

**PROPOSED REDEVELOPMENT AT
LAND AT 15 LANGSTON ROAD
HAYLING HAVANT
PO9 1RA**

**FLOOD RISK AND DRAINAGE
ASSESSMENT REPORT**

On Behalf of: PHILLIPS BUILD LTD.

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1. Introduction

Instructions were received in July 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in accordance with the current recommendations given in the National Planning Policy Framework, which has now superseded PPS25, has been produced in relation to the requirements of the code for sustainable homes.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 71649 05574.

Currently the site is used as a single domestic dwelling, it is a two storey house with a conservatory and associated tarmac surfaced access driveway from Langston Road. The areas of the site that do not contain the driveway or dwelling are lawned areas or gardens consisting of mostly soft landscaped areas.

The proposed re-development involves removing the existing dwelling and replacing with a 3 storey block of flats, containing 9 units. There is also a small covered car port, bin store and cycle store structure. There will also be a new access road to replace the existing onto Langston Road as well as car parking spaces. It is proposed that the car parking and access road will be constructed using a permeable surface such as permeable block pavements.

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

The site is to be found to the Eastern side of Langston Road. The site is generally flat. It appears to have been a domestic dwelling since it was constructed around 1930-1940, before that the site appears to have been a field / orchard. There are currently numerous mature trees surrounding the site.

The local sewerage network as noted on the Southern Water drainage records can be found in Appendix C. It also shows that there are only foul water drains within the direct vicinity of our site, within Langston Road. It is understood that the foul water from the site connects into the foul sewer within Langston Road. There is an IC in the North West corner of the site shown on the topographical plan which is probably the foul connection point from the site to the sewer within the

road. The site most likely uses soakaways to deal with its storm water as there are no storm water sewers within Langston Road adjacent to the site.

3. Geology

A study was made of the local British Geological Survey mapping and it was found that the site is underlain by River Terrace Deposits overlying Seaford Chalk. The findings of the map will need to be confirmed by a site investigation if required. Local boreholes available fairly near the site show ground water at approximately 2.50-3.0m below ground level and confirm the soil profile noted above.

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 at 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 the urban setting but the majority of the area proposed for the redevelopment is currently soft landscaped. We have investigated the site and found that the foul water connects into the foul sewer within Langston Road and evidence would indicate that the storm water from the existing buildings on site is directed into soakaways.

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 = 42.6m³, which equates to a discharge rate of 1.973 L/s.

During a 6 hour storm event for the above noted storm the storm water runoff from the proposed site = 110.6m³, which equates to a discharge rate of 5.121 L/s.

Therefore an additional volume of 68.0m³ of storm water runoff will be created as a result of the renovation development. However this run off volume is slightly skewed as it also includes run off from the new permeable surfaced access road and parking areas, which will not actually be the case. This is because the storm water will be held within the voided subbase of the road and stored temporarily before infiltration into the soil as described within the next section.

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 soakaways within Appendix E (Note that currently the soakaways have been sized using estimated soil infiltration rates for the River Terrace Deposit 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 sizes are required:

New flat roof, bin store, cycle store and carport – 2 No. 4.5x4.5x1.20m deep soakaways will be required for these areas. 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)

New driveway and car parking areas – This will be a permeable surfaced system with a voided subbase below using aggregate to ensure a 30% void ratio. This will mean that a depth of 150mm of voided base is required to store the storm water for long enough to ensure no site storm water runoff from these areas.

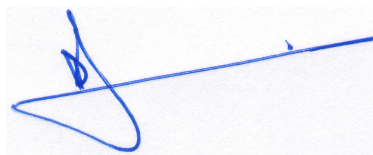
Foul water from the site will be discharged into the local foul sewer within Langston Road as already occurs. It may be possible to re-use the existing connection once its condition has been confirmed on site. The foul water discharge from the site will increase slightly but will not be significant and will not affect flood risk on the site. 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 rainage 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



B.

Land at 15 Langstone Rd, Hayling Havant, Hampshire Phillips Build Ltd				Project & Drawing Title Existing Site and Location Drawn: CJP Date: March 18 Checked: RSD Date: March 18 Scale at A3: 1:500 & 1:1250 Job No.: 18-006 Drawing No.: 001 Rev: P1 Status: PRE APPLICATION ENQUIRY				Project & Drawing Title Ground Floor: Residential Building Ground Floor: 15 Langstone Rd Havant, Hampshire Phillips Build Ltd 15 Langstone Rd Havant, Hampshire PHILLIPS BUILD LTD 15 LANGSTONE RD HAVANT, HAMPSHIRE PO15 5JF 01329 810000 www.phillipsbuild.co.uk Local Planning Department: Planning & Regeneration		
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B. Existing site plan and site topographic survey



Land at 15 Langstone Rd, Hayling

Havant, Hampshire

Phillips Build Ltd

Project & Drawing title

Existing Site and Location

Drawn	Date	Checked	Date	Scale at A3
CJP	March 18	HUG	March 18	1:500 & 1:1250
Job N°	18-006	Drawing N°	001	Rev. P1
Status	PRE APPLICATION ENQUIRY			

Ground Floor Plans & Building Details
Working Date: 18th March 2018

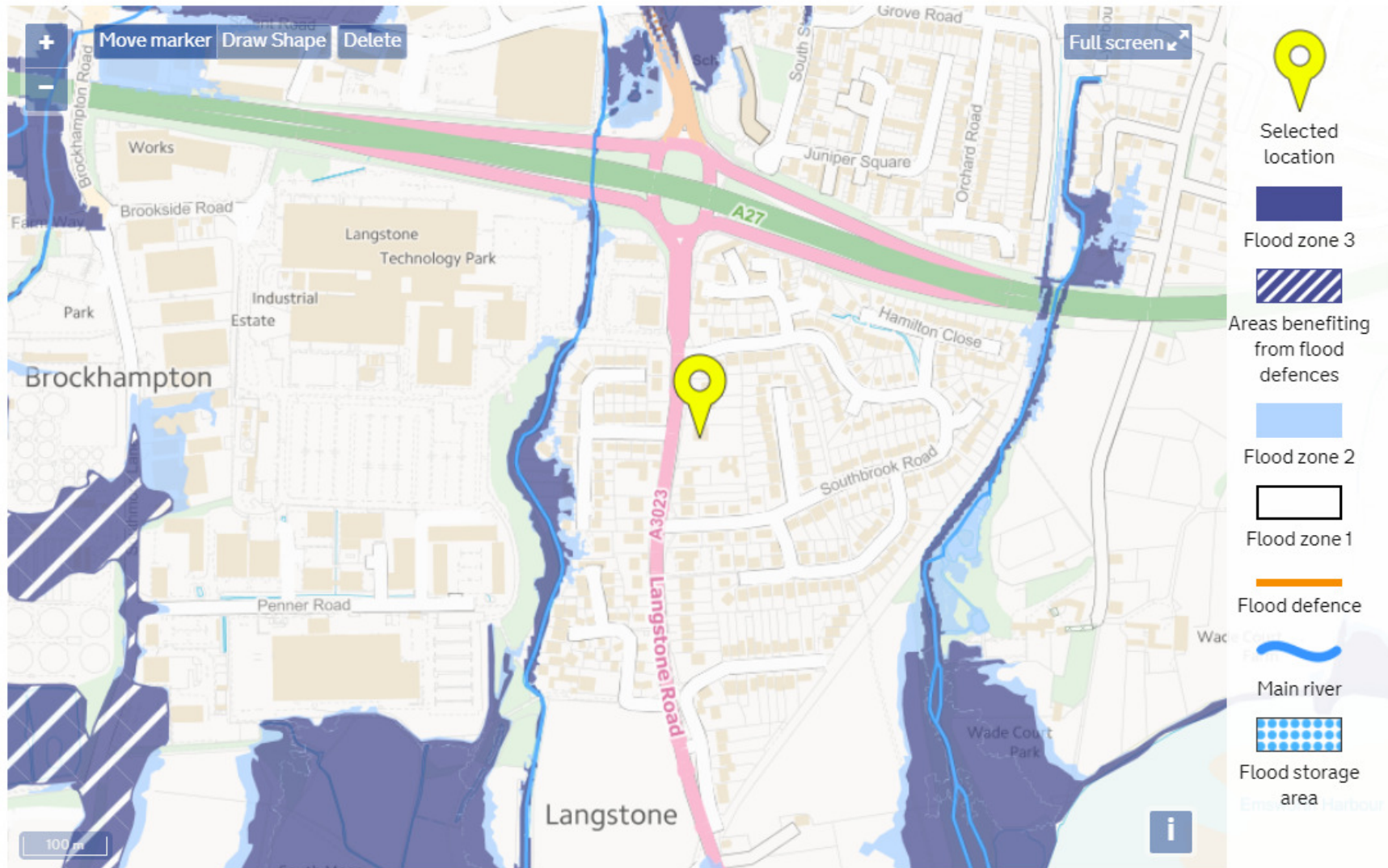
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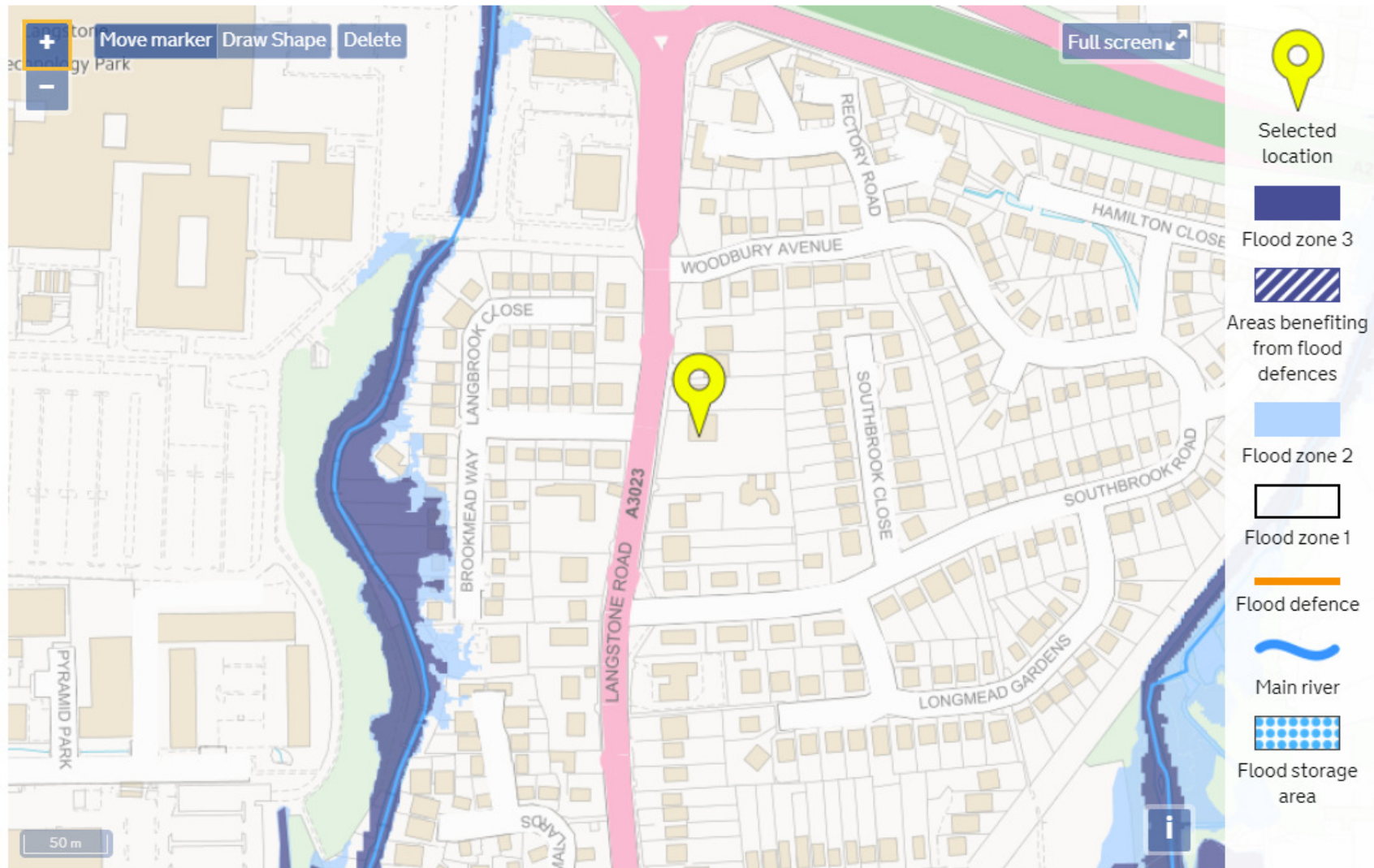
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Registered in England & Wales

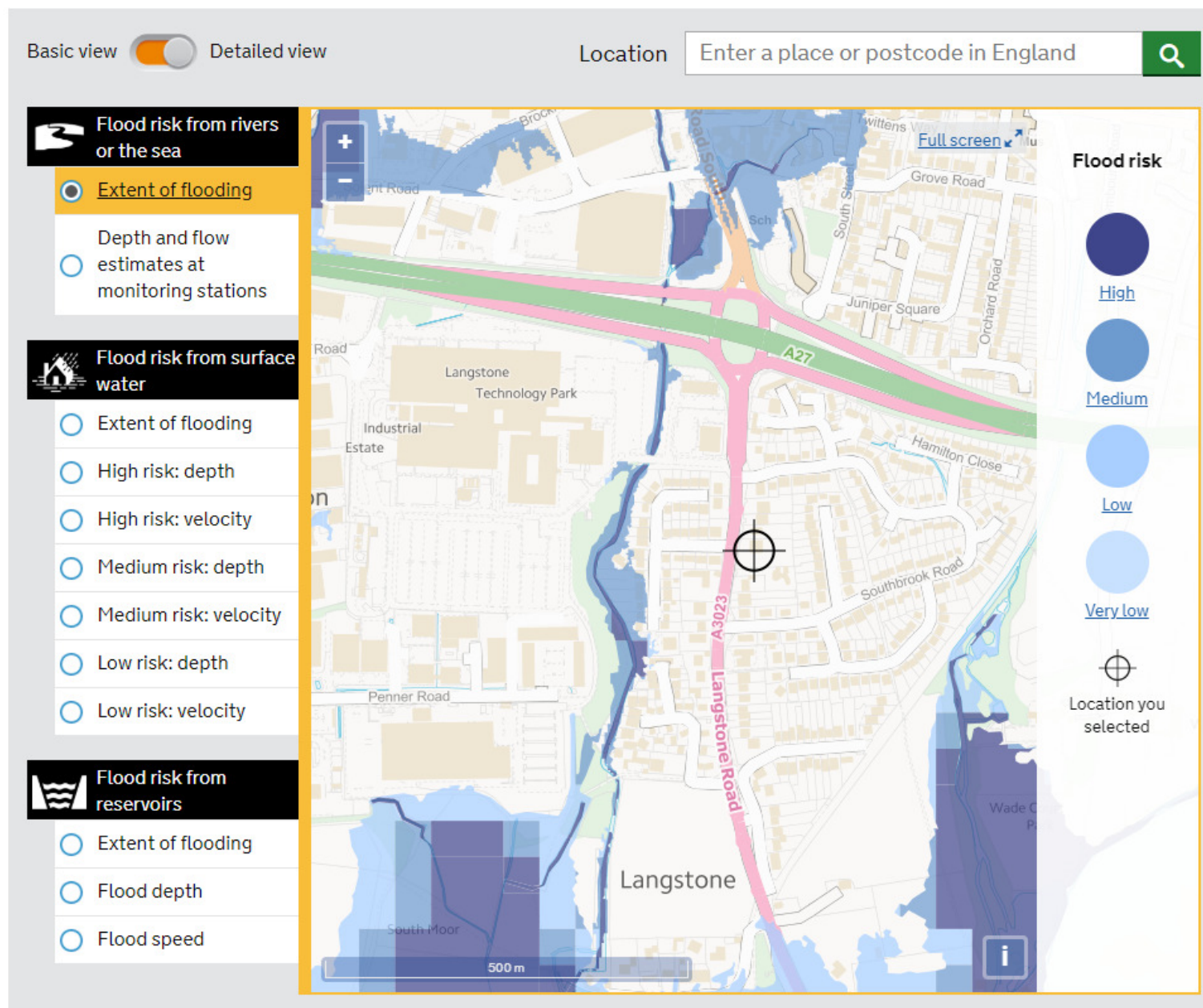
C. Proposed Development Plans

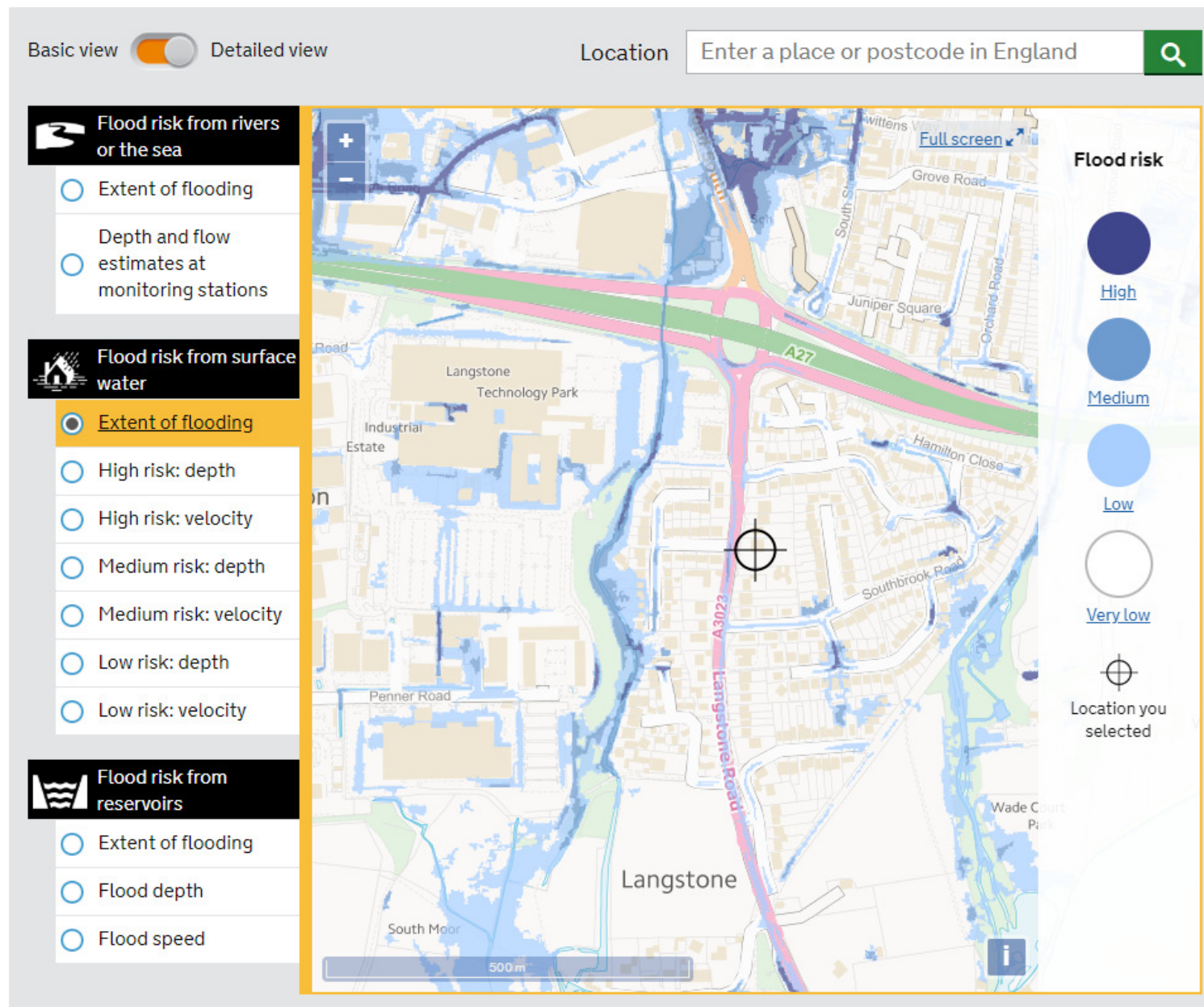


D. Flood Risk Mapping









E. Storm water run off calculations - Existing

STORM WATER - EXISTING SITE RUN-OFFS

(Using guidance from BRE 365)

Job No.: 382998
Job Name: 15 Langston Road

Total site Area	8906	m2
Surface	Area (m2)	Run-off coeff
Existing house roof	190	1.00
Conservatory	25	1.00
Driveway	151	1.00
Other permeable areas	2647	0.00
Sum	3013	

Document A

1 in 100 year event + 40% climate change									
Eff Area	366	m2							
100 year return period + climate change									
R5	0.03242	m	Storm duration (Min.)	T	N	r	Climate allowance 30%		
R10	0.04017	m	5	0.08 hrs	0.083333	0.1	0.023154		
R15	0.04546	m	10	0.17 hrs	0.166667	0.1	0.028694		
R30	0.05603	m	15	0.25 hrs	0.25	0.1	0.032473		
R60	0.06888	m	30	0.50 hrs	0.5	0.1	0.040022		
R120	0.08450	m	60	1.00 hrs	1	0.1	0.0492		
R240	0.10348	m	120	2.00 hrs	2	0.1	0.060356		
R360	0.11643	m	240	4.00 hrs	4	0.1	0.073917		
Run-off from site during 6 Hour event									
Volume of total run-off			Flow in Ltrs / second during event						
I360	42.615	m3	Flow	1.973	L/s				
Therefore total run off									
			42.6	m3	OR	1.973	L/s		

1 in 1 year event									
Eff Area	366	m2							
1 year return period + climate change									
R5	0.01416	m	Storm duration (Min.)	T	N	r	Climate allowance 30%		
R10	0.01792	m	5	0.08 hrs	0.083333	1	0.010892		
R15	0.02049	m	10	0.17 hrs	0.166667	1	0.013788		
R30	0.02562	m	15	0.25 hrs	0.25	1	0.015764		
R60	0.03186	m	30	0.50 hrs	0.5	1	0.01971		
R120	0.03944	m	60	1.00 hrs	1	1	0.024508		
R240	0.04866	m	120	2.00 hrs	2	1	0.03034		
R360	0.05494	m	240	4.00 hrs	4	1	0.037429		
Run-off from site during 6 Hour event									
Volume of total run-off			Flow in Ltrs / second during event						
I360	20.110	m3	Flow	0.931	L/s				
Therefore total run off									
			20.1	m3	OR	0.931	L/s		

Storm water run off calculations – Proposed

STORM WATER - PROPOSED SITE RUN-OFFS

Document B

(Using guidance from BRE 365)

Job No.: 382996
Job Name: Porte Marsh Mill, Calne

Total site Area	Area (m ²)	Run-off coeff	8906 m ² EF Area (m ²)
Surface			
New flats roof	380	1.00	380
Drive way	312	1.00	312
Car parking area	191	1.00	191
Car port, cycle store and bin store	67	1.00	67
Other permeable areas	2063	0.00	0
		0.00	0
		0.00	0
		0.00	0
Sum	3013	0.50	0

1 in 100 year event + 40% climate change						1 in 1 year event					
EF Area	960	m ²				EF Area	960	m ²			
100 year return period + climate change						1 year return period + climate change					
R5	R10	R15	R30	R60	R120	R5	R10	R15	R30	R60	R120
0.03242 m	0.04017 m	0.04548 m	0.06203 m	0.08888 m	0.08450 m	0.01416 m	0.01792 m	0.02049 m	0.02562 m	0.03186 m	0.03944 m
Storm duration (Min.)	5	10	15	30	60	5	10	15	30	60	120
T	0.083333	0.166667	0.25	0.5	1	0.083333	0.166667	0.25	0.5	1	2
N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
r	0.023154	0.028694	0.032473	0.040022	0.0492	0.023154	0.028694	0.032473	0.040022	0.0492	0.060356
Climate allowance 40%						Climate allowance 40%					
R360	0.11843 m					R360	0.05494 m				
Run-off from site during 6 Hour event						Run-off from site during 6 Hour event					
Volume of total run-off	110.613	m ³				Volume of total run-off	52.198	m ³			
Flow in Ltrs / second during event	5.124	L/s				Flow in Ltrs / second during event	2.417	L/s			

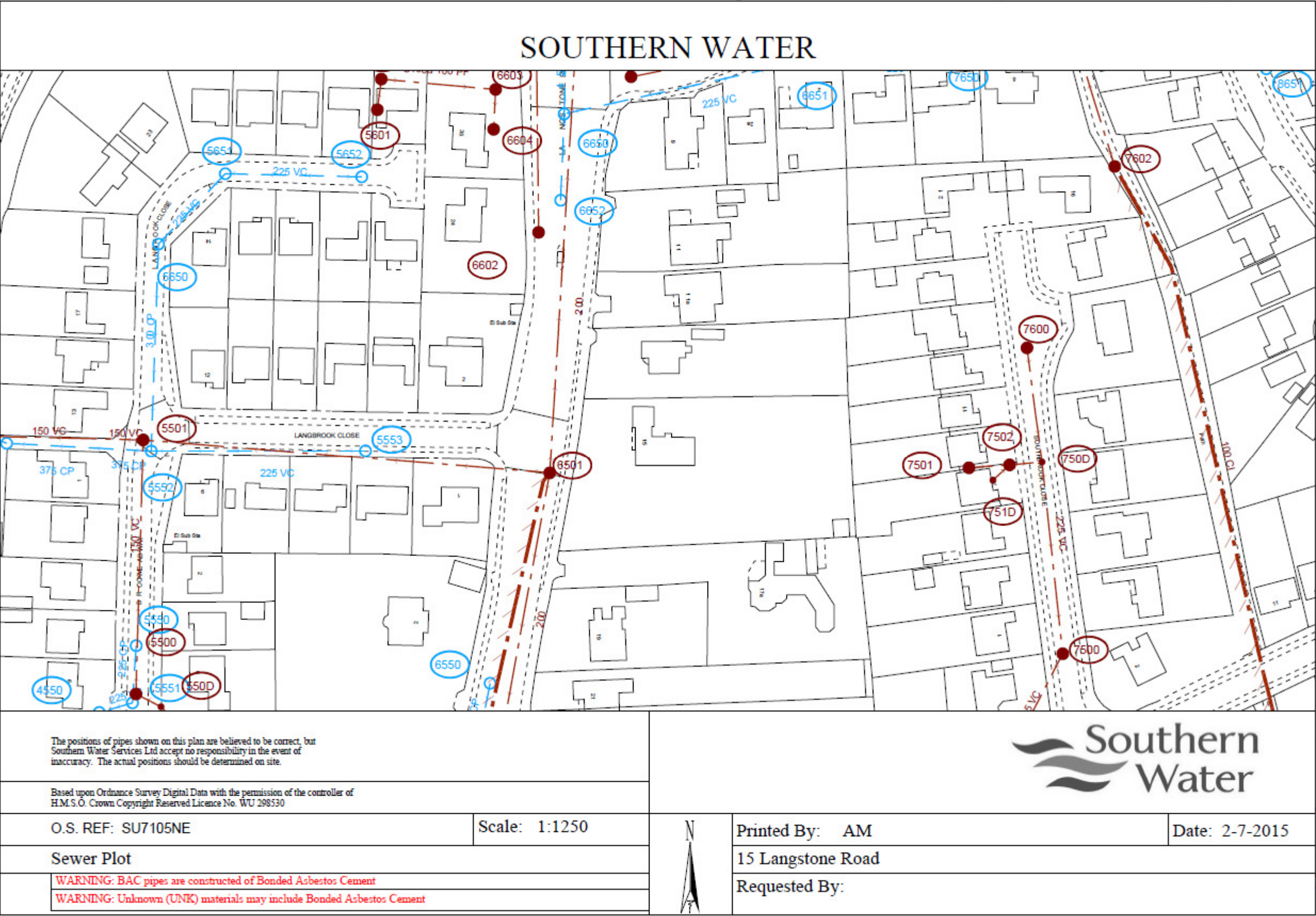
The above run-off volumes will be contained on site and not run-off, see below:

Soakaway check for house roofs and permeable driveways for 1 in 100 yr + 40% climate change 6 hour event

New flats + bin / cycle store + car port					
Inflow to soakaway system	52.046	m ³			
Outflow from Tank	8.00E-06	m ³ s			
f			(Assumed soil infiltration rate TBC in due course)		
Soakaway dims:					
L	4.5	m	No. of soakaways	2	No.
W	4.5	m			
Depth	1.2	m (below invert depth of inlet pipe)			
As50	31.1	(50% effective depth + base area as BRE365)			
Void ratio	95.0	%			
Outflow from Tanks:	10.73	m ³			
Storage required:	41.32	m ³	Time to drain:	11.55	hours
S360			ts50		
Storage provided	40.2	m ³			
Critical storm =	S300				
Storage required =	41.32				
Time to discharge =	11.55	Hours			
Soakaway size proposed is satisfactory					

Driveway and car park only					
Inflow to soakaway system	58.567	m ³			
Outflow from Tank	8.00E-06	m ³ s			
f			(Assumed soil infiltration rate TBC in due course)		
Soakaway dims:					
Area	503.0	m	No. of soakaways	1	No.
Depth	0.15	m (below invert depth of inlet pipe)			
As50	265.3	(50% effective depth + half base area as BRE365)			
Void ratio	30.0	%			
Outflow from Tanks:	45.84	m ³			
Storage required:	12.72	m ³	Time to drain:	0.83	hours
S360			ts50		
Storage provided	22.8	m ³			
Critical storm =	S300				
Storage required =	12.72				
Time to discharge =	0.83	Hours			
Soakaway size proposed is satisfactory					

F. Existing drainage plan of the site and Wessex Water Sewer Records



G. Proposed storm water mitigation drawing

