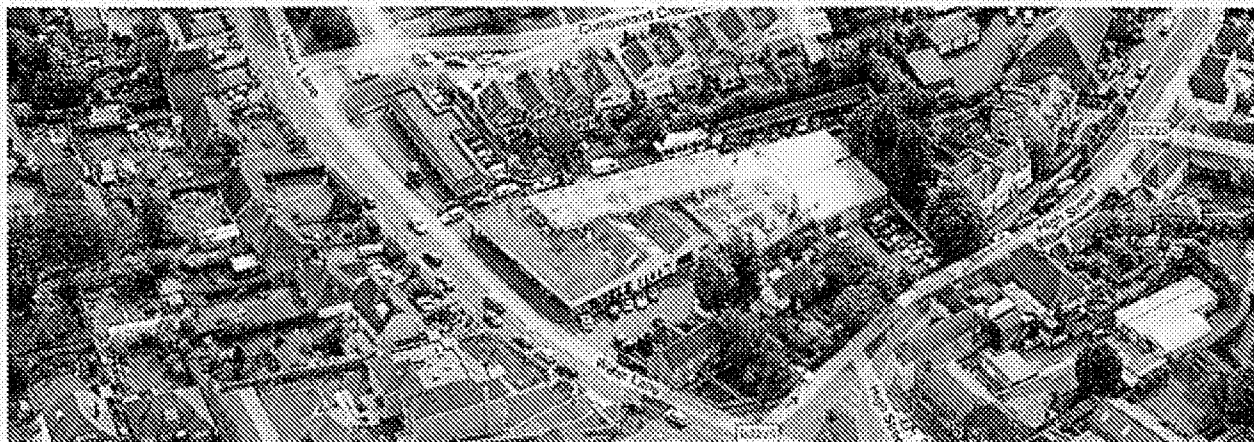




civils ltd - consulting engineers



FLOOD RISK ASSESSMENT

Chandlers Worthing

Water Lane, Angmering BN16 4EH

CLIENT

Chandlers Worthing
Water Lane
Angmering
BN16 4EH

Ref: 4595/2.3F
Date: December 2012

CONSULTING ENGINEERS

GTA Civils Ltd
66a Church Walk
Burgess Hill
West Sussex RH15 9AS



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- 2.0 Existing Site & Current Flood Conditions
- 3.0 Proposed Scheme Design & Flood Risk Mitigation
- 4.0 Floodplain Volume
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- C Environment Agency Flood Data
- D Strategic Flood Risk Assessment (SFRA) Flood Maps
- E Sewer Records
- F Proposed Scheme Drawings
- G Micro Drainage Calculation

Issue	Date	Compiled	Checked
First Issue	11 December '12	JP	MR

Report by: **John Pakenham BSc (Hons)**
 Checked by: **Martin Roberts I Eng, ACIWEM, MIHT**

1.0 INTRODUCTION

- 1.1 This Flood Risk Assessment (FRA) report has been prepared for Chandlers Worthing in relation to their premises at Water Lane, Angmering BN16 4EH and no responsibility is accepted to any third party for all or part of this study in connection with this or any other development.
- 1.2 GTA Civils Ltd was appointed by the client to provide a FRA as required by the Environment Agency and Arun District Council in order to achieve Planning Approval for the development of the Chandlers Worthing property in Water Lane, Angmering.
- 1.2 This report will take the form of a formal Flood Risk Assessment in accordance with the 2102 National Planning Policy Framework (NPPF) and the associated Technical Guidance document, this being the current definitive central government flood risk policy. The Strategic Flood Risk Assessment commissioned by Arun District Council will also be researched for historical records of flooding from all known sources.
- 1.3 It is understood that the Sequential Test procedure is currently being, or will have been, addressed as it lies outside the author's remit. This report concentrates on the second part of the Exception Test, namely this development is safe.

2.0 EXISTING SITE & CURRENT FLOOD CONDITIONS

- 2.1 The site lies within the area administered by Arun District Council. An unnamed brook passes within a few metres to the northwest of the site. This watercourse is culverted at this point.
- 2.2 The site's area is approximately 0.47ha: see the site location maps and aerial views in Appendix A.
- 2.3 Currently the site comprises an operational car sales and maintenance garage with associated external hardstandings. The main showrooms and workshops unit is augmented by an open-sided car showroom and office building to the north end. There is also a dwelling, known as Phares Courtledge, located at the southwest corner of the site. The site is impermeable, apart from the dwelling's garden, whose area totals approximately 430m².
- 2.4 The total 'enclosed building area' on the site is 1622.64m². This excludes the open sided showroom at the north of the site, as this flood waters would freely enter this unit. The area of this part is 195m², making the total roofed area (1623 + 195 =) 1818m².
- 2.5 A topographical survey of the existing site has been conducted, with levels to Ordnance Datum, and is contained within Appendix B of this report. The survey shows that the site's levels range between approximately 7.9m AOD at the south corner and 5.47m AOD near to the north corner of the site. The finished floor level (FFL) of the main garage unit is 5.93m AOD. The threshold level of the dwelling unit is also 5.93m AOD.
- 2.6 Geology: the BGS's online geology map shows the bedrock is Chalk (a mixture of 'Lewes Nodular Chalk', 'Seaford Chalk', 'Newhaven Chalk' and 'Culver Chalk' formations is showing on this map.) This is overlain by 'Head Deposits' (clay, silt, sand and gravel.) The Chalk is renowned for its high to very high permeability whilst Head's porosity can vary widely.
- 2.7 A site investigation was carried out some time ago and was limited to a small part of the site. It confirms that both Head and Chalk comprise the geology, however, and that there is a varying depth of made ground above the Head stratum. The depth down to the Chalk varied between 1.7m and 4.0m below ground level. The summary of this investigation is included in Appendix B.
- 2.8 Once the depth to the chalk stratum is known soil soakage tests shall be carried out, in accordance with BRE Digest 365, in order to ascertain the soil's and chalk's infiltration rates. These must be undertaken prior to finalising the surface water drainage design. Likewise, the depth to the chalk must be determined, by undertaking a more comprehensive Site Investigation.
- 2.9 The Environment Agency's flood map (in Appendix C) shows that the site lies within Flood Zone 3A - High Probability (FZ3A), as it is shaded deep blue. It does not benefit from formal defences. Inland sites in FZ3A are defined in the NPPF's technical guidance as having an annual probability of greater than 1 in 100 – or 1% – or, put another way, are expected to flood once every 100 years on average. Correspondence from the EA states that the site is liable to flood in the critical 1 in 75 years storm event, however, which places it at a slightly higher risk than FZ3A.
- 2.10 The highest modelled '1 in 100 years + climate change' level (provided by the EA) is **6.10m AOD** – see table in Appendix C. Although there is some variation across the site it is contended that this level is as close to the mean as is possible to estimate.

- 2.11 The Strategic Flood Risk Assessment (SFRA) commissioned by Arun District Council, confirms this in its 'Climate Change Fluvial Flood Zones' Map (C2-F.) This is shown in Appendix D.
- 2.12 The SFRA shows this site falls within a Groundwater Emergence Zone – see the excerpt from the 'Indicative Risk of Groundwater Flooding' Map (G1) in Appendix D. Although this looks serious at first glance it should be borne in mind that actual incidents of groundwater flooding in this area are extremely rare. Such flooding is understood to occur in (low-lying) aquifers when the water table rises after *multiple* periods of high rainfall.
- 2.13 The Groundwater Emergence Zone map was published by DEFRA in conjunction with Jacobs. This was a national modelling exercise using winter hydrographs akin to 2000/1. The zones where groundwater was showing within 2m of the ground's surface were thus defined. Therefore it is not certain where the emergence points typically occur and it is unclear whether this hydrology is definitive. The only point to take forward with regard to groundwater flood risk is that there is a significant risk of such flooding in this vicinity: this can be checked by a site-specific soil investigation measuring groundwater depths.
- 2.14 According to the EA's correspondence in Appendix C, this site flooded in 1980 and June 2012. The SFRA's historical maps (in Appendix D) confirm this, ie there are recorded incidents nearby.
- 2.15 The SFRA's 'Areas Prone to Flooding From the Land' map (Map L in Appendix D) shows that this area is in the high risk zone of this source. It can be deduced from this map that the culverted section causes a restriction in the fluvial flow. The waters flow overland in the same direction and re-join the open-channel section some 250m southwest of the application site. The ramification of this will be outlined in the next section.
- 2.16 Southern Water's sewer records were obtained – see Appendix E. These show that there are no surface water sewers in this area, meaning that all precipitation currently discharges to ground.

3.0 PROPOSED SCHEME DESIGN & FLOOD RISK MITIGATION

- 3.1 The proposal is to demolish the existing car sales showrooms/maintenance workshops and dwelling and erect 22 no. dwelling units with associated car barns. These comprise 1-2 bedroom flats and 2-4 bedroom houses. See the 'Proposed Site Layout and elevations' in Appendix F. Note that the car barns are open-fronted.
- 3.2 The total roofed (or footprint) area of the proposed buildings is 973m². There is a nett decrease of 845m² from 1818m², see section 2.4.
- 3.3 Table 2 of the NPPF's technical guidance document states that private dwellings are 'More Vulnerable'. Table 3 states that this classification requires the Exception Test to be passed in FZ3A.
- 3.4 The NPPF requires that the lowest finished floor level (FFL) of new developments in FZ3A is set 0.3m higher than the '1% plus climate change level', which was found to be 6.10m AOD in Section 2.10. 6.40m AOD is the lowest proposed FFL, therefore.
- 3.5 The car barns' ground levels will be as close to existing levels as practically possible.
- 3.6 Access to safety: drawing 4595/101 includes routes to safe, dry land. These are in broadly 2 directions, 1 to the High Street, and the 2nd to Cumberland Crescent. Both of these highways are in FZ1 and this extends southwards along both routes to the wider highway network. The minimum level along these paths is 5.90m AOD. It is contended that a maximum flood depth of 0.2m will not constitute hazardous conditions to most occupants as this is significantly less than the height of a wellington boot. It must be remembered that the maximum flood level of 6.10m AOD is the peak level and so the length of time that the flood level will be greater than 5.9m will be limited.
- 3.7 Overland flow routes: within those car barns' and garden walls (in the floodplain) will be missed bricks where the level difference between ground level and 6.10m AOD is over 75mm. There will be weep holes in 'perp joints' where this difference in level is less than 75mm. The spacing of these will be no greater than every 1.35m.

4.0 FLOODPLAIN VOLUME

4.1 The following table summarises the existing and proposed building areas relating to the floodplain:

	In Floodplain (m ²)	Outside Floodplain (m ²)
Existing Building areas:	1622	0
Proposed Building areas:	460	513
Proposed External Raised areas:	710	n/a
Nett Increase/Decrease:	-452	513

- 4.2 The ground levels across the external areas will be kept as they are currently as far as possible, except for raised areas that are necessary for accessing the units' FFLs and for safe access to dry land. Appendix F shows a site layout plan with the total area of external space that will be raised within the floodplain. This area has been calculated as 710m².
- 4.3 As an additional benefit, all units (in the floodplain) ground floors will be suspended, of resilient construction, eg concrete beam/blocks. Floodable voids will be provided between the critical level of 16.10m AOD and existing ground levels. The ground floor's construction depth will be limited to the range between 16.10m and 16.40m AOD – at the minimum levels, this being the freeboard range.
- 4.4 There will be at least one 1200mm x 300mm deep aperture on each unit's elevation. These will be fitted with sturdy mesh barriers to stop wildlife ingress. As each of the elevations will allow ingress/egress of flood waters there will be no impedance of flow.
- 4.5 The surface of the void will be of lean mix concrete with a smooth finish. There will be a 1:80 rise to a central apex. In this way the waters will recede out of the units as the flood waters abate.
- 4.6 It is clear that the proposal will significantly *increase* the floodplain's volume: the nett area will store water that would be currently displaced by the units.

5.0 SURFACE WATER DRAINAGE STRATEGY

- 5.1 SUDS: one of the main tenets of the NPPF is for new developments to not increase flood risk of neighbouring/downstream properties. The EA and NPPF expect such developments to incorporate surface water drainage strategies that are 100% sustainable.
- 5.2 All the hardstandings on the site (ie driveway areas etc.) will be of porous pavings. This area totals 656m².
- 5.3 As stated in Section 2.6 the site is underlain by Chalk, but this is at a depth below Head. The latter's infiltration rate is likely to be low, so it is proposed to excavate this locally to utilise the Chalk's high porosity.
- 5.4 The surface water from all the roofed areas will be routed into the porous paving's granular substrate. This will be segmented with baffles to create a 'terraced' effect, which is needed due to the change in level throughout the site.
- 5.5 Drawing no 4595/102 in Appendix F shows 2 cellular soakaways. These will extend down 1.5 metres into the chalk, which will help ensure the water in the critical '1 in 100 years plus 30% climate change' event will a) be stored and b) will drain away. There will be a minimum of 5m from all buildings and the boundaries.
- 5.6 Appendix E includes a calculation that provides an indicative tank soakaway size totalling 337m³. Note that this is based on an assumed soil infiltration rate of 4 X 10⁻⁶m/s (equivalent to 0.144m/hr) and the actual rate must be determined prior to finalising the design.
- 5.7 Indeed, the complete surface water drainage design must be designed fully once the depth to the chalk has been determined, as well as both the chalk's and the head's infiltration rate have been confirmed. If the head offers any significant soakage it is proposed to allow water in the drives/parking areas to soakaway, too. This will reduce the soakaway volume required.
- 5.8 The 'half drain time' of the calculation is excessive. It should be no greater than 1440 minutes as there is a chance of a second '100 years' storm occurring within 24 hours. The peak volume in the critical '1 in 100 years plus 30% climate change' storm is 183.6m³, whilst the capacity of the 2 soakaways is 337m³. So there is an additional 153.4m³ available in the event of a second storm occurring. The shortfall of 30.2m³ (to 183.6m³) can be made up by increasing the depth of substrate in the porous pavings' area. The exact depth of this can only be determined once the rest of the drainage has been accurately designed.

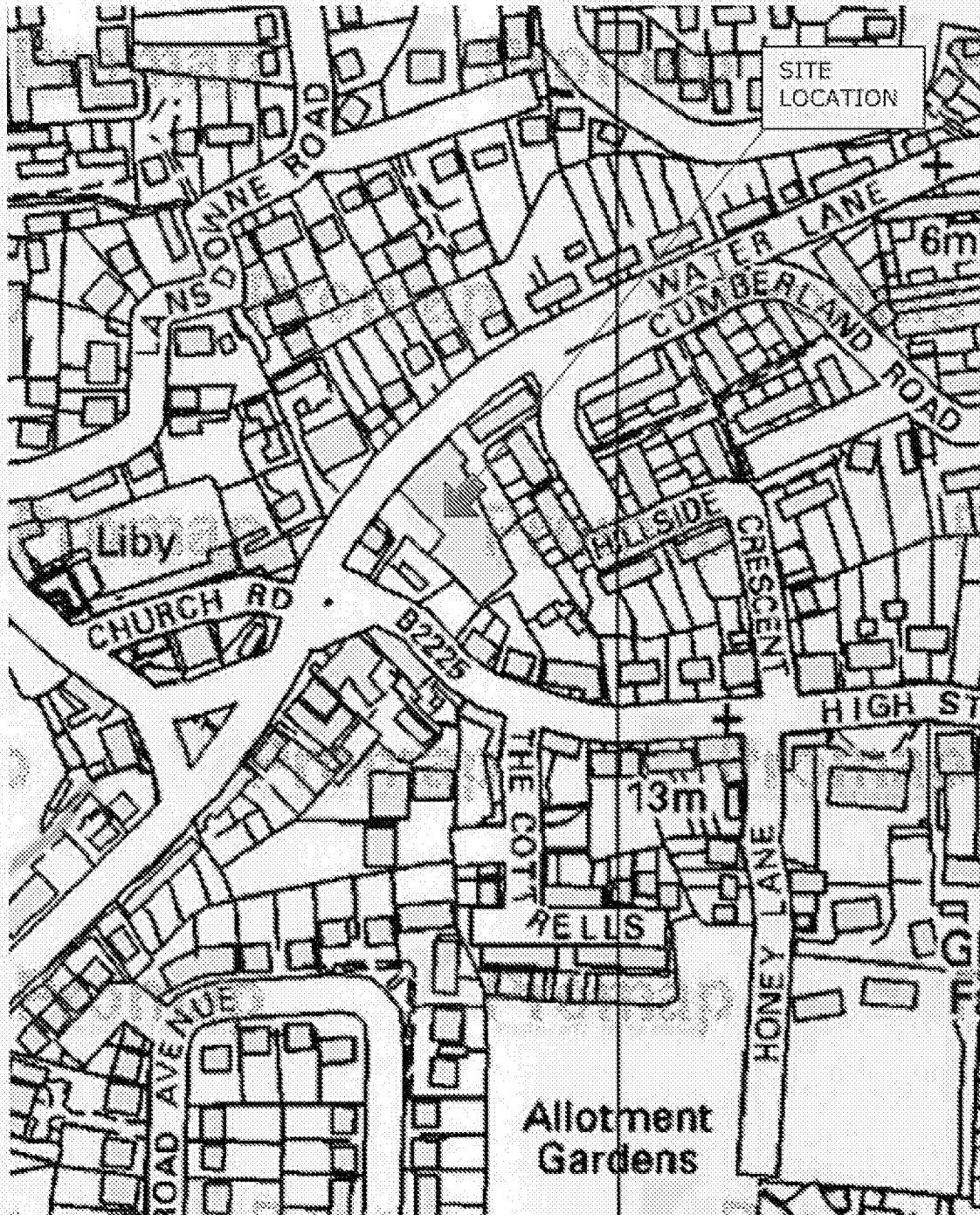
6.0 SUMMARY

- 6.1 Much of the site is in Flood Zone 3A (High Probability.)
- 6.2 The proposal is to replace a car sales showroom/workshop complex (and dwelling) with 22 new dwellings.
- 6.3 The minimum lowest proposed FFL will be **6.40m AOD**, which provides 0.3m freeboard above the EA's modelled '100 years + climate change' flood level of **6.10m AOD**.
- 6.4 As there is a dramatic reduction in the total area of buildings on the site there will be a large increase in floodplain volume on this site. See the table of areas in section 4.1.
- 6.5 As an additional benefit, there will be a floodable void under each unit within the floodplain. Overland flow routes will be unaffected as there will be 'weep holes' in perp joints and missed bricks to all external walls within the floodplain.
- 6.6 Access to safety routes are shown in Appendix F. The minimum level of 5.9m AOD is not hazardous to most users, it is contended.
- 6.7 After a full site investigation and soil soakage tests (to BRE Digest 365) have been undertaken, the surface water drainage design is to be finalised. An indicative scheme is included in Appendices F and G. This is also outlined in Section 5.0 above.
- 6.8 With these measures in place, this development will not increase the flood risk on this site or that of neighbouring properties and so shall comply with the policies contained within the 2012 NPPF.

- End of Report -

APPENDIX A

Site Location Map & Photos





Aerial View

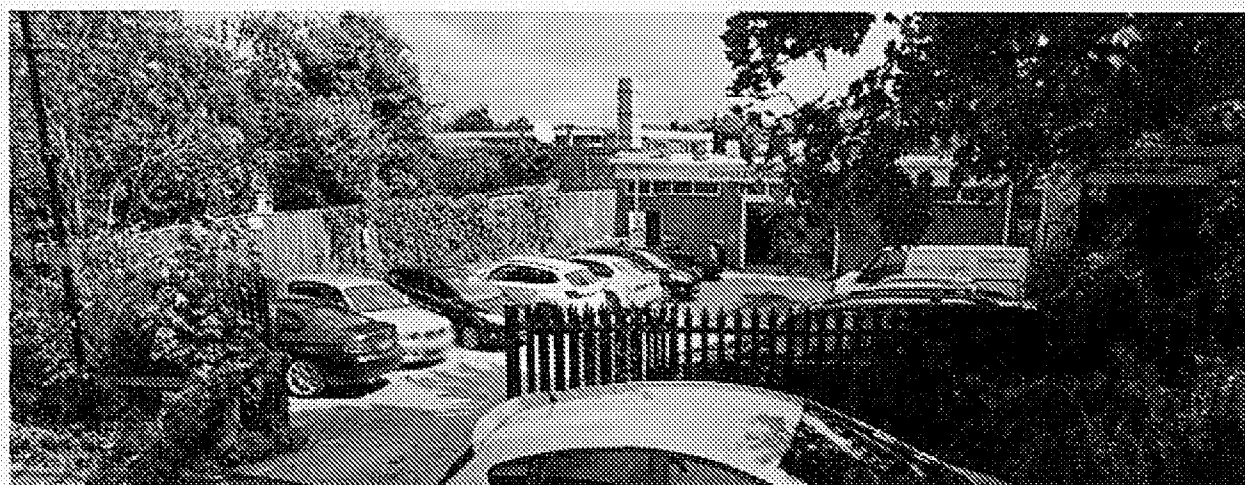
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View southwest from north corner (Water Lane)



View east from Water Lane



View north from High Street

APPENDIX B

Topographic Survey & SI Report Summary

W:\Projects\4595 EPA, Marshall Creek, Water Lane, Angmering BD18 4B\52.3 Specifications & Reports\FR: Flood Risk Assessment	Date	Job No.
	December '12	4595/2.3F



Keeble House, Stuart Way
East Grinstead, West Sussex RH19 4DA

Directors: M. W. Stevenson BSc MBA CEng CEM MCCE CDEast FOS MCQand CEng (Executive)
J. M. Harkness BSc CEng CEM MCCE FOS
EurEast R. C. Smith BSc LLB MSc CDEast FOS SLC
EurEast Helen L. Smith BSc MSc CDEast FOS ARGAM SLC
D. Moughy BSc (City Eng) MSc
R. Bingham BEng
A. J. Thomas CEng MCCE (Non Executive)
A. J. Gurney FOS AGCB
Co. Secretary: Dr Derek Peckey PhD DSc BSc MSc FGS
Consultant:

SUMMARY

The site, which extends to about 10m x 10m, comprises an area within the forecourt of Chandlers BMW garage. It is understood an underground waste oil tank is located within the site. The object of the investigation was to assess the likely nature and extent of soil and groundwater contamination from the tank.

Geological records indicate the site to be underlain by head over upper chalk.

A historical Ordnance Survey map search undertaken as part of a previous report by URS indicated that the site had a history of use as a garage. A culverted watercourse is situated to the west of the site.

A single phase of intrusive investigation was carried out.

The soils encountered comprised made ground to 0.6/1.7m, over interbedded clays and clay/gravels to 1.7/4.0m, over chalky silts at depth.

Groundwater was encountered at about 0.8-1.8m below ground level.

Low level contamination was identified in the soils in the form of Petroleum Hydrocarbons and Poly Aromatic Hydrocarbons.

There was also evidence of low level low level groundwater contamination in the form of Total Petroleum Hydrocarbons to the south of the tank, and to a lesser extent in the culverted watercourse. It is not possible, at this stage, to confirm whether these incidences are related. There is also evidence of low levels of groundwater contamination in the form of Total Petroleum Hydrocarbons and Semi Volatile Organic Compounds to the west of the tank. It should be noted, however, that the levels of contamination identified would be considered unlikely to warrant specific remedial action in isolation. Further work would, however, be required to define the extent of the contamination on this and the wider garage site, and any links to the impact on the adjacent water course and the chalk aquifer.

The site investigation was conducted and this report has been prepared for the sole internal use and reliance of Barry Ian Vidgeon, Michael John Coates, Group 1 Automotive UK Limited and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorization of Southern Testing Laboratories Limited. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

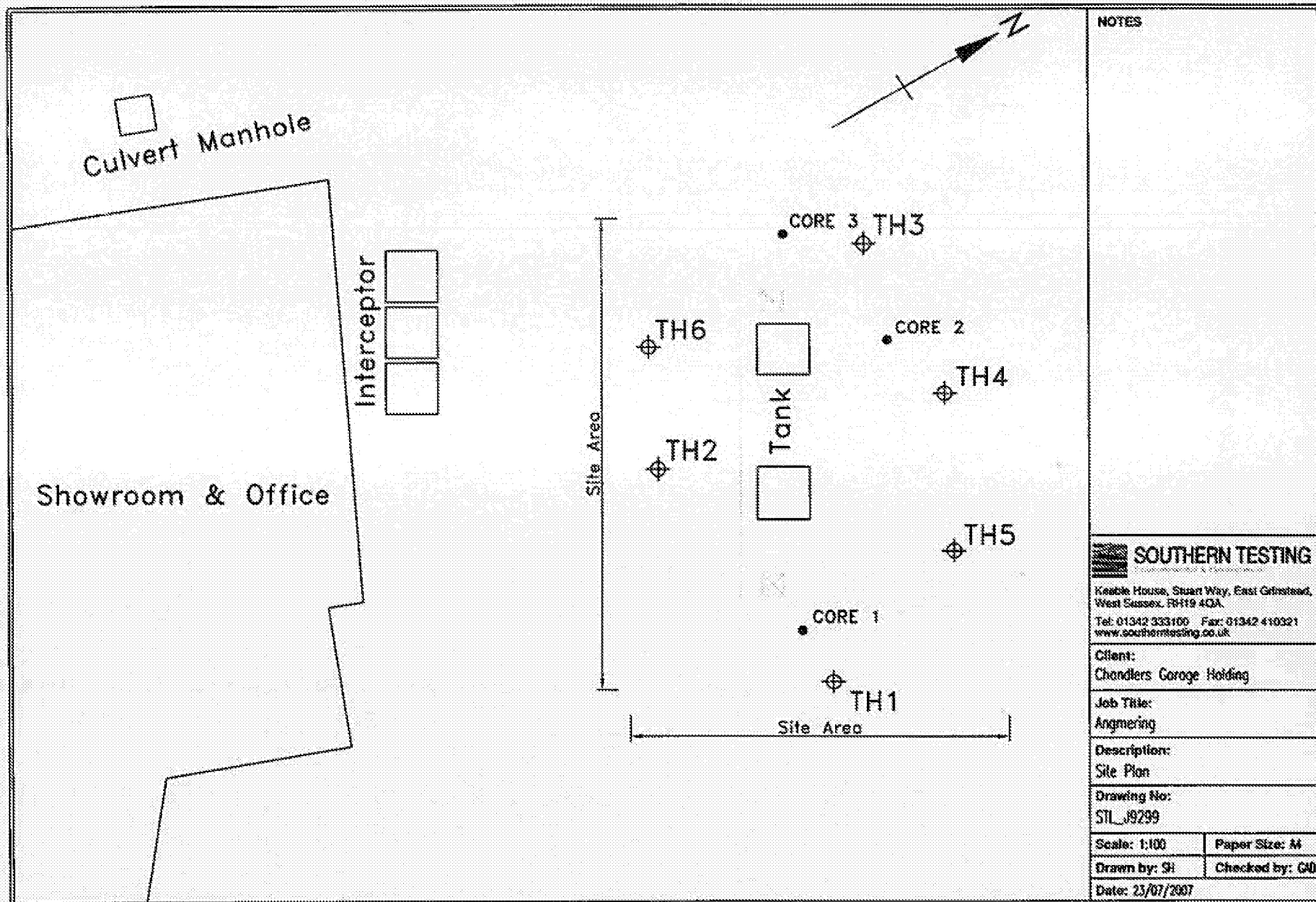
The findings and opinions conveyed via this Site Investigation Report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Limited believes are reliable. Nevertheless, Southern Testing Laboratories Limited cannot and does not guarantee the authenticity or reliability of information obtained from others.

(Countersigned)

For and on behalf of Southern Testing Laboratories Limited

(Signed)





NOTES

 **SOUTHERN TESTING**
Environmental & Geotechnical

Keable House, Swan Way, East Grinstead,
West Sussex, RH19 4QA

Tel: 01342 333100 Fax: 01342 410321
www.southern-testing.co.uk

Client:
Chondlers Garage Holding

Job Title:
Angmering

Description:
Site Plan

Drawing No:
STL_09299

Scale: 1:100	Paper Size: A4
Drawn by: SH	Checked by: GAO
Date: 23/07/2007	



Site : Angmering

Client : Chandlers Garage Holdings Ltd

National Grid Reference		TQ 069 044	
Job No	J9299	Date	20/07/2007
Logged by	SH	Engineer	GAD

Excavation Method : Hand Auger & Dart Rig

Hole No TH1				Hole No TH2			
Water strikes: Seepages at 3.0m		Hole No TH1		Water strikes: Water level:		Hole No TH2	
Pit sides: Unstable				Pit sides: Unstable			
Depth m/mm	Sample Type or Test Type & Value	Depth (Thickness)	Key Soil Description	Depth m/mm	Sample Type or Test Type & Value	Depth (Thickness)	Key Soil Description
0.0	D	100	CONCRETE Block paving	0.0	D	100	CONCRETE Block paving
0.0	D	200	SUBBASE Loose brown sandy SUBBASE	0.0	D	200	SUBBASE Loose brown sandy SUBBASE
0.0	D	500	CONCRETE CONCRETE slab	0.0	D	500	CONCRETE CONCRETE slab
0.0	D	800	MADE Loose grey brown silty clay	0.0	D	800	MADE Loose dark grey very sandy silty clay
0.0	D	800	GROUND MADE GROUND with occasional flint gravels and brick fragments	0.0	D	800	GROUND MADE GROUND with occasional brick fragments and flint gravels
1.0	D	(1.2)	CLAY Soft brown silty CLAY with occasional flint gravels	1.0	D	(1.2)	CLAY Soft brown silty CLAY with occasional flint gravels
1.1	D			1.1	D		
1.5	D	1.4	CLAY Soft brown silty CLAY with frequent sub-angular flint gravels	1.5	D	1.7	CLAY Stiff brown silty CLAY with occasional fine to coarse sub-angular flint gravels
2.0	D	(900)	[slight hydrocarbon odour at 1.1m]	2.0	D	(900)	
2.5	D	2.3	CLAY Stiff brown silty CLAY with occasional black speckling	2.5	D	2.8	CLAY Firm to stiff mid-brown slightly silty plastic CLAY with rare fine to medium sub-angular flint gravels
3.0	D	(1.2)	CLAY/GRAVEL Becoming soft with depth	3.0	D	(1.2)	
3.5	D		Firm to stiff brown silty CLAY/GRAVEL. Gravel is fine to coarse sub-angular	3.5	D		
4.0	D	3.8	CLAY No recovery from 3.0m	4.0	D	3.8	SILT Very soft off white chalky SILT
						4.0	[strong hydrocarbon odour]
4m deep monitoring well No recovery from 3-3.5m				4m deep monitoring well			
Hole No TH3				Hole No TH4			
Water strikes: Dry		Hole No TH3		Water strikes: Seepages from 1.0m		Hole No TH4	
Pit sides: Stable				Pit sides: Stable			
Depth m/mm	Sample Type or Test Type & Value	Depth (Thickness)	Key Soil Description	Depth m/mm	Sample Type or Test Type & Value	Depth (Thickness)	Key Soil Description
0.0	D	100	CONCRETE Block paving	0.0	D	100	CONCRETE Block paving
0.0	D	300	SUBBASE Loose brown sandy SUBBASE	0.0	D	300	SUBBASE Loose brown sandy SUBBASE
0.0	D	450	CONCRETE CONCRETE slab	0.0	D	500	CONCRETE CONCRETE slab
0.0	D	700	MADE Loose brown gravelly silty fine to medium sand MADE GROUND.	0.0	D	(900)	MADE Loose dark grey brown sandy silty clay MADE GROUND with occasional flint gravels and concrete fragments
1.0	D	(300)	MADE Gravel is fine to medium sub-angular to sub-rounded	1.0	D		Crushed concrete found at 0.9m. Seepages from 1.0m
			Loose dark brown fine to coarse sand MADE GROUND with occasional fine to medium sub-rounded flint gravels				
			Concrete obstructions at 1.0m				
Refused on concrete obstruction at 1.0m				Refused on concrete obstruction at 1.0m			



Southern Testing

Environmental & Geotechnical

TEST HOLE LOG

Site : Angmering

Client : Chandlers Garage Holdings Ltd

National Grid Reference		TQ 069 044	
Job No	J9299	Date	20/07/2007
Logged by	SH	Engineer	GAD

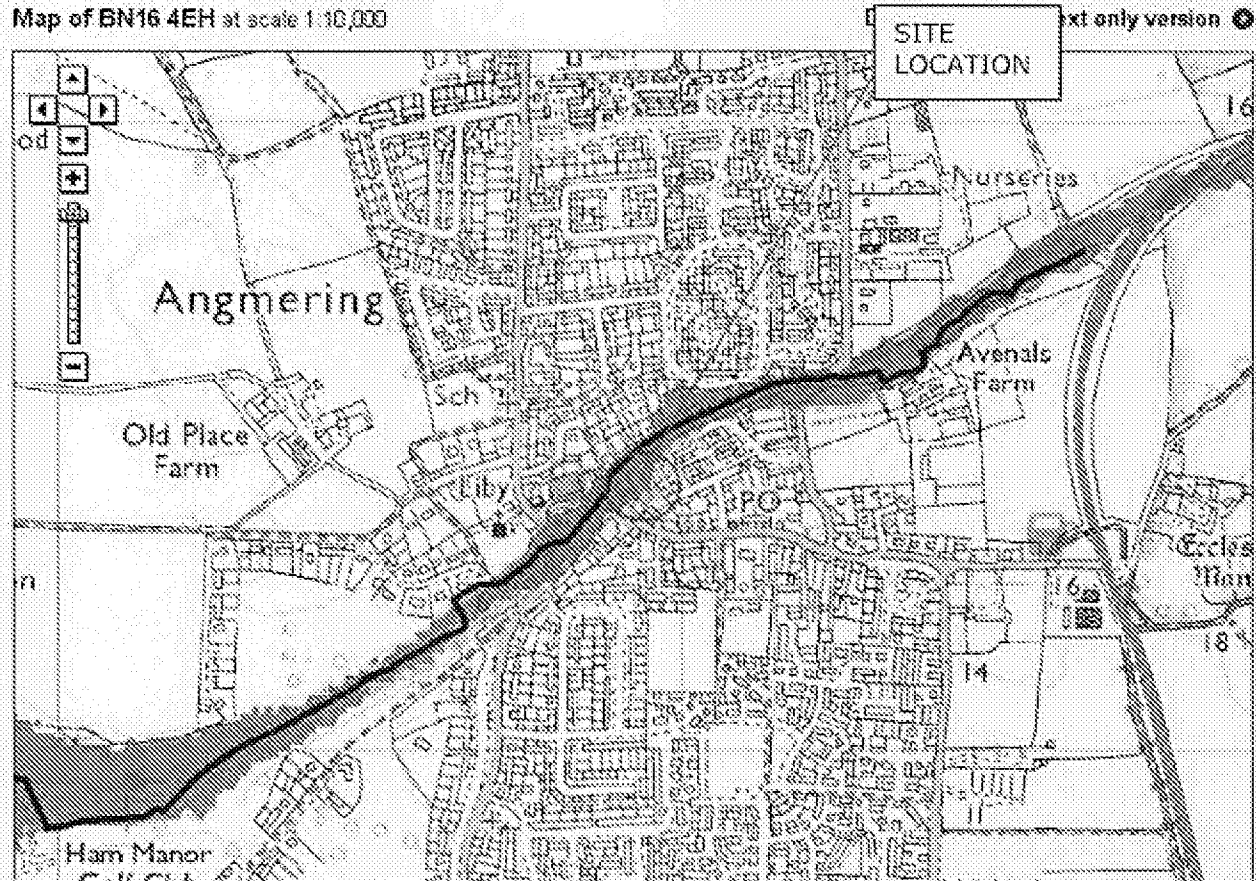
Excavation Method : Hand Auger & Dart Rig

Hole No TH5			Hole No TH6		
Water strikes: Dry Water level: Pit sides: Unstable			Water strikes: Seepages at 1.5m Water level: 0.76m after 1hr Pit sides: Unstable		
Depth m/mm	Sample Type or Test Type & Value	Soil Description	Depth m/mm	Sample Type or Test Type & Value	Soil Description
100		CONCRETE Black paving	100		CONCRETE Black paving
250		SUBBASE Loose brown sandy SUBBASE	250		SUBBASE Loose brown sandy SUBBASE
400		CONCRETE CONCRETE slab	400		CONCRETE CONCRETE slab
600		MADE Loose brown sandy gravel MADE GROUND (20mm pea shingle fill)	600		MADE Loose dark grey sandy clay
			(700)		MADE GROUND MADE GROUND with occasional brick fragments and flint gravels
1.0	D		1.0	D	
1.2	D		1.2	D	CLAY Firm mid-brown silty CLAY with occasional fine to coarse sub-angular flint gravels
1.5	D 1/140		1.5	D	
2.0	D		1.7	D	CLAY Seepages at 1.5m (slight hydrocarbon odour at 1.5m)
2.5	D		(1.0)		Firm dark brown sandy CLAY with frequent fine to coarse sub-angular flint gravels
3.0	D 1/100		2.7	D	CLAY Firm mid-brown slightly silty plastic CLAY with rare fine to medium sub-angular flint gravels
4.0	D		(1.1)		No recovery from 3.0-3.8m
		Refused at 0.5m	3.8		
			4.0		SILT Very soft off white grey chalky SILT [strong hydrocarbon odour]
					No recovery from 3.0-3.8m

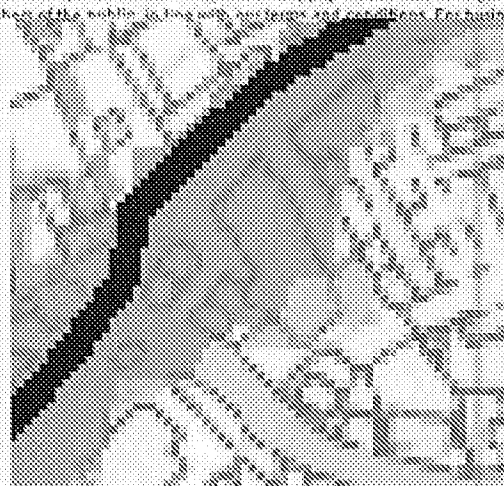
APPENDIX C

Environment Agency Flood Data

Map of BN16 4EH at scale 1:10,000



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Contains Royal Mail data © Royal Mail copyright and database right 2012.
This drawing is declared to inform members of the public, in line with our terms and conditions. For business or commercial use, please contact us.



EA Website Flood Map

(The enlarged area shows that the south end of the site lies within FZ1 – the rest is in either FZ2 or FZ3A.)

W:\Projects\4995 FPA, Marshall Clark, Water Lane, Angmering BN16 4EH\2.3 Flood Risk Assessment & Planning\Flood Risk Assessment	Date December '12	Job No. 4995/2.3F
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John Pakenham
Gloucester House
Church Walk
Burgess Hill
WEST SUSSEX
RH15 9AS

Our ref: SSD/3647/cw
Your ref:
Date: 3rd October 2012

Dear Mr Pakenham

Provision of Product 4 for Flood Risk Assessment

Thank you for your request to use Environment Agency data. The information is attached.

If you have requested this information to help inform a development proposal, then you should note the detail in the attached advisory text on the use of Environment Agency Information for Flood Risk Assessments.

Supporting Information

NaFRA (National Flood Risk Assessment)– Our most recent National Flood Risk Assessment (carried out in 2009), takes account of the location, type and condition of flood defences. The likelihood of flooding for this area (taking into account defences) is Moderate - The chance of flooding each year is 1.3% (1 in 75) chance or less but greater than 0.5% (1 in 200) chance in any year.

Note - This information relates to the area that the above named property is in and is not specific to the property itself.

Model Information – All modelled data is taken from Lower Tidal River Arun Strategy Model carried out by Atkins consulting, completed 2010. The model is a 1D-2D Infoworks RS model.

Defence Information

The culvert running under Angmering High Street was last inspected from the upstream end down to the Lamb inn pub in March 2010 which showed the culvert to be of fair condition. The remainder section of the culvert downstream will be surveyed in the next 12 months.

Flood History – We have records of flooding in this area flooding in 1980 and are aware that this area flooded in the June 2012, though details are not currently available and will be detailed within the Investigation report on this flood event in West Sussex.

Flood Warning – This site falls within the 'Angmering on the Black Ditch Flood Warning Area. We suggest all properties sign up to Flood Warnings Direct wherever possible to receive direct messages whenever flooding is expected that may affect your property. More information is available at:
<http://www.environment-agency.gov.uk/homeandleisure/floods/38289.aspx>, alternatively call Floodline on: 0845 988 1188.

If you have any queries or would like to discuss the content of this letter further please contact me.

Yours sincerely

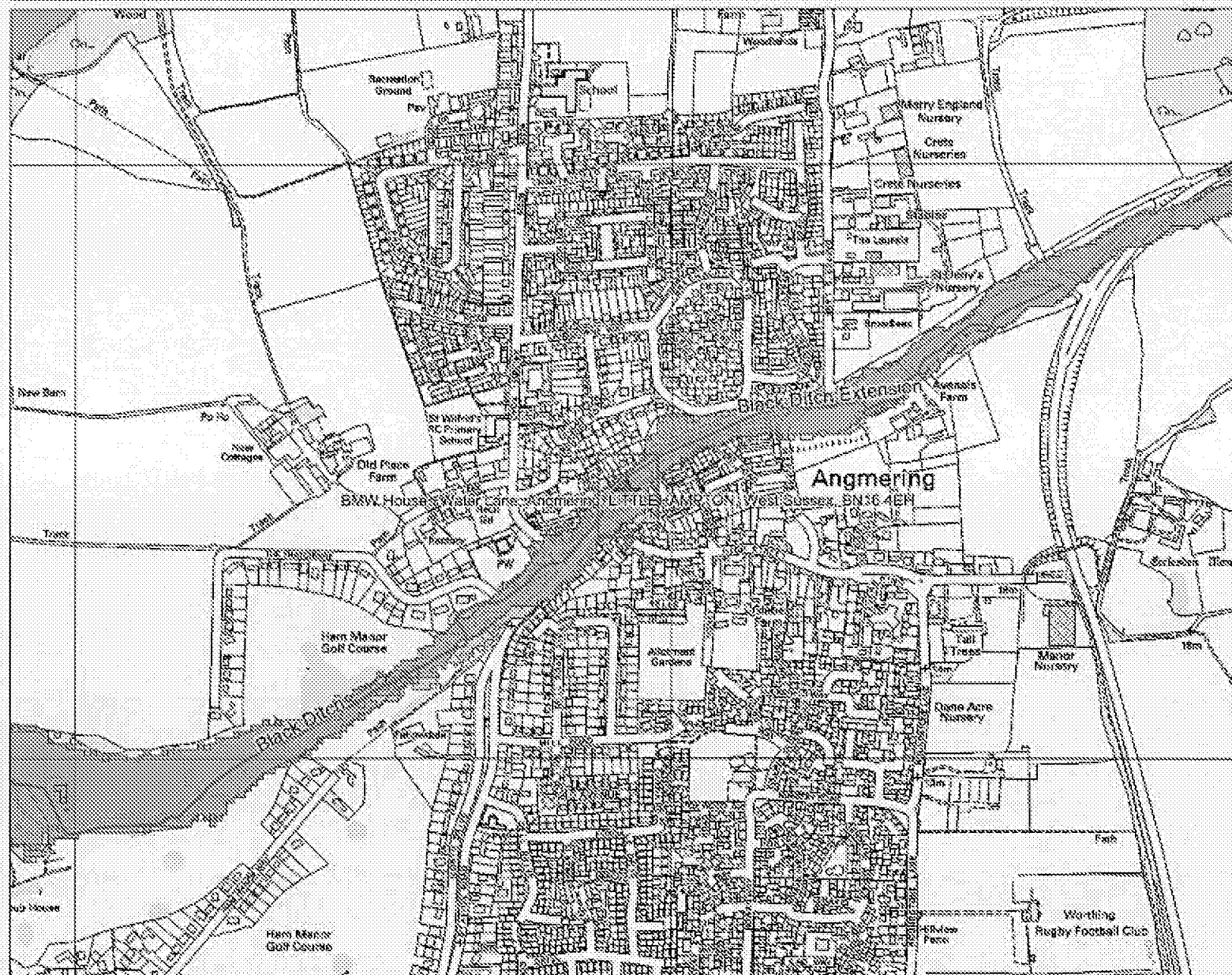


Gemma Harrison
Partnership & Strategic Overview
Flood Risk Management



W:\Projects\4095_FRA_Burgess Hill\Water Lane_Engineering\4095_FRA\2.0 Specifications & Reports\Flood Risk Assessment	Date December 2012	Job No. 4395/2.01
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Flood Risk Map - Chandlers BMW



Environment
Agency

Scale 1:10,000



- Sealed Main Rivers
- Flood Map - Defences
- Areas Benefiting from Flood Defences
- Flood Map - Flood Storage Areas
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2

Flood Likelihood

(taking into account defences)

Low: The chance of flooding each year is 0.5% (1 in 200) or less.

Moderate: The chance of flooding each year is 1.3% (1 in 75) or less, but greater than 0.5% (1 in 200).

Significant: The chance of flooding each year is greater than 1.3% (1 in 75).

Outside Blue Areas: Generally this means that the chance of flooding each year from rivers or the sea is less than 0.1% (1 in 1000).

Flood Map Areas (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:

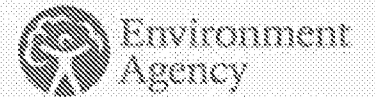
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 508 508 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Node Point Locations for Modelled Data



Legend

—— Main River

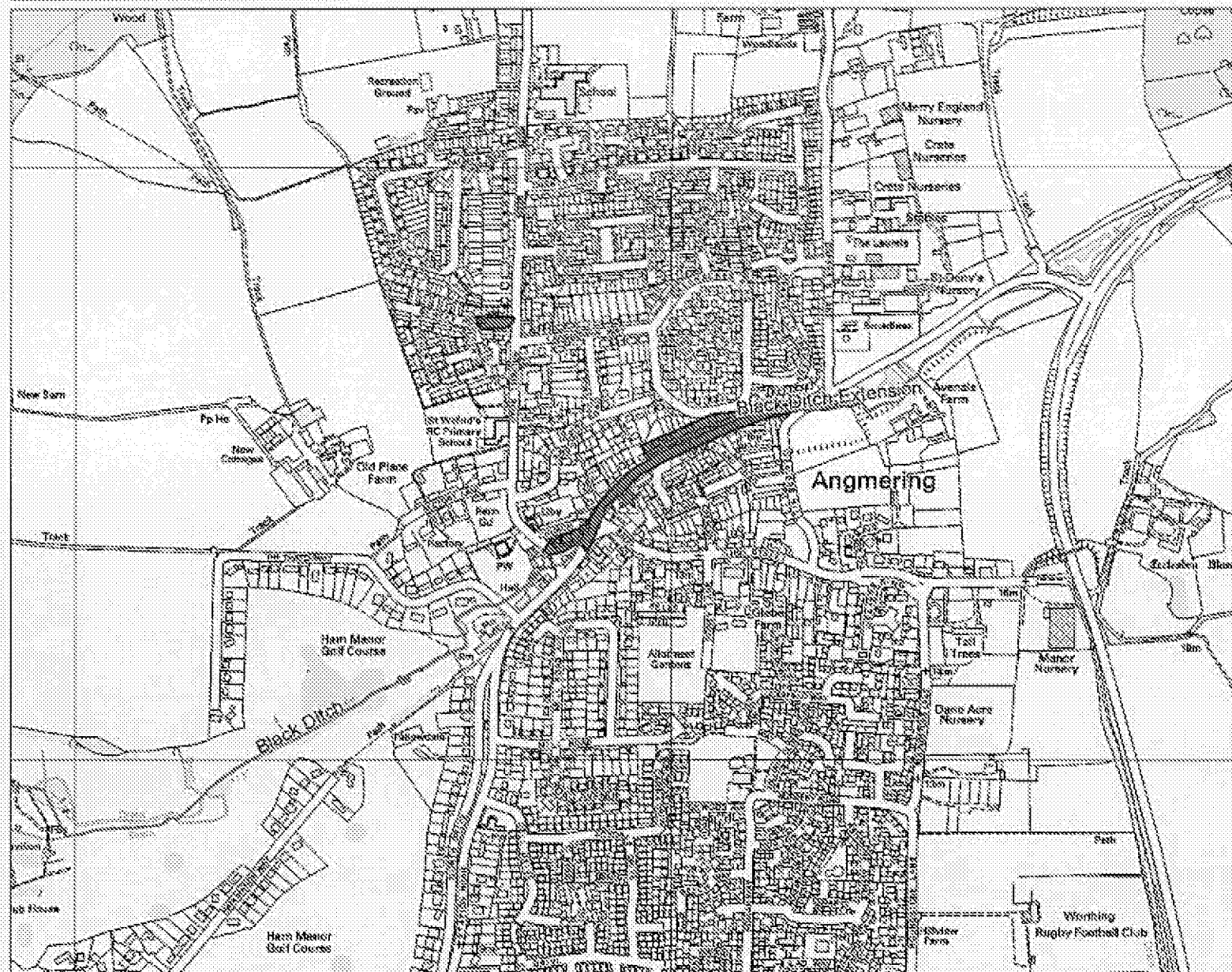
● Chandlers BMW Node Points



0 20 40 60
Meters

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Historic Flood Events Outline - Chandlers BMW



Environment
Agency

Scale 1:10,000



-  Sealed Main Rivers
-  Historic Flood Map

Flood Likelihood (taking into account defences)

Low: The chance of flooding each year is 0.5% (1 in 200) or less.

Moderate: The chance of flooding each year is 1.3% (1 in 75) or less, but greater than 0.5% (1 in 200).

Significant: The chance of flooding each year is greater than 1.3% (1 in 75).

Outside Blue Areas: Generally this means that the chance of flooding each year from rivers or the sea is less than 0.1% (1 in 1000).

Flood Map Areas (assuming no defences)

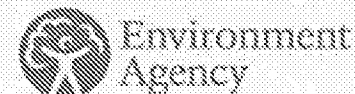
Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

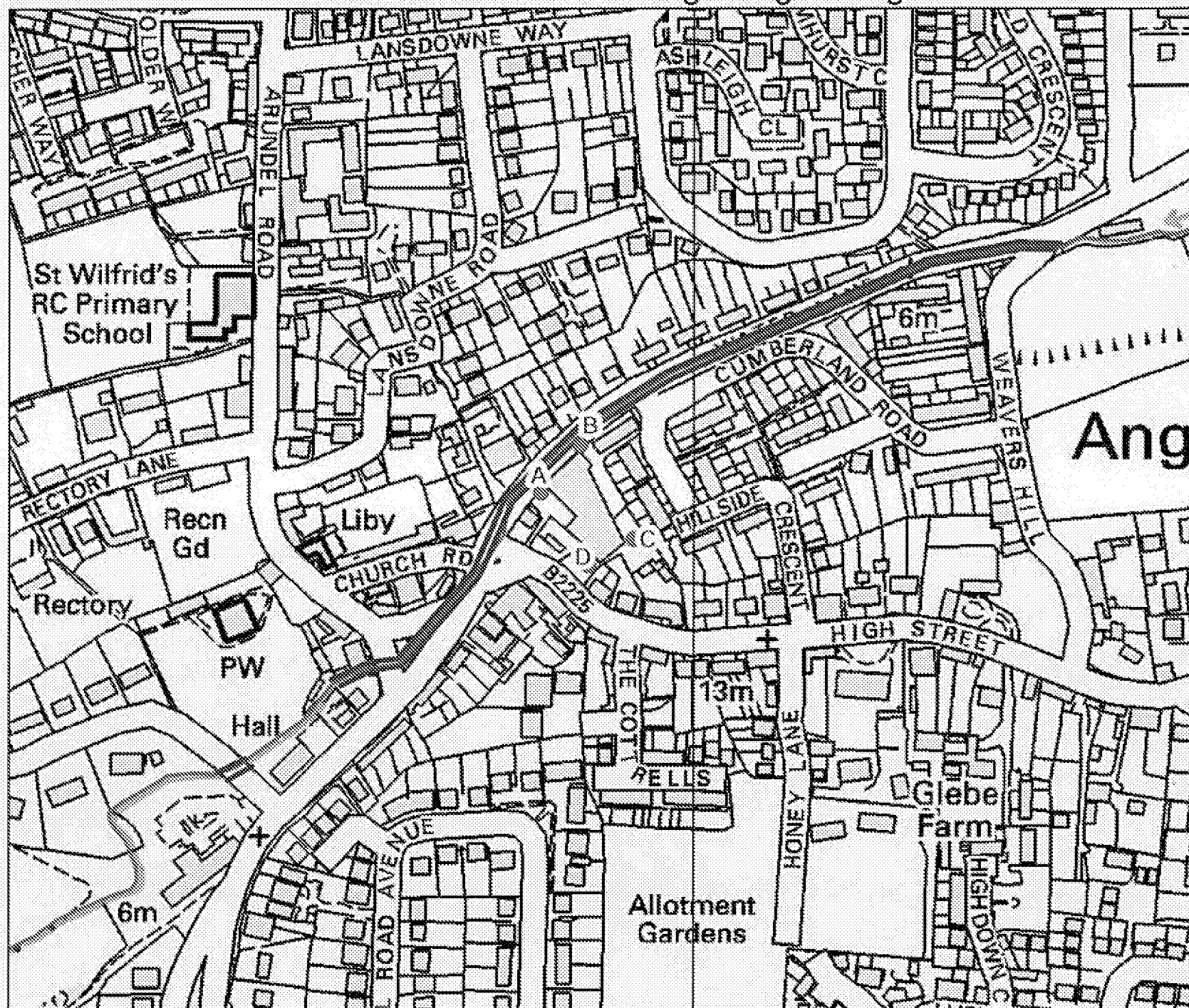
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Location of Culvert through Angmering



Legend

-  Culvert
-  Main River
-  Chandlers BMW Node Points



Product 4 Flood Risk Data Requested by: John Pakenham, GTA Civils Ltd, Gloucester House, 66a Church Walk, Burgess Hill, West Sussex, RH15 9AS

Site: Chandlers BMW, Angmering, West Sussex

Table 1 Water Levels: Fluvial

Node Reference	NGR		Modelled Flood Levels in Metres AOD			
	Eastings	Northings	Defended Annual Exceedance Probability			
			1.33%	1%	1%CC	0.1%
A	506,904	104,438	5.707	5.724	5.758	5.837
B	506,930	104,466	6.051	6.066	6.100	6.200
C	506,962	104,407	N/A	N/A	N/A	N/A
D	506,936	104,391	N/A	N/A	N/A	6.844

Table 2 Water Depths: Fluvial

Node Reference	NGR		Modelled Flood Depths in Metres			
	Eastings	Northings	Defended Annual Exceedance Probability			
			1.33%	1%	1%CC	0.1%
A	506,904	104,438	0.014	0.014	0.065	0.144
B	506,930	104,466	0.142	0.142	0.190	0.291
C	506,962	104,407	0	0	0	0
D	506,936	104,391	0	0	0	0.032

Produced on 3rd October 2012

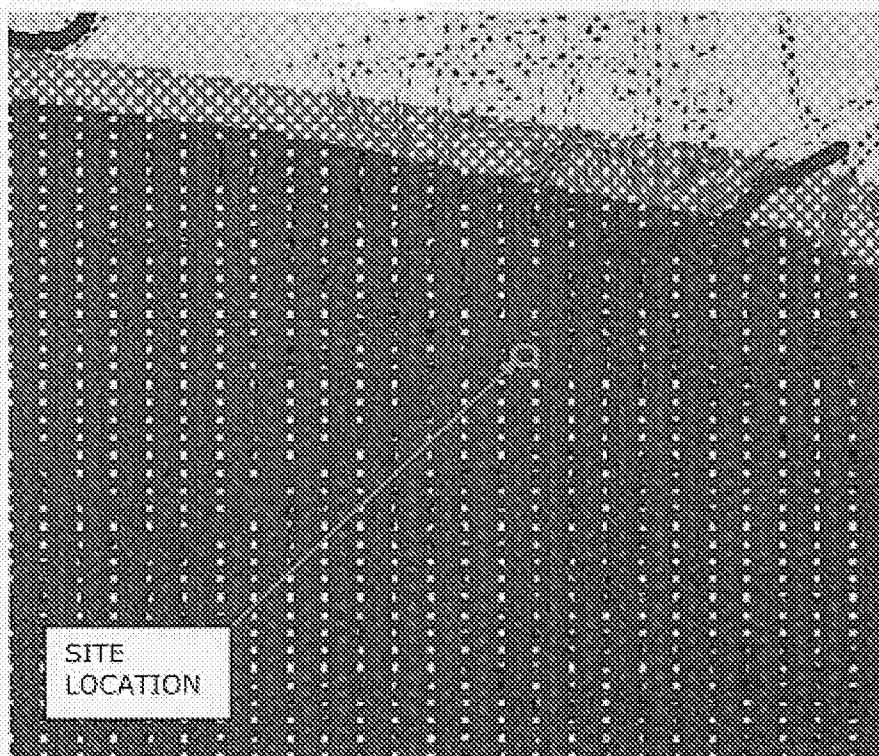
APPENDIX D

Strategic Flood Risk Assessment (SFRA) Flood Maps



Enlarged Extract from SFRA's 'Climate Change Fluvial Flood Zones' Map (C2-F)

W:\Projects\4595 FRA, Marshall Clark, Water Lane, Angmering\BRI5 48P12.3	Date	Job No.
Specifications & Reports\2. Flood Risk Assessments	December '12	4595/2.3F



Main River



Groundwater Emergence Zones

Groundwater Flood Risk



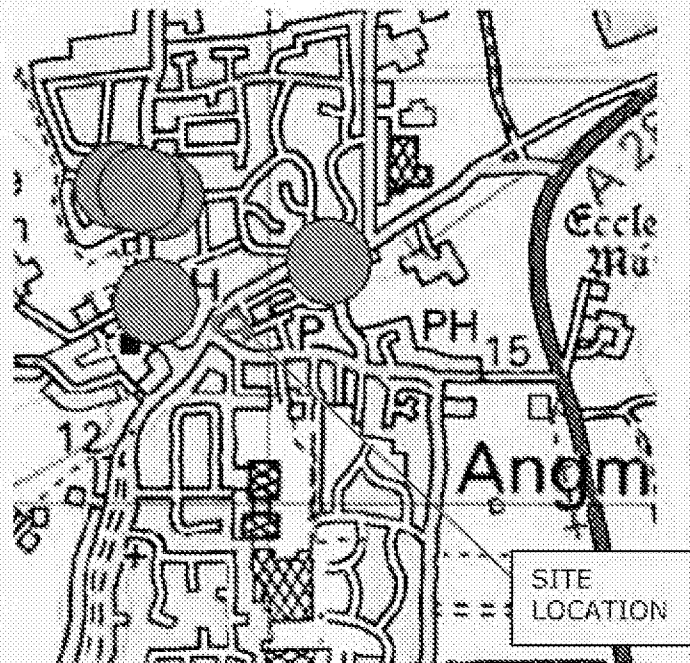
High



Medium

Enlarged Extract from SFRA's 'Indicative Risk of Groundwater Flooding' Map (G1)

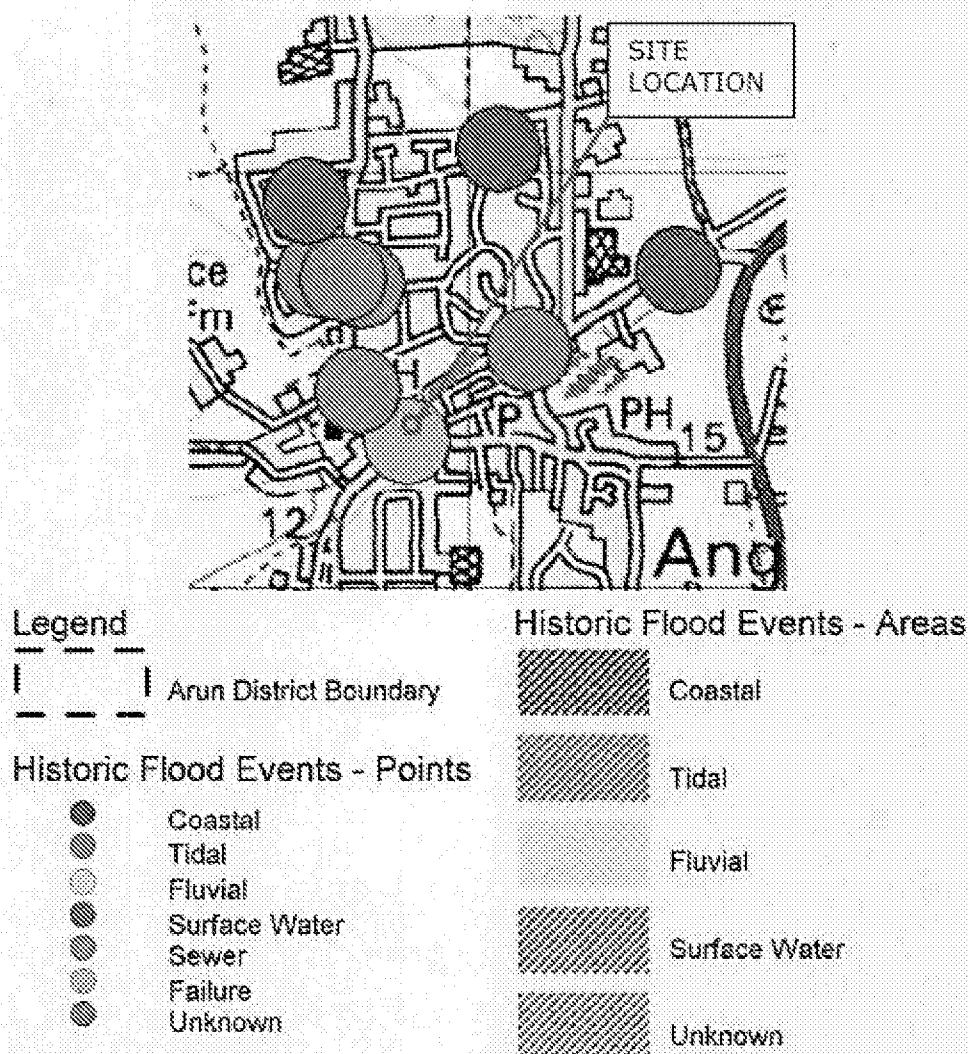
W. Wyseville CDD FRA, Marshell Close, Water Lane, Angmering BN16 4BN/2.0 Surrey/Trinity & Partners Ltd. Flood Risk Assessments	Date	Rev No.
	December '12	4595/2.0F



Historic Incidents of Sewer Flooding

Enlarged Extract from SFRA's 'Historic Incidents of Flooding From Sewers' Map (5)

Wynne & Associates Ltd, Horwell Park, Water Lane, Angmering BN15 4DG Specifications & Reports: Flood Risk Assessments	Date	Iss. No.
	December 2012	4595/2.3F



Enlarged Extract from SFRA's 'Historic Flood Events' Map (H)



Enlarged Extract from SFRA's 'Areas Prone to Flooding From the Land' (L), ie overland flow

(This is in the 'medium to high' zone, but no actual incidents, ie points, are close. The small dashed lines indicate the fluvial flow flowing overland due to the culverted watercourse – ie this creates a small 'area'.)

APPENDIX E

Sewer Records

W:\Prep\2015\15 FRA, Marshes Clark, Water Lane, Angmering BMS 48hr\2.3 Specifications & Reports\Flood Risk Assessment	Date	Job No.
	December '12	4595/2/3F

104364



TQ0604SE

Scale: 1:1250

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy.

XXXXXXXXXX **THE STATE OF CONNECTICUT DEPARTMENT OF REVENUE**

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5027-1635

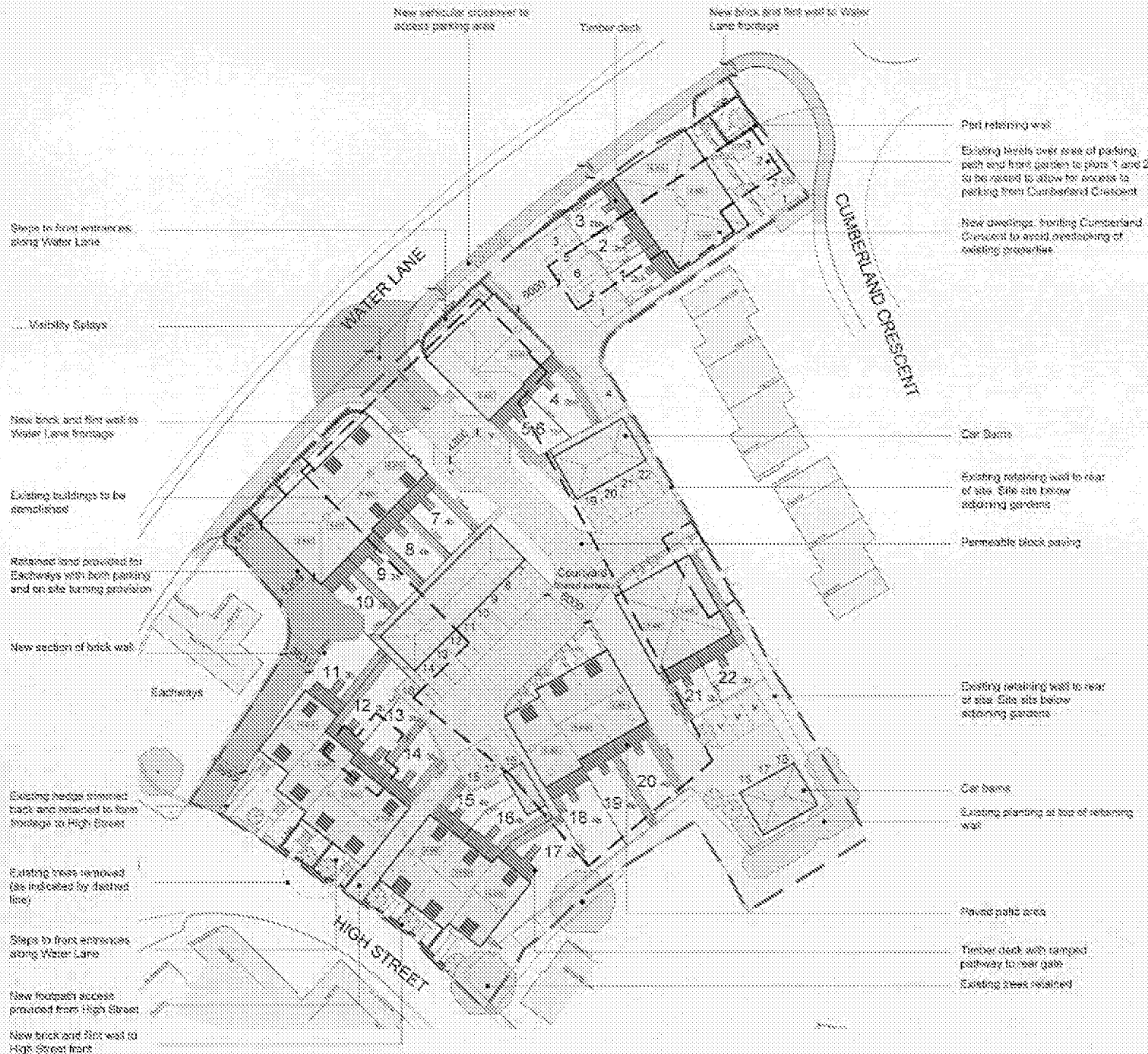
SEWER RECORDS PAGE 2 OF 2

Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape	Node	Cover	Invert	Size	Material	Shape
0201K	13.88	13.78	150	VC	ORC	0402X	5.40	2.48	300	VC	ORC	0601K	13.88	13.78	150	VC	ORC	0801K	13.88	13.78	150	VC	ORC
0301K	13.08	12.98	175	VC	ORC	0502X	12.11	8.26	150	VC	ORC	0901K	13.88	13.78	150	VC	ORC	1101K	13.88	13.78	150	VC	ORC
0302X			175	VC	ORC	0602X	12.18	8.34	150	VC	ORC	1201K	13.88	13.78	150	VC	ORC	1401K	13.88	13.78	150	VC	ORC
0303X			175	VC	ORC	0702X	12.78	8.98	150	VC	ORC	1501K	13.88	13.78	150	VC	ORC	1701K	13.88	13.78	150	VC	ORC
0304X	11.58	6.97	150	VC	ORC	0802X	11.80	8.58	175	VC	ORC	1801K	13.88	13.78	150	VC	ORC	2001K	13.88	13.78	150	VC	ORC
0402X	12.77	9.24	150	VC	ORC	0902X	12.44	8.75	175	VC	ORC	2101K	13.88	13.78	150	VC	ORC	2301K	13.88	13.78	150	VC	ORC
0403X	12.30	10.78	150	VC	ORC	1002X	12.17	10.47	150	VC	ORC	2401K	13.88	13.78	150	VC	ORC	2601K	13.88	13.78	150	VC	ORC
0404X	11.62	10.69	100	VC	ORC	1102X	11.84	11.09	150	VC	ORC	2501K	13.88	13.78	150	VC	ORC	2701K	13.88	13.78	150	VC	ORC
0410X	12.04	11.7	150	VC	ORC	1202X	8.78	2.83	175	VC	ORC	2801K	13.88	13.78	150	VC	ORC	3001K	13.88	13.78	150	VC	ORC
0420X	12.45	11.15	100	VC	ORC	1302X	8.28	4.48	150	VC	ORC	3101K	13.88	13.78	150	VC	ORC	3301K	13.88	13.78	150	VC	ORC
0430X	12.84		100	VC	ORC	1402X	7.89	6.08	150	VC	ORC	3401K	13.88	13.78	150	VC	ORC	3601K	13.88	13.78	150	VC	ORC
0440X	12.40		100	VC	ORC	1502X	5.99	3.11	175	VC	ORC	3701K	13.88	13.78	150	VC	ORC	3901K	13.88	13.78	150	VC	ORC
0501K	8.30	3.34	175	VC	ORC	1602X			175	VC	ORC	4001K	13.88	13.78	150	VC	ORC	4201K	13.88	13.78	150	VC	ORC
0502X	8.27	4.91	175	VC	ORC	1702X			175	VC	ORC	4301K	13.88	13.78	150	VC	ORC	4501K	13.88	13.78	150	VC	ORC
0503X	8.54	3.68	175	VC	ORC	1802X			175	VC	ORC	4601K	13.88	13.78	150	VC	ORC	4801K	13.88	13.78	150	VC	ORC
0504X	8.80	3.74	180	VC	ORC	1902X			175	VC	ORC	4901K	13.88	13.78	150	VC	ORC	5101K	13.88	13.78	150	VC	ORC
0505X	8.76	4.61	150	VC	ORC	2002X			175	VC	ORC	5201K	13.88	13.78	150	VC	ORC	5401K	13.88	13.78	150	VC	ORC
0506X	7.1	6.41	150	VC	ORC	2102X			175	VC	ORC	5501K	13.88	13.78	150	VC	ORC	5701K	13.88	13.78	150	VC	ORC
0507X	8.59	7.18	150	VC	ORC	2202X			175	VC	ORC	5801K	13.88	13.78	150	VC	ORC	6001K	13.88	13.78	150	VC	ORC
0508X	8.7	5.94	175	VC	ORC	2302X			175	VC	ORC	5901K	13.88	13.78	150	VC	ORC	6201K	13.88	13.78	150	VC	ORC
0509X			175	VC	ORC	2402X			175	VC	ORC	6301K	13.88	13.78	150	VC	ORC	6501K	13.88	13.78	150	VC	ORC
0510X			175	VC	ORC	2502X			175	VC	ORC	6401K	13.88	13.78	150	VC	ORC	6701K	13.88	13.78	150	VC	ORC
0511X			175	VC	ORC	2602X			175	VC	ORC	6801K	13.88	13.78	150	VC	ORC	7001K	13.88	13.78	150	VC	ORC
0512X			175	VC	ORC	2702X			175	VC	ORC	6901K	13.88	13.78	150	VC	ORC	7201K	13.88	13.78	150	VC	ORC
0513X			175	VC	ORC	2802X			175	VC	ORC	7001K	13.88	13.78	150	VC	ORC	7401K	13.88	13.78	150	VC	ORC
0514X			175	VC	ORC	2902X			175	VC	ORC	7101K	13.88	13.78	150	VC	ORC	7601K	13.88	13.78	150	VC	ORC
0515X			175	VC	ORC	3002X			175	VC	ORC	7201K	13.88	13.78	150	VC	ORC	7801K	13.88	13.78	150	VC	ORC
0516X			175	VC	ORC	3102X			175	VC	ORC	7301K	13.88	13.78	150	VC	ORC	8001K	13.88	13.78	150	VC	ORC
0517X			175	VC	ORC	3202X			175	VC	ORC	7401K	13.88	13.78	150	VC	ORC	8201K	13.88	13.78	150	VC	ORC
0518X			175	VC	ORC	3302X			175	VC	ORC	7501K	13.88	13.78	150	VC	ORC	8401K	13.88	13.78	150	VC	ORC
0519X			175	VC	ORC	3402X			175	VC	ORC	7601K	13.88	13.78	150	VC	ORC	8601K	13.88	13.78	150	VC	ORC
0520X			175	VC	ORC	3502X			175	VC	ORC	7701K	13.88	13.78	150	VC	ORC	8801K	13.88	13.78	150	VC	ORC
0521X			175	VC	ORC	3602X			175	VC	ORC	7801K	13.88	13.78	150	VC	ORC	9001K	13.88	13.78	150	VC	ORC
0522X			175	VC	ORC	3702X			175	VC	ORC	7901K	13.88	13.78	150	VC	ORC	9201K	13.88	13.78	150	VC	ORC
0523X			175	VC	ORC	3802X			175	VC	ORC	8001K	13.88	13.78	150	VC	ORC	9401K	13.88	13.78	150	VC	ORC
0524X			175	VC	ORC	3902X			175	VC	ORC	8101K	13.88	13.78	150	VC	ORC	9601K	13.88	13.78	150	VC	ORC
0525X			175	VC	ORC	4002X			175	VC	ORC	8201K	13.88	13.78	150	VC	ORC	9801K	13.88	13.78	150	VC	ORC
0526X			175	VC	ORC	4102X			175	VC	ORC	8301K	13.88	13.78	150	VC	ORC	10001K	13.88	13.78	150	VC	ORC
0527X			175	VC	ORC	4202X			175	VC	ORC	8401K	13.88	13.78	150	VC	ORC						
0528X			175	VC	ORC	4302X			175	VC	ORC	8501K	13.88	13.78	150	VC	ORC						
0529X			175	VC	ORC	4402X			175	VC	ORC	8601K	13.88	13.78	150	VC	ORC						
0530X			175	VC	ORC	4502X			175	VC	ORC	8701K	13.88	13.78	150	VC	ORC						
0531X			175	VC	ORC	4602X			175	VC	ORC	8801K	13.88	13.78	150	VC	ORC						
0532X			175	VC	ORC	4702X			175	VC	ORC	8901K	13.88	13.78	150	VC	ORC						
0533X			175	VC	ORC	4802X			175	VC	ORC	9001K	13.88	13.78	150	VC	ORC						
0534X			175	VC	ORC	4902X			175	VC	ORC	9101K	13.88	13.78	150	VC	ORC						
0535X			175	VC	ORC	5002X			175	VC	ORC	9201K	13.88	13.78	150	VC	ORC						
0536X			175	VC	ORC	5102X			175	VC	ORC	9301K	13.88	13.78	150	VC	ORC						
0537X			175	VC	ORC	5202X			175	VC	ORC	9401K	13.88	13.78	150	VC	ORC						
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0540X			175	VC	ORC	5502X			175	VC	ORC	9701K	13.88	13.78	150	VC	ORC						
0541X			175	VC	ORC	5602X			175	VC	ORC	9801K	13.88	13.78	150	VC	ORC						
0542X			175	VC	ORC	5702X			175	VC	ORC	9901K	13.88	13.78	150	VC	ORC						
0543X			175	VC	ORC	5802X			175	VC	ORC	10001K	13.88	13.78	150	VC	ORC						
0544X			175	VC	ORC	5902X			175	VC	ORC												
0545X			175	VC	ORC	6002X			175	VC	ORC												
0546X			175	VC	ORC	6102X			175	VC	ORC												
0547X			175	VC	ORC	6202X			175	VC	ORC												
0548X			175	VC	ORC	6302X			175	VC	ORC												
0549X			175	VC	ORC	6402X			175	VC	ORC												
0550X			175	VC	ORC	6502X			175	VC	ORC												
0551X			175	VC	ORC	6602X			175	VC	ORC												
0552X			175	VC	ORC	6702X			175	VC	ORC												
0553X			175	VC	ORC	6802X			175	VC	ORC												
0554X			175	VC	ORC	6902X			175	VC	ORC												
0555X			175	VC	ORC	7002X			175	VC	ORC												
0556X			175	VC	ORC	7102X			175	VC	ORC												
0557X			175	VC	ORC	7202X			175	VC	ORC												
0558X			175	VC	ORC	7302X			175	VC	ORC												
0559X			175	VC	ORC	7402X			175	VC	ORC												
0560X			175																				

APPENDIX F

Proposed Scheme Drawings

Worked on 4995 FPA, Marshall Park, Water Lane, Angmering BN16 4BN 2.3 Specifications & Reports for Flood Risk Assessment	Date:	Iss. No:
	December '12	4995/2.3F



SCHEDULE OF ACCOMMODATION

AFFORDABLE

Plot	Type & Size	No. Units
5,6	1 x 1 bed	2
1,2,3	1 x 2 bed	3
4	1 x 3 bed	1
22	1 x 4 bed	1

Total Affordable Units

7

PRIVATE

Plot	Type & Size	No. Units
9,10	1 x 2 bed	2
21	1 x 3 bed	1
11,12,13,14	1 x 4 bed	4
7,8,15,16,17,18,19,20	1 x 5 bed	10

Total Private Units

18

Total Units

25

Total Parking Spaces (incl. Car Bays)

47

2 x Spaces per house

10

1 x Space per flat

2

5 x Visitor Spaces

5

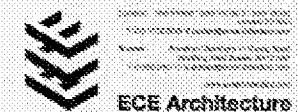
DENSITY = 48 dph

SITE AREA = 0.42ha

Key

dx	dropped kerb
dx	Private dwellings
dx	Affordable dwellings
dx	Indicative gate
1.0m	1.0m high close board fence
1.0m	1.0m high brick screen wall
1.0m	1.0m high brick and flint wall
1.0m	1.0m high brick and flint wall

1.0m	1.0m high close board fence
1.0m	1.0m high brick screen wall
1.0m	1.0m high brick and flint wall
1.0m	1.0m high brick and flint wall



Chandlers Worthing

Site at Water Lane, Angmering

Scale 1:500

1:250 @ A1 / 1:500 @ A3

PK BY 22.11.12

2041 202 8

PRELIMINARY

Existing flood Zone 3A

Indicates areas to be raised for means of access to units and escape during flooding - see Flood Risk Assessment Section 4 for summary of volumes

Indicates direction of means of escape to areas above 6.1m AOD



4595/101
Flood Contour, Raised
External Areas and
Routes to Safety
Scale 1@500@A4



4595/102 Indicative
Surface Water
Drainage Strategy
Scale 1:500@A4

Micro Drainage Calculation

W. Projects, CEE 774, Physical Chart, Water Lane, Engineering 8816 4th Fl.
 Southridge & Associates, Flood Risk Assessments

GTA Civils Ltd		Page 1
Gloucester House	Chandlers	
66a Church Walk	Water Lane	
Burgess Hill RH15 9AS	Angmering	
Date 06-12-12	Designed by JNP	
File cellular soakawa...	Checked by	
Micro Drainage	Source Control W.12.6.1	

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 2760 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	1.670	0.670	0.0	42.9	OK
30 min Summer	1.901	0.901	0.0	57.7	OK
60 min Summer	2.154	1.154	0.0	73.9	OK
120 min Summer	2.424	1.424	0.0	91.2	OK
180 min Summer	2.585	1.585	0.0	101.5	OK
240 min Summer	2.698	1.698	0.0	108.8	OK
360 min Summer	2.875	1.875	0.0	120.1	OK
480 min Summer	3.008	2.008	0.0	128.6	OK
600 min Summer	3.116	2.116	0.0	136.5	OK
720 min Summer	3.207	2.207	0.0	141.3	OK
960 min Summer	3.356	2.356	0.0	150.9	OK
1440 min Summer	3.579	2.579	0.0	165.2	OK
2160 min Summer	3.812	2.812	0.2	180.1	OK
2880 min Summer	3.825	2.825	0.4	180.9	OK
4320 min Summer	3.828	2.828	0.5	181.1	OK
5760 min Summer	3.834	2.834	0.6	181.5	OK
7200 min Summer	3.839	2.839	0.7	181.8	OK
8640 min Summer	3.842	2.842	0.7	182.0	OK
10080 min Summer	3.844	2.844	0.7	182.1	OK
15 min Winter	1.751	0.751	0.0	48.1	OK
30 min Winter	2.009	1.009	0.0	64.6	OK
60 min Winter	2.292	1.292	0.0	82.7	OK
120 min Winter	2.595	1.595	0.0	102.1	OK

Storm Event	Rain (mm/hr)	Time-Peak (mins)
15 min Summer	122.433	19
30 min Summer	82.239	34
60 min Summer	52.862	64
120 min Summer	32.503	124
180 min Summer	24.118	184
240 min Summer	19.386	244
360 min Summer	14.268	364
480 min Summer	11.460	484
600 min Summer	9.659	604
720 min Summer	8.396	724
960 min Summer	6.724	964
1440 min Summer	4.907	1444
2160 min Summer	3.573	2164
2880 min Summer	2.849	2820
4320 min Summer	2.087	3116
5760 min Summer	1.644	3600
7200 min Summer	1.377	4536
8640 min Summer	1.192	5264
10080 min Summer	1.056	5952
15 min Winter	122.433	19
30 min Winter	82.239	34
60 min Winter	52.862	64
120 min Winter	32.503	124

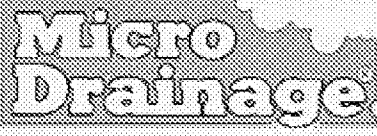
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Gloucester House	Chandlers	
66a Church Walk	Water Lane	
Burgess Hill RH15 9AS	Angmering	
Date 06-12-12	Designed by JNP	
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Micro Drainage	Source Control W.12.6.1	

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
180 min Winter	2.775	1.775	0.0	113.7	O K
240 min Winter	2.902	1.902	0.0	121.8	O K
360 min Winter	3.100	2.100	0.0	134.5	O K
480 min Winter	3.249	2.249	0.0	144.0	O K
600 min Winter	3.370	2.370	0.0	151.7	O K
720 min Winter	3.472	2.472	0.0	158.3	O K
960 min Winter	3.639	2.639	0.0	169.0	O K
1440 min Winter	3.837	2.837	0.6	181.6	O K
2160 min Winter	3.845	2.845	0.7	182.1	O K
2880 min Winter	3.858	2.858	1.0	183.0	O K
4320 min Winter	3.867	2.867	1.1	183.8	O K
5760 min Winter	3.866	2.866	1.1	183.5	O K
7200 min Winter	3.863	2.863	1.0	183.3	O K
8640 min Winter	3.859	2.859	1.0	183.1	O K
10080 min Winter	3.855	2.855	0.9	182.8	O K

Storm Event	Rain (mm/hr)	Time-Peak (mins)
180 min Winter	24.116	184
240 min Winter	19.366	244
360 min Winter	14.268	364
480 min Winter	11.450	484
600 min Winter	9.659	604
720 min Winter	8.396	724
960 min Winter	6.724	964
1440 min Winter	4.907	1386
2160 min Winter	3.573	1732
2880 min Winter	2.649	2076
4320 min Winter	2.087	2856
5760 min Winter	1.644	3632
7200 min Winter	1.377	4392
8640 min Winter	1.193	5184
10080 min Winter	1.056	5856

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Micro Drainage		Source Control W.12.6.1
<u>Rainfall Details</u>		
Rainfall Model	FSR	Winter Storms Yes
Return Period (years)	100	Cv (Summer) 0.750
Region England and Wales		Cv (Winter) 0.840
M5-60 (mm)	20.000	Shortest Storm (mins) 15
Ratio R	0.350	Longest Storm (mins) 10000
Summer Storms	Yes	Climate Change % +30
<u>Time / Area Diagram</u>		
Total Area (ha) 0.187		
Time (mins)	Area (ha)	
0-4	0.187	
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Gloucester House	Chandlers	
66a Church Walk	Water Lane	
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Model Details

Storage is Online Cover Level (m) 6.000

Cellular Storage Structure

Invert Level (m) 1.000
Infiltration Coefficient Base (m/hr) 0.14400
Infiltration Coefficient Side (m/hr) 0.14400
Safety Factor 2.0
Porosity 0.95

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	67.4	0.0	2.600	67.4	0.0
0.200	67.4	0.0	2.800	67.4	0.0
0.400	67.4	0.0	3.000	67.4	155.9
0.600	67.4	0.0	3.200	67.4	172.5
0.800	67.4	0.0	3.400	67.4	179.1
1.000	67.4	0.0	3.600	67.4	185.6
1.200	67.4	0.0	3.800	67.4	192.2
1.400	67.4	0.0	4.000	67.4	198.8
1.600	67.4	0.0	4.200	67.4	205.3
1.800	67.4	0.0	4.400	67.4	211.9
2.000	67.4	0.0	4.600	67.4	218.5
2.200	67.4	0.0	4.800	67.4	225.0
2.400	67.4	0.0	5.000	67.4	231.6

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