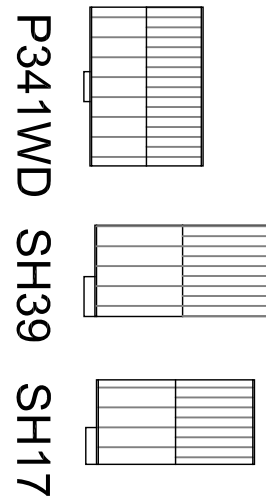
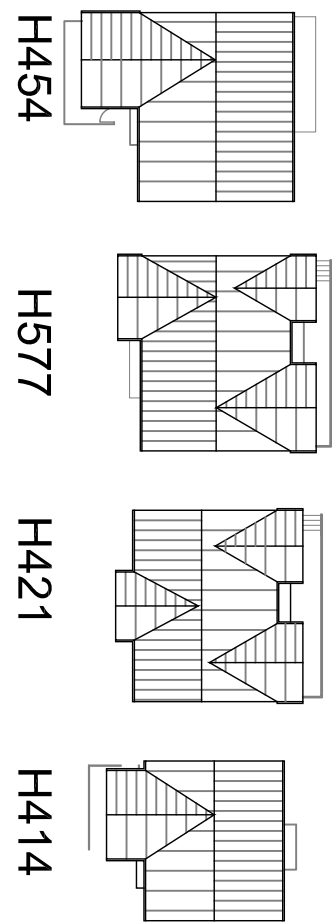


Appendix 3

HOUSE TYPES



Electricity sub station



SCHEDULE OF ACCOMMODATION

TOTAL FLOORSPACE =69,868sqft / 6,430sqm					
NAME	BEDS	SIZE (sqft)	STOREYS	NO.	TOTAL (sqft)
H454 Por.	4	2085	2	5	10,425
H577 Por.	5	1972	2	10	19,720
H421 por.	4	1771	2	9	15,939
H414 por.	4	1406	2	7	9,842
P341WD Por.	3	1001	2	2	2,002
PRIVATE				33	57,928
SH39 Por.	3	930	2	8	7,440
SH17 Por.	2	750	2	6	4,500
AFF.				14	11940
TOTAL				47	69,868



REVISION DATE COMMENTS AUTHOR CHECKED

TITLE
PORTDOWN HILL
HAVANT

lhc
architecture
urbanism
landscape

DEFINITION
MASTER PLAN

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REVISION
REV

AUTHOR CHECKED
MH / DMH

DRAWING - STATUS
PLANNING

CONTRACTOR
LHC GROUP

CLIENT
LHC GROUP

PROJECT
PORTDOWN HILL

DATE
FEB 2014

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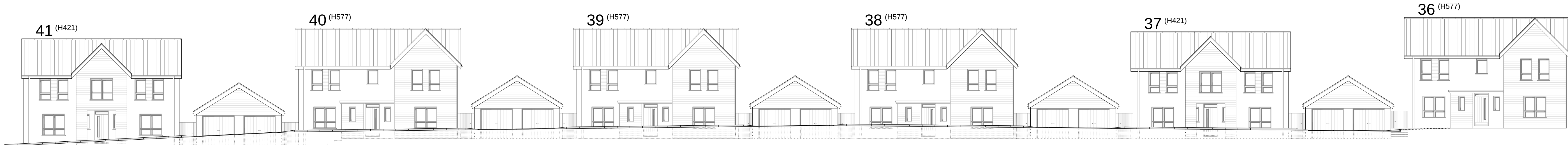
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PLANNING

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PROJECT
PORTDOWN HILL



STREET SECTION 1



STREET SECTION 2



STREET SECTION 3



STREET SECTION 4



STREET SECTION 5



SITE LAYOUT
(not to scale)

REVISION	DATE	COMMENTS	TITLE	AUTHOR / CHECKED
			PORTSDOWN HILL, HAVANT	
			STREET SECTIONS	
			DATE	SCALE
			FEB 2014	1:150 @ A1 1:300 @ A3
			DRAWING No.	REV.
			10774 - P.01.13	-
			DRAWING-STATUS	PLANNING

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☐ EXETER

☐ PLYMOUTH

☒ SOUTHAMPTON

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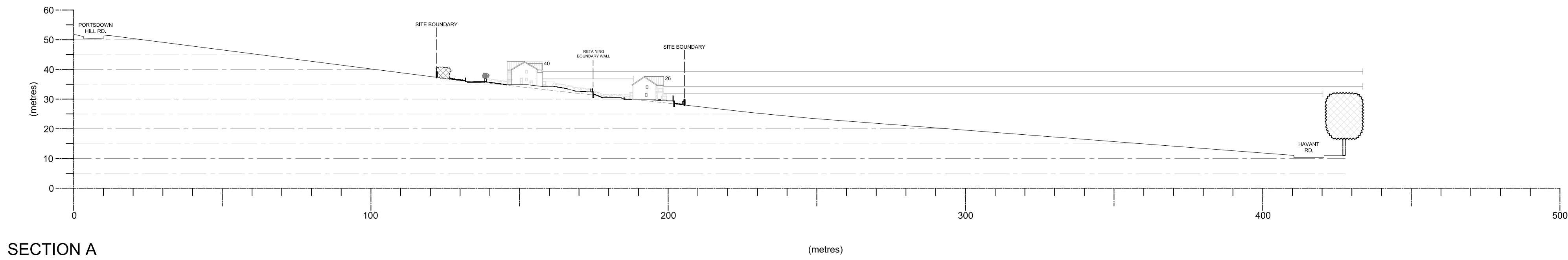
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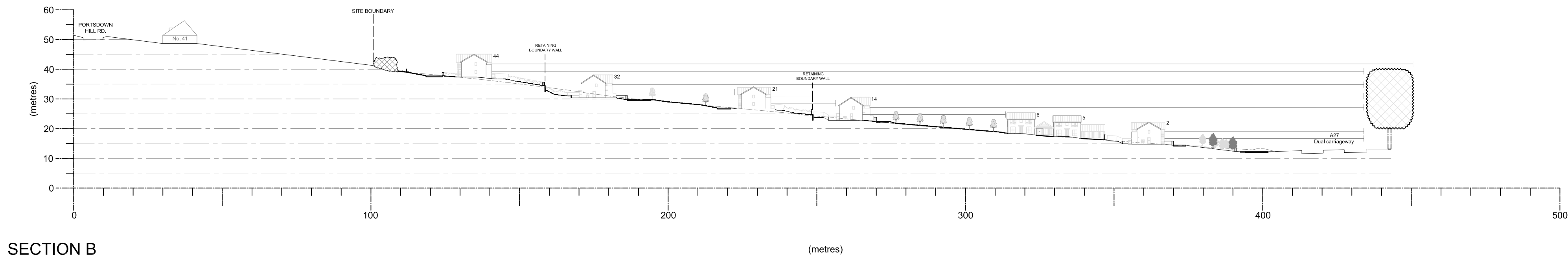
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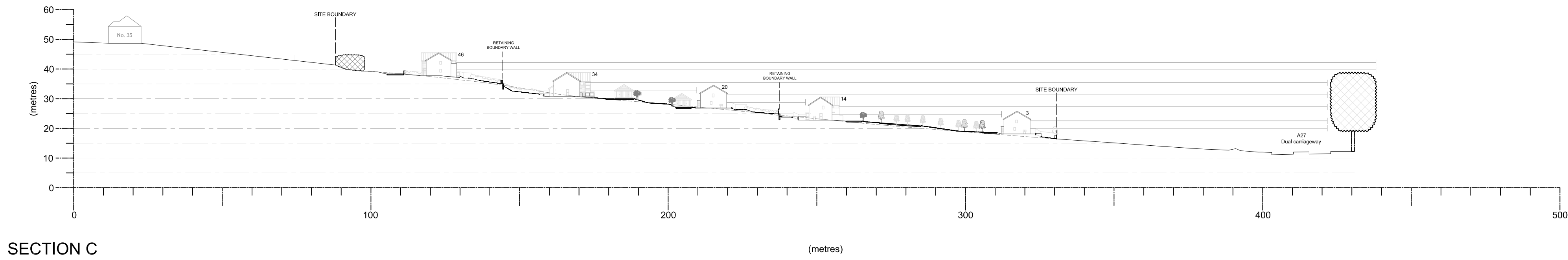
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SECTION A



SECTION B

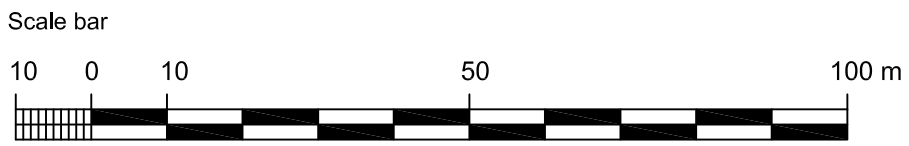


SECTION C



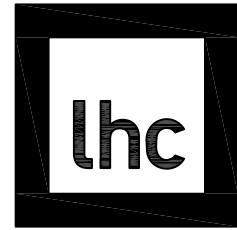
SITE LAYOUT
(not to scale)

Tree heights taken from survey produced by 'Siteline'.
Drawing number 36PH001A, dated August 2011.



Note: not true section through buildings. All buildings shown either as flank or front elevation.

REVISION	DATE	COMMENTS	TITLE		AUTHOR / CHECKED	
			PORTSDOWN HILL, HAVANT			
			DETAIL			
			SITE SECTIONS A-C			
			DATE	FEB 2014	SCALE	1:1000 @ A1
			DRAWING No.	10774 - P01.06	REV.	AUTHOR / CHECKED
					-	AC/RS
			DRAWING-STATUS	PLANNING		



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SOUTHAMPTON 08450 714565

CONTRACTORS MUST CHECK ALL DIMENSIONS ON SITE. ONLY PLUMED DIMENSIONS ARE TO BE WORKED FROM. DEPENDENCIES MUST BE REPORTED TO THE ARCHITECT BEFORE PROCEEDING. THIS DRAWING IS COPYRIGHT.

Appendix 4

23 September 2011

Your ref:
Planning ref:
Our ref: J11144/DB/c02

Ms K Child
Barratt David Wilson Southampton
Tollbar House
Tollbar Way
Hedge End
Southampton
Hampshire
SO30 2UH

Dear Ms Child,

RE: PORTSDOWN HILL SITE, HAVANT, HAMPSHIRE
DESK STUDY & GROUND INVESTIGATION LETTER REPORT FOR THE
PROPOSED RESIDENTIAL REDEVELOPMENT

Further to instruction from BDW Southampton, we have carried out desk study research and subsequently attended the above site and carried out a walkover survey and ground investigation to provide information to assist with the redevelopment of the site through the construction of 80 new houses, together with driveways, access roads, hardstanding for car parking, soft landscaping and areas of private domestic gardens.

The comments made in this letter are limited to those that can be made on the basis of the information obtained by Wilson Bailey Partnership as part of the limited research and site walkover visit carried out to date. Our comments should be viewed in the context of the limited scope of the investigation, the locations of the accessible sampling points and the range of data sources consulted, no liability can be accepted for information in other data sources. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate; no independent validation of such information has been made by Wilson Bailey Partnership.

Scope of Work

A desk study has been carried out in accordance with current guidelines for best practice to establish the environmental site setting and development history of the site and the surrounding area.

The desk study has been followed by a pre-purchase ground investigation to provide information to assist with the design of new foundations, pavements, soakaways and facilitate the inspection of soils and recovery of soil samples for contaminated land assessment.

The ground investigation has been carried out in a single phase and comprised a series of 6 small diameter boreholes drilled by means of an open drive percussive soil sampling rig to a depth of up to 5.45 m together with a series of 17 trial pits excavated using a rubber tyred mechanical excavator. Combined soil gas and groundwater monitoring standpipes have been installed into a number of the boreholes located across the site to facilitate future monitoring. Falling head borehole percolation testing has been carried out in a number of the boreholes to assess the potential for soil soakage and the viability of soakaways as part of the proposed redevelopment. A return visit to monitor the depth to ground water and the presence of soil gasses across the site has not been carried out to date.

The soils encountered in the boreholes were inspected by a Chartered Geologist and representative soil samples were recovered for subsequent laboratory testing for geotechnical properties and for contaminated land soil analyses to determine the presence of a wide range of potential soil contaminants. The scope of the ground investigation was limited by the continued use of the eastern part of the site as grazing for horses, which precluded the excavation of trial pits within this part of the site.

In accordance with current best practice, the findings of the desk study and ground investigation have been used to formulate a conceptual model for the site and facilitate a preliminary qualitative risk assessment and discussion of the implications of any identified issue of potential concerns with regards to ground contamination. On the basis of this assessment, the requirement for any further assessment or remedial action as part the redevelopment of this site for residential purposes has been determined.

Site Description

The site is roughly triangular in shape with approximate maximum dimensions 190 m by 350 m. The main western and southern parts of the site are currently occupied by open agricultural land, whilst the northeastern part of the site comprises a series of heavily grazed paddocks together with a number of stable buildings for horses, sheds, associated feed stores and various caravans, boats and dilapidated trailers.

The northern and eastern boundaries to the site are marked by various hedges and fences that form the extent of rear gardens to adjoining properties fronting onto Firlands Rise and Spinnaker View to the east and Portsdown Hill Road to the north. The southern boundary to the site is formed by a section of mature hedgerow together with a steel five bar gate that provides access to the site from Bedhampton Hill to the south. The western boundary to the site is not clearly defined and forms a notional site boundary line through the agricultural fields that extend westwards towards further houses approximately 200 m to the west of the site.

The site slopes downwards to the south and southeast with an overall variation in site level of approximately 28 m, which corresponds with an overall site gradient of approximately 1:10, which is consistent with the variation of the surrounding topography. The northeastern corner of the site is however sensibly levelled with a noticeable break in slope within the middle portion of the paddock area, which has a localised slope gradient of approaching 1:7.

As part of the walkover survey no indications of the storage or use of chemicals was noted, with no indications of distressed vegetation noted.

The site may be additionally located using National Grid Reference 469354,106186.

Site History

The history of the site and immediate surrounding area has been researched by reference to publically available historical Ordnance Survey (OS) maps together with supplementary information inspected at the Havant Local Studies Library.

The earliest map studied, dated 1868, indicates the site to have been occupied by open fields within a predominantly rural setting with a number of chalk pits shown to have been located in the vicinity of the site to the north, including one quarry immediately adjacent to the northern boundary of the site. Subsequent historical maps dating to the present day indicate that the site has remained essentially unchanged, although the former open agricultural land to the north and east is shown to have been gradually developed for housing.

The various chalk pits shown on the historical maps are predominantly shown to have remained disused and open to the present day, although one of the larger chalk pits located approximately 150 m to the east of the site is shown to have been redeveloped through the construction of the A3(M) in the early 1970s together with the subsequent construction of a substantial portal frame commercial building, although the variation of topography at that site indicates that the former chalk pit has been reused rather than filled prior to redevelopment.

Environmental Site Setting

Information provided by the British Geological Survey indicates the northwestern part of the site to be underlain by the Tarrant Member of the Upper Chalk Formation, with the remainder of the site shown to be underlain by Head Deposits overlying the Newhaven Member of the Upper Chalk Formation.

Information provided by the Environment Agency indicates the chalk strata to be classified as a Principal Bedrock Aquifer, with the overlying Head Deposit classified as a Secondary (undifferentiated) Superficial Aquifer. The site is not shown to be located within any class of Source Protection Zone associated with any licensed groundwater abstraction points, although the Inner Source Protection Zone associated with the Portsmouth Water Havant Springs abstraction points are shown to be located approximately 150 m to the north of the site.

Further information provided by the Environment Agency does not indicate the presence of any active or historical landfill sites or other indications of any other potentially contaminative land uses such as waste processing sites, fuel filling stations or pollution incidents have been recorded within 500 m of the site. The Harts Farm Landfill site is however shown to be located approximately 600 m to the southeast of the site and is understood to have been licensed for the placement of household wastes prior to closure of the landfill.

Information provided by the Health Protection Agency indicates the site to be located in an area where less than 1% of houses are above the action level for radon emissions, such that radon protective measures should not be required as part of the construction of new buildings.

Preliminary Conceptual Site Model Summary and Risk Assessment

The historical and current use of the site for open agriculture and as grazing for horses is not considered to present a potentially contaminative history. Whilst there have been a number of historical chalk pits in the vicinity of the site, these are all indicated to have remained open and unfilled to the present day. A single closed historical household waste landfill site however is shown to be located approximately 600 m to the southeast of the site.

Ground Conditions

Across the northeastern part of the site, beneath the initial nominal layer of topsoil, a natural weathered profile of chalk was encountered to the full depth of investigation in this part of the site. Across the remainder of the site the topsoil layer has been found to be underlain by an initial silty sandy clay with occasional and locally abundant flint gravel to depths of between 1.40 m and 2.50 m below ground level. Underlying the initial clay layer, a variable chalk derived silt and sand with variable flint gravel and cobbles was encountered to the maximum depth of 2.80 m below ground level within the majority of the exploratory positions.

Within the northwestern part of the site these chalk derived silt and sand Head Deposits have been proved to be underlain by a natural weathered profile of chalk at depths of between 1.30 m and 1.90m. Where proved in the deeper small diameter boreholes within the southern part of the site, the underlying chalk strata has been encountered at a depth of 3.20 m below ground level

The results of laboratory index testing carried out on selected soil samples indicates the near surface clay soils to be of low to medium plasticity.

Groundwater was not encountered as part of this ground investigation. Whilst combined soil gas and groundwater monitoring standpipes have been installed in a number of the boreholes, return visits for soil gas and groundwater monitoring have not been carried out to date.

No visual or olfactory indications of ground contamination were noted as part of the fieldwork phase of the ground investigation.

Foundation Design Advice

Within the northeastern part of the site where chalk has been encountered beneath the initial topsoil layer, and within parts of the northwestern part of the site where chalk has been encountered at depths of less than about 2.00 m, moderate width pad or strip foundations may be designed to found within the natural weathered profile of chalk strata at a minimum depth of 1.00 m below ground level with a minimum foundation width of 0.60 m and apply a net allowable bearing pressure of 200 kN/m².

Within the southern and central parts of the site, where predominantly clay Head Deposits have been encountered, foundations may need to be locally deepened and designed to apply a reduced net allowable bearing pressure of 75 kN/m² at a minimum depth of 1.00 m below ground level.

Whilst the approximate extent of the site that is potentially affected by clay soils is indicated on the enclosed annotated site plan, it may be prudent to carry out further ground investigation by trial pitting once access is available, to further delineate the change in ground conditions. Alternatively it may be prudent to have foundation excavations in this part of the site inspected by a suitably qualified and experienced engineer.

Foundations within the clay soils present within the southeastern part of the site will need to be deepened in the vicinity of existing and proposed trees and National House Building Council (NHBC) guidelines should be followed in this respect; medium shrinkability clays should be assumed where clay soils are present.

Where trees are to be removed the required founding depth should be determined on the basis of the existing tree height if it is less than 50% of the mature height and on the basis of full mature height if the current height is more than 50% of the mature height. Where a tree is to be retained the final mature height should be adopted and due allowance should be made for future growth of trees, with particular reference to the relatively dense additional planting that is proposed as part of the ecological mitigation measures. Notwithstanding NHBC guidelines, all foundations should extend beyond the zone of desiccation; in this respect it would be prudent to have all foundation excavations inspected by a suitably experienced engineer. The requirement for compressible material alongside foundations should be determined by reference to the NHBC guidelines.

Consideration could be given to the use of alternative foundation such as 'Insulslab' or other proprietary waffle raft foundation solutions at this site, although the sloping site topography may render their use uneconomic. Further investigation, testing and discussion may however be required in order for the use of alternative foundation solutions to be sanctioned by the NHBC at this site.

Excavations

Shallow excavations for services and foundations within the near surface soils are likely to remain dry and broadly stable in the short term. Groundwater is unlikely to be encountered within shallow excavations for foundations and services. Where personnel are required to enter excavations, a risk assessment should be carried out and temporary lateral support or battering of the excavation sides considered in order to comply with normal safety requirements.

Slope Stability

A detailed assessment of the slope stability at this site is outside the scope of this pre-purchase report and will be heavily dependent upon the requirement for any retaining walls and slope regarding likely to be associated with the proposed redevelopment such that further review may be required in due course once the layout and detailed levels of the proposed development have been determined. The site walkover has not indicated the presence of any instigations of historical slope instability of slope movements at this site.

Ground Floor Slabs

Whilst ground bearing floor slabs could be considered across the northeastern part of the site where chalk soils have been encountered at shallow depth, across the majority of the site where near surface medium shrinkability clay soils have been encountered, proposed new buildings should be designed to incorporate suspended ground floor slabs over a void in accordance with NHBC guidelines.

Pavement Design

Depending upon the finalised design of the development and the proposed ground levels, the formation level for hardstandings and access roads across the majority of the site is likely to be within the near surface clay soils such that pavements may be designed on the basis of an assumed California Bearing Ratio (CBR) of "about 2%". Insitu CBR testing may be of assistance in the detailed design of new pavements.

Within the northeastern part of the site, where formation levels are likely to be within chalk strata, these soils are to be regarded as frost susceptible and a minimum pavement thickness of 450mm is likely to be required

Surface Water Drainage

The results of the borehole falling head percolation testing may be used to provide a preliminary assessment of likely soil soakage, although full size trial pit soakage testing may be required in due course, to provide detailed design data, particularly if adoptable highways drainage is required. The results of the falling head testing are enclosed and indicate assessed soil infiltration rates of 4 E-6 m/s and 7 E-6 m/s may be expected within the Head Deposits of the southern part of the site, whilst soakage rates of up to 1 E-4 may be expected within the chalk strata present in the northeastern part of the site.

Shallow soakaways may therefore be expected to be viable at this site, although discussions should be held with the local Environment Agency office with regards to the proximity of the Inner Protection Zone of the Havant Springs abstraction point which is operated by Portsmouth Water for the supply of drinking water to Portsmouth.

Effect of Sulphates

Chemical analyses of selected soil samples have revealed generally low concentrations of soluble sulphate, corresponding to Class DS-1 AC-1 of Table 2 of BRE Special Digest 1: SD1 Part 1 (August 2001). The guidelines contained in the above digest should be followed in the design of foundation concrete.

Potable Water Supply

The requirement for protection of underground sections of potable water supplies will need to be confirmed through discussions with the proposed statutory provider of mains water to the site, although precautions are not likely to be required for the development at this site.

Soil Contamination Test Results

Part IIA of the Environmental Protection Act 1990, which was inserted into that Act by Section 57 of the Environment Act 1995, provides the main regulatory regime for the identification and remediation

of contaminated land. The determination of contaminated sites is based on a “suitable for use” approach which involves managing the risks posed by contaminated land by making risk-based decisions. This risk assessment is carried out on the basis of a source-pathway-receptor approach. The results of comprehensive laboratory analyses carried out by an MCERTS accredited laboratory on a limited number of soil samples recovered from this site are enclosed. At the time of reporting only a relatively limited selection of Soil Guideline Values have been released following the withdrawal of the previous guidance. The significance of the measured concentrations of any chemicals of concern has therefore been assessed in relation to the available SGVs together with the revised and updated values that have been adopted by the Chartered Institute of Environmental Health (CIEH)¹. Whilst the values that have been adopted by the CIEH are not statutory, they are widely accepted as providing a suitable initial screening value against which measured concentrations of potential contaminants can be assessed to determine the requirement for site specific quantitative risk assessment.

From a review of the enclosed results it is apparent that elevated concentrations of a wide range of potential soil contaminants have not been detected within the selected representative soil samples submitted to laboratory analyses.

Contaminated Land Discussion

The historical and current use of the site as open agricultural land and grazing is not considered to present a potentially contaminative history or current use and the walkover survey has not revealed any signs of storage or use of potentially contaminative chemicals and no indications of distressed vegetation were noted.

The historic landfill site located approximately 600 m to the south of the site is not considered to pose a significant risk to this site by virtue of distance and the presence of significant infrastructure features including road and rail cuttings that are likely to mitigate the potential for any potentially mobile soils gasses or contaminants to affect this site.

The ground investigation carried out to date has not indicated the presence of elevated concentrations of a wide range of potential contaminants, and whilst unlikely, it is conceivable that localised pockets of contamination could be present. It is therefore considered that the ground works for the proposed redevelopment at this site should be carried out under a geo-environmental watching brief in order that should any suspicious or contaminated soils be encountered, they can be appropriately investigated by a geo-environmental engineer and appropriately dealt with in consultation with the regulatory authorities.

Site workers should be made aware of the site history and the potential for contamination to be present and a programme of working should be identified to protect workers handling any soil. The method of site working should be in accordance with guidelines set out by HSE² and CIRIA³ and the requirements of the Local Authority Environmental Health Officer (EHO).

Further work

It may be prudent to carry out a limited programme of soil gas monitoring in order to determine the requirement for gas protection measures.

Consideration could also be given to carrying out a further phase of trial pit investigation, once access is available, within the southeastern part of the site in order to more fully delineate the boundary between predominantly clay and sand soils within this part of the site. Whilst this information is not

1 *The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (2nd Edition) July 2009.*

2 *HSE (1992) HS(G)66 Protection of workers and the general public during the development of contaminated land HMSO*

3 *CIRIA (1996) A guide for safe working on contaminated site Report 132, Construction Industry Research & Information Association*

considered necessary for the contaminated land assessment, it would be important to assist with the detailed design of foundations once the proposed development layout and levels have been finalised.

Further consideration of the implications of any slope stability issues will need to be given once the detailed design and levels of the proposed redevelopment have been finalised.

We trust that this letter provides sufficient information although please do not hesitate to contact me should you have any queries or questions.

Yours sincerely
Wilson Bailey Partnership

Dominic Brightman
BSc MSc DIC FGS CGeol ARSM
Principal Engineer

Project Name Land at Portsdown Hill		Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth			Dimensions: -	Scale 1:25
Client: BDW Southampton			Depth 2.50m	Logged By DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	D		0.30			TOPSOIL	
0.50	D		0.50			Firm orange-brown silty sandy CLAY with fine to medium flint gravel	
1.00	D					Firm pale brown CLAY with abundant chalk fragments and occasional fine to medium flint gravel and cobbles	1
2.00	D						2
			2.50				3
						Trialpit Complete at 2.50 m	4

Remarks:	Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.	
Groundwater:	Groundwater not encountered	

Project Name

Land at Portsdown Hill

Project No.

J11144

Co-ords: -

Level: -

Date

12/08/2011

Location: Bedhampton, Havant, Portsmouth

Dimensions: -

Depth

2.50m

Scale

1:25

Client: BDW Southampton

Logged By
DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.25	D		0.35			TOPSOIL	
0.50	D					Firm orange-brown silty CLAY with abundant flint and occasional chalk	
1.00	D		1.00			Pale brown off white clayey SILT with abundant chalk fragments and flint with fine to medium gravel and cobbles	1
2.00	D						2
			2.50				3
						Trialpit Complete at 2.50 m	4

Remarks: Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.

Groundwater: Groundwater not encountered.



Project Name Land at Portsdown Hill		Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth			Dimensions: -	Scale 1:25
Client: BDW Southampton			Depth 2.70m	Logged By DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	D		0.30			TOPSOIL	
0.50	D					Firm reddish orange-brown silty sandy CLAY with occasional flint and gravel	
1.00	D		0.80			Pale brown off-white SILT with abundant fine chalk and flint fragments and cobbles	1
2.00	D						2
			2.70			Trialpit Complete at 2.70 m	3
							4

Remarks: Trial pit excavated using a rubber tyred excavatoe (JCB ecx) with a 600mm bucket. Trial pit sides stable.

Groundwater: Groundwater not encountered.



Project Name Land at Portsdown Hill	Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth		Dimensions: - Depth 2.70m	Scale 1:25
Client: BDW Southampton			Logged By DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.25	D		0.30			TOPSOIL	
0.50	D					Firm reddish orange-brown silty CLAY with occasional flint and fine gravel	
0.90	D		1.00			Pale brown off white sandy SILT with abundant fine chalk and abundant cobbles	1
1.10	D						
			2.70			Trialpit Complete at 2.70 m	3
							4

Remarks: Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.

Groundwater: Groundwater not encountered.



Project Name

Land at Portsdown Hill

Project No.

J11144

Co-ords: -

Level: -

Date

12/08/2011

Location: Bedhampton, Havant, Portsmouth

Dimensions: -

Depth

2.50m

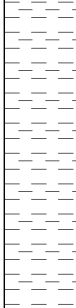
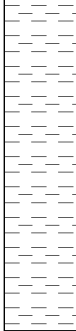
Scale

1:25

Client: BDW Southampton

Logged By

DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.30	D		0.35			TOPSOIL	
0.50	D					Firm reddish orange-brown CLAY with abundant fine gravel with occasional cobbles	
1.00	IVN 1		80				
1.00	IVN 2		110				
1.00	IVN 3		100				
1.00	D		1.40		Pale brown very sandy silty CLAY with abundant fine chalk and flint gravel and cobbles.	1	
2.00	D		2.50			Trialpit Complete at 2.50 m	2
							3
							4

Remarks: Trial pit excavated using a tired excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.

Groundwater: Groundwater not encountered.



Project Name

Land at Portsdown Hill

Project No.

J11144

Co-ords: -

Level: -

Date

12/08/2011

Location: Bedhampton, Havant, Portsmouth

Dimensions: -

Depth

2.70m

Scale

1:25

Client: BDW Southampton

Logged By

DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	D		0.35			TOPSOIL	
						Firm reddish orange-brown SILT	
1.00	D		1.60				1
						Pale brown clayey sandy SILT	
2.00	D		2.70				2
						Trialpit Complete at 2.70 m	3
							4

Remarks: Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.

Groundwater: Ground water not encountered.



Project Name Land at Portsdown Hill	Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth		Dimensions: - Depth 2.80m	Scale 1:25
Client: BDW Southampton			Logged By DB

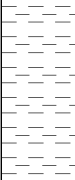
Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.30	D		0.40			TOPSOIL	
1.00	D					Firm reddish orange-brown silty CLAY with gravel and occasional cobbles	1
2.00	D		1.80			Pale brown silty clayey locally yellow SAND	2
			2.80			Trialpit Complete at 2.80 m	3
							4

Remarks: Tria pit exvavated using a rubber tyre excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.

Groundwater: Ground water not ecountered.



Project Name Land at Portsdown Hill		Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth			Dimensions: -	Scale 1:25
Client: BDW Southampton			Depth 2.60m	Logged By DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	D		0.20			TOPSOIL	
0.50	D					Firm dark orange-brown silty sandy CLAY with flint and gravel	
1.00	D		0.80			Pale brown silty SAND with fine chalk fragments and abundant fine flint gravel and occasional cobbles	1
2.00	D						2
			2.60			Trialpit Complete at 2.60 m	3
							4

Remarks:	Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.	
Groundwater:	Ground water not ecountered.	

Project Name Land at Portsdown Hill	Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth		Dimensions: - Depth 2.50m	Scale 1:25
Client: BDW Southampton			Logged By DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	D		0.30			TOPSOIL	
						Structureless CHALK comprising a white comminuted chalk matrix with scattered fine gravel of white weak low density chalk fragments (Grade Dm)	1
1.50	D		1.40			Structureless CHALK comprising a fine to medium gravel of white weak low density chalk fragments with a white comminuted chalk matrix (Grade Dc)	2
2.00	D		2.50				3
						Trialpit Complete at 2.50 m	4

Remarks: Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.

Groundwater: Ground water not encountered.



Date
12/08/2011

Logged By
DB

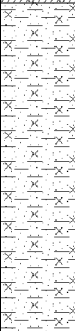
A vertical scale bar with tick marks and labels 1, 2, 3, and 4.

Groundwater: Ground water not encountered.



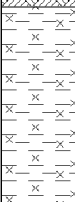
Project Name Land at Portsdown Hill			Project No. J11144		Co-ords: - Level: -		Date 12/08/2011	
Location: Bedhampton, Havant, Portsmouth					Dimensions: -		Scale 1:25	
Client: BDW Southampton					Depth 2.20m		Logged By DB	
Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description		
Depth (m)	Type	Results						
0.20	D		0.30			TOPSOIL		
1.00	D					Firm reddish orange-brown silty sandy CLAY		
2.00	D		1.90			Structureless CHALK comprising a fine to medium gravel of white weak low density chalk fragments with abundant flints within a white comminuted chalk matrix (Grade Dc)		
			2.20			Trialpit Complete at 2.20 m		
Remarks: Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.								
Groundwater: Ground water not encountered.								



Project Name Land at Portsdown Hill			Project No. J11144		Co-ords: - Level: -		Date 12/08/2011	
Location: Bedhampton, Havant, Portsmouth					Dimensions: -		Scale 1:25	
Client: BDW Southampton					Depth 1.70m		Logged By DB	
Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description		
Depth (m)	Type	Results						
0.20	D		0.30			TOPSOIL		
1.00	D					Firm reddish orange-brown silty sandy CLAY		
						Structureless CHALK comprising a fine to medium gravel of white weak low density chalk fragments with abundant flints within a white comminuted chalk matrix (Grade Dc)		
2.00	D		1.70		Trialpit Complete at 1.70 m			
Remarks: Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.								
Groundwater: Ground water not encountered.								



Project Name Land at Portsdown Hill	Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth	Dimensions: - Depth 2.20m		Scale 1:25
Client: BDW Southampton			Logged By DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.20	D		0.30			TOPSOIL	
						Firm pale yellowish brown silty CLAY with abundant fragments of chalk	
1.00	IVN 1	110					1
1.00	IVN 2	120					
1.00	D		1.30			Firm yellowish brown silty CLAY	
1.50	D		1.70			Structureless CHALK comprising a white comminuted chalk matrix with scattered fine gravel of white weak low density chalk fragments with abundant flint cobbles (Grade Dm)	2
2.00	D		2.20			Trialpit Complete at 2.20 m	
							3
							4

Remarks: Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.

Groundwater: Ground water not ecountered.



Project Name Land at Portsdown Hill		Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth			Dimensions: -	Scale 1:25
Client: BDW Southampton			Depth 2.80m	Logged By DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
			0.30			TOPSOIL	
1.00	D					Pale yellowish brown very clayey SAND with abundant fine to medium chalk and occasional flint gravel	1
2.00	D						2
			2.80			Trialpit Complete at 2.80 m	3
							4

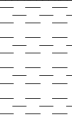
Remarks:	Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.	
Groundwater:	Ground water not encountered.	

Project Name Land at Portsdown Hill		Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth			Dimensions: -	Scale 1:25
Client: BDW Southampton			Depth 2.90m	Logged By DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.30	D					TOPSOIL	
0.60	D		0.50			Firm reddish orange-brown silty sandy CLAY with flint gravel and cobbles	
1.00	D		0.80			Off white silty SAND with abundant chalk fragments and cobbles	1
2.00	D						2
2.50	D		2.40			Yellowish brown clayey SAND with occasional flint gravel	
			2.90			Trialpit Complete at 2.90 m	3
							4

Remarks:	Trial pit excavated using a rubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.	
Groundwater:	Ground water not ecountered.	

Project Name Land at Portsdown Hill	Project No. J11144	Co-ords: - Level: -	Date 12/08/2011
Location: Bedhampton, Havant, Portsmouth		Dimensions: - Depth 2.30m	Scale 1:25
Client: BDW Southampton			Logged By DB

Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
Depth (m)	Type	Results					
0.30	D					TOPSOIL	
0.80	D		0.50			Firm reddish brown CLAY with root hairs and root holes - dessicated	
1.20	D		0.90			Pale yellow brown off-white very silty slightly clayey SAND with abundant fine chalk and fine flint gravels	1
2.00	D						2
			2.30			Trialpit Complete at 2.30 m	3
							4

Remarks: Trial pit excavated using arubber tyred excavator (JCB 3cx) with a 600mm bucket. Trial pit sides stable.

Groundwater: Ground water not ecountered.







Project Name

Land at Portsdown Hill

Project No.

J11144

Co-ords: -

Hole Type

WLS

Location: Bedhampton, Havant, Portsmouth

Level: -

Scale

1:50

Client: BDW Southampton

Dates: 12/08/2011

Logged By

DB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	D		0.40			TOPSOIL	
		1.00	D					CHALK: recovered as a melange of white chalk fines with occasional low density weak chalk gravel (Grade Dm)	1
		2.00	D						2
		3.00	D						3
					3.45			End of Borehole at 3.45 m	4
									5
									6
									7
									8
									9
			Type	Results					

Remarks: Ground water not encountered

Project Name

Land at Portsdown Hill

Project No.

J11144

Co-ords: -

Hole Type

WLS

Location: Bedhampton, Havant, Portsmouth

Level: -

Scale

1:50

Client: BDW Southampton

Dates: 12/08/2011

Logged By

DB

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								TOPSOIL	
		1.00 1.00	SPT D	N=49 (6,6/ 7,9,13,20)	0.70			Dense and medium dense off-white and pale brown silty SAND with abundant chalk and flint gravel	1
		2.00 2.00	SPT D	N=16 (3,4/ 4,3,4,5)	2.40			Firm pale brown silty sandy CLAY with fine chalk fragments and scattered flint gravel	2
		3.00 3.00	SPT D	N=16 (4,4/ 3,5,4,4)	3.20			CHALK: recovered as a melange of off-white and pale brown chalk fines with occasional low density weak chalk gravel (grade Dm)	3
		4.00 4.00	SPT D	N=11 (3,3/ 3,2,3,3)	4.45			End of Borehole at 4.45 m	4
									5
									6
									7
									8
									9
			Type	Results					

Remarks: Ground water not encountered



Site Portsdown Hill Site, Havant, Hampshire

Client BDW Southampton

Job Number
 J11144

Sheet
 2/2

Date: 12 August 2011

Borehole No: 2

Test Data
Before start of test:
Borehole depth (m): 3.00

Casing depth (m): --

Water level (m): --

Time (mins)	Depth to Water (m)	Depth of Water (m)
0	0	3.00
1	1.2	1.80
2	1.78	1.22
3	2.34	0.66
8	2.65	0.35
10	2.85	0.15

Soakage Calculation

Borehole Diameter (m) 0.0600

Borehole Area (m) 0.0028

Borehole Perimeter (m) 0.188

From Plot: D1 (m) 1.8

D2 (m) 0.66

T1 (min) 1

T2 (min) 3

 Soakage Volume (m³) 0.003

 Soakage Area (m²) 0.23

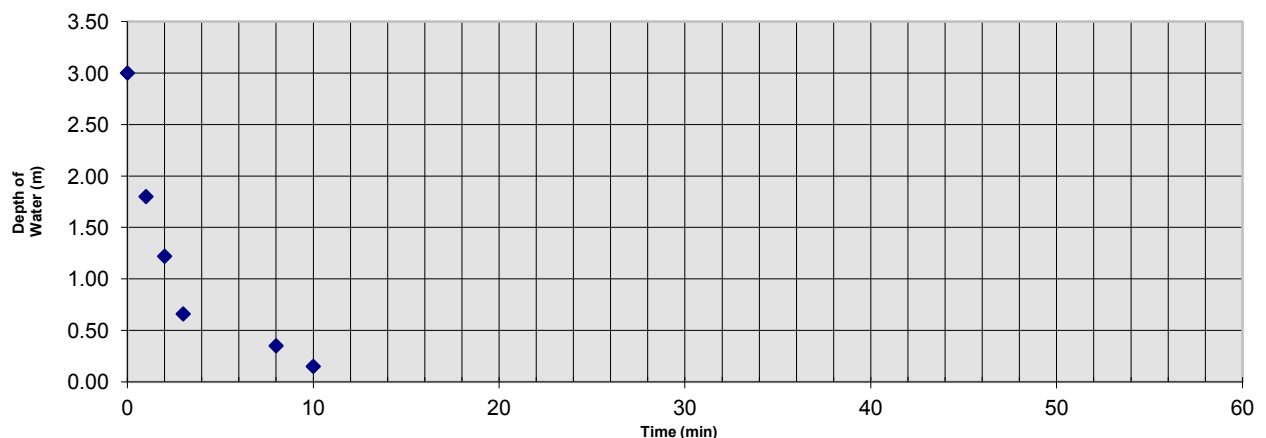
Time (min) 2

Soakage rate (m/sec) 1.14E-04

Soakage rate (m/day) 9.889156627

At end of test:
Borehole depth (m): 2.85

Casing depth (m): 0

Water level (m): 2.85

Remarks:

 Borehole left open for 40 minutes prior to testing to determine natural water level
 Test repeated twice with similar results, with the borehole water draining to natural water level in less than two minutes

Site Portsdown Hill Site, Havant, Hampshire

Client BDW Southampton

Job Number
J11144

Sheet
2/2

Date: 12 August 2011

Borehole No: 6

Test Data

Before start of test:

Borehole depth (m): 3.00

Casing depth (m): --

Water level (m): --

Time (mins)	Depth to Water (m)	Depth of Water (m)
0	0.66	2.34
1	0.74	2.26
3	0.9	2.10
9	1	2.00
13	1.05	1.95
21	1.3	1.70
29	1.48	1.52
43	1.76	1.24

Soakage Calculation

Borehole Diameter (m) 0.0600

Borehole Area (m) 0.0028

Borehole Perimeter (m) 0.188

From Plot:

D1 (m)	2.34
D2 (m)	1.24
T1 (min)	0
T2 (min)	43

Soakage Volume (m³) 0.003

Soakage Area (m²) 0.34

Time (min) 43

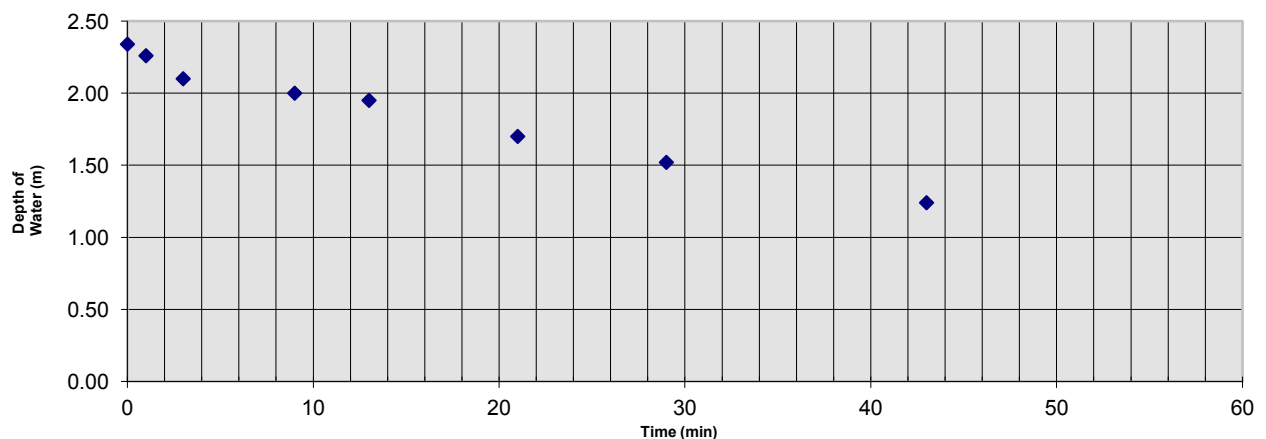
Soakage rate (m/sec)	3.54E-06
Soakage rate (m/day)	0.306126393

At end of test:

Borehole depth (m): 2.53

Casing depth (m): 0

Water level (m): 1.76



Remarks:

Borehole left open for 40 minutes prior to testing to determine natural water level
Test repeated twice with similar results, with the borehole water draining to natural water level in less than two minutes

Site Portsdown Hill Site, Havant, Hampshire

Client BDW Southampton

Job Number
J11144

Sheet
2/2

Date: 12 August 2011

Borehole No: 5

Test Data

Before start of test:

Borehole depth (m): 3.00
Casing depth (m): --
Water level (m): --

Time (mins)	Depth to Water (m)	Depth of Water (m)
0	0.5	2.50
1	0.62	2.38
2	0.75	2.25
5	0.98	2.02
7	1.05	1.95
15	1.3	1.70
29	1.78	1.22
43	2.43	0.57

Soakage Calculation

Borehole Diameter (m) 0.0600
Borehole Area (m) 0.0028
Borehole Perimeter (m) 0.188

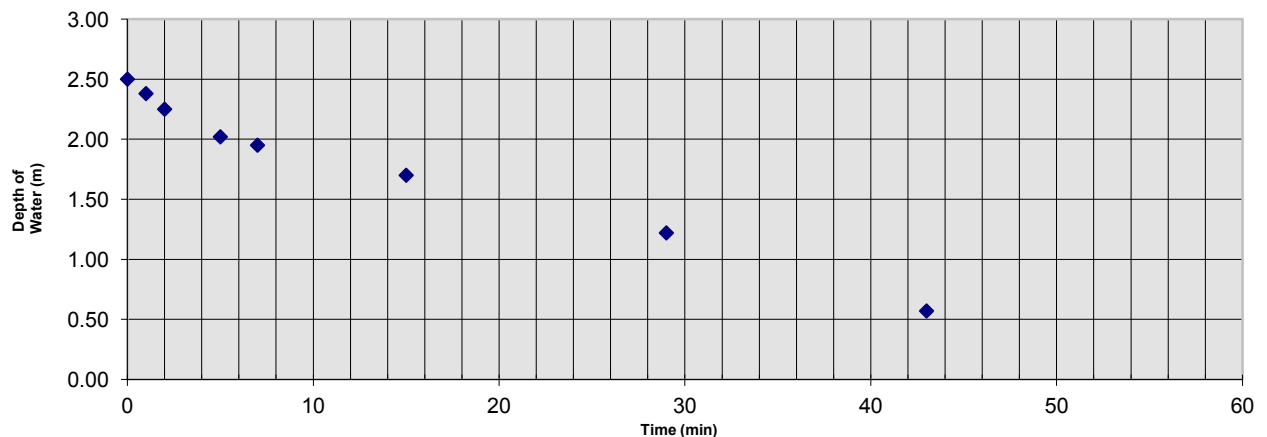
From Plot: D1 (m) 2.50
D2 (m) 0.57
T1 (min) 0
T2 (min) 43

Soakage Volume (m³) 0.005
Soakage Area (m²) 0.29
Time (min) 43

Soakage rate (m/sec)	7.24E-06
Soakage rate (m/day)	0.625476369

At end of test:

Borehole depth (m): 2.76
Casing depth (m): 0
Water level (m): 2.43



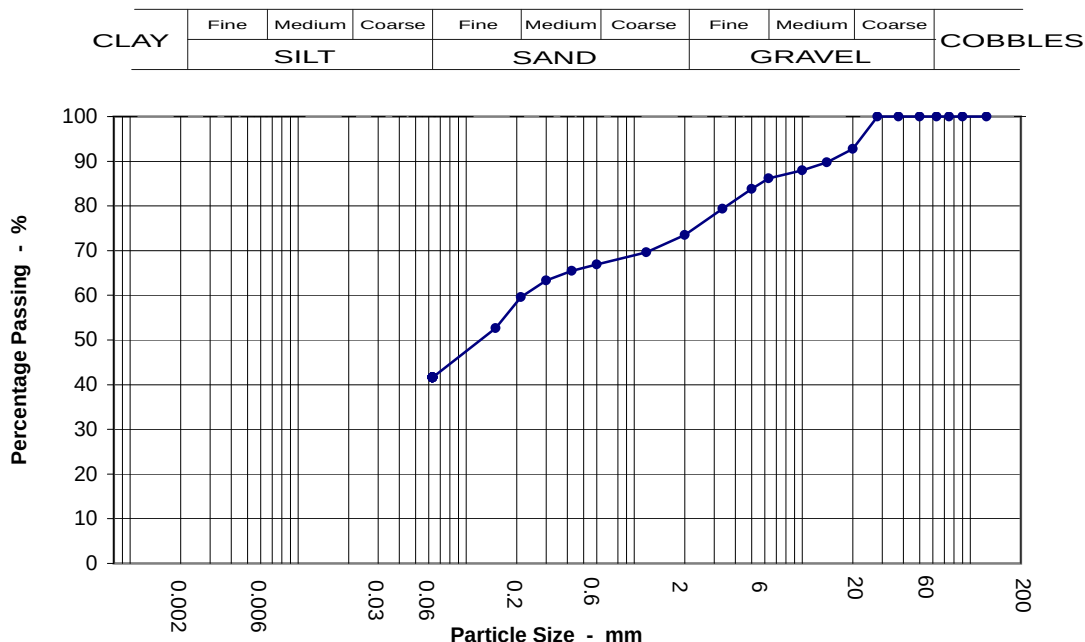
Remarks:

Borehole left open for 40 minutes prior to testing to determine natural water level
Test repeated twice with similar results, with the borehole water draining to natural water level in less than two minutes

Project Name: Portsdown Hill						Samples Received: 16/08/2011			
						Project Started: 23/08/2011			
Client: Wilson Bailey Geotechnical & Environmental						Testing Started: 05/09/2011			
Project No: -			Our job/report no: 11513			Date Reported: 07/09/2011			
Borehole No:	Sample No:	Depth (m)	Description	Moisture content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425 mm (%)	Remarks
BH6	-	1.00	Brown and orange brown slightly sandy slightly gravelly CLAY (gravel is fm and sub-angular to angular)	18					
TP1	-	1.00	Brown slightly silty slightly gravelly CLAY with occasional chalk fragments (gravel is fmc and sub-angular)	15	29	16	13	90	
TP2	-	0.50	Brown slightly sandy slightly gravelly CLAY (gravel is fine and sub-angular)	21	51	19	32	85	
TP2	-	1.00	Brown slightly sandy slightly gravelly CLAY (gravel is fm and sub-angular to angular)	23					
TP3	-	0.50	Brown slightly sandy slightly gravelly CLAY (gravel is fm and sub-angular to angular)	21					
TP4	-	0.90	Brown slightly sandy slightly gravelly CLAY (gravel is fine and angular)	16	46	17	29	91	
TP5	-	1.00	Brown and orange brown slightly sandy gravelly CLAY (gravel is fm and sub-angular to angular)	17	46	15	31	64	
TP7	-	1.00	Orange brown slightly sandy gravelly CLAY (gravel is fm and sub-angular)	18	42	18	24	60	
TP10	-	1.00	Pale brown slightly silty slightly gravelly CLAY with occasional chalk fragments (gravel is fine and sub-angular)	16	38	18	20	93	
TP13	-	1.00	Brown slightly sandy slightly gravelly CLAY (gravel is fm and sub-angular)	20	45	18	27	90	
TP13	-	1.50	Yellowish brown sandy silty CLAY	19					
TP14	-	1.00	Yellowish brown slightly silty slightly gravelly CLAY (gravel is fine and sub-angular)	14					
TP15	-	1.00	Yellowish brown slightly silty slightly gravelly CLAY (gravel is fm and sub-angular)	14					
TP16	-	1.00	Orange brown slightly silty slightly gravelly CLAY with occasional chalk fragments (gravel is fm and sub-angular)	14	28	16	12	86	
TP17	-	0.80	Brown slightly sandy slightly gravelly CLAY (gravel is fine and sub-angular to angular)	17	52	19	33	89	
 Summary of Test Results BS 1377 : Part 2 : Clause 4.4 : 1990 Determination of the liquid limit by the cone penetrometer method. BS 1377 : Part 2 : Clause 5 : 1990 Determination of the plastic limit and plasticity index. BS 1377 : Part 2 : Clause 3.2 : 1990 Determination of the moisture content by the oven-drying method.									Checked and Approved Initials: K.P Date: 07/09/2011
Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU Test Results relate only to the sample numbers shown above. Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr) All samples connected with this report ,incl any on 'hold' will be stored and disposed off according to Company policy.Acoply of this policy is available on request.									

Project Name: Portsdown Hill					K4 SOILS 
Client: Environmental		Project no: -			
Our job no: 11513					
Borehole No:	Sample No:	Depth m	Description	pH	Sulphate content (g/l)
TP2	-	0.50	Brown slightly sandy slightly gravelly CLAY (gravel is fine and sub-angular)	7.8	0.09
TP5	-	1.00	Brown and orange brown slightly sandy gravelly CLAY (gravel is fm and sub-angular to angular)	7.7	0.09
TP13	-	1.00	Brown slightly sandy slightly gravelly CLAY (gravel is fm and sub-angular)	7.8	0.10
Date 07/09/2011	Summary of Test Results				Checked and Approved Initials : kp
	BS 1377 : Part 3 : Clause 5 : 1990				
	Determination of sulphate content of soil and ground water : gravimetric method				

K4 SOILS 	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Our Report No:	11513
		Project No:	-
Location	Portsmouth Hill	Borehole / Trial Pit No:	TP3
Visual Soil Description	Brown slightly gravelly sandy clayey SILT with occasional fm chalk fragments (gravel is fmc and sub-rounded to angular)	Depth	1.00 m
		Sample Type/No	- 0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	93		
14	90		
10	88		
6.3	86		
5	84		
3.35	79		
2	74		
1.18	70		
0.6	67		
0.425	65		
0.3	63		
0.212	60		
0.15	53		
0.063	42		

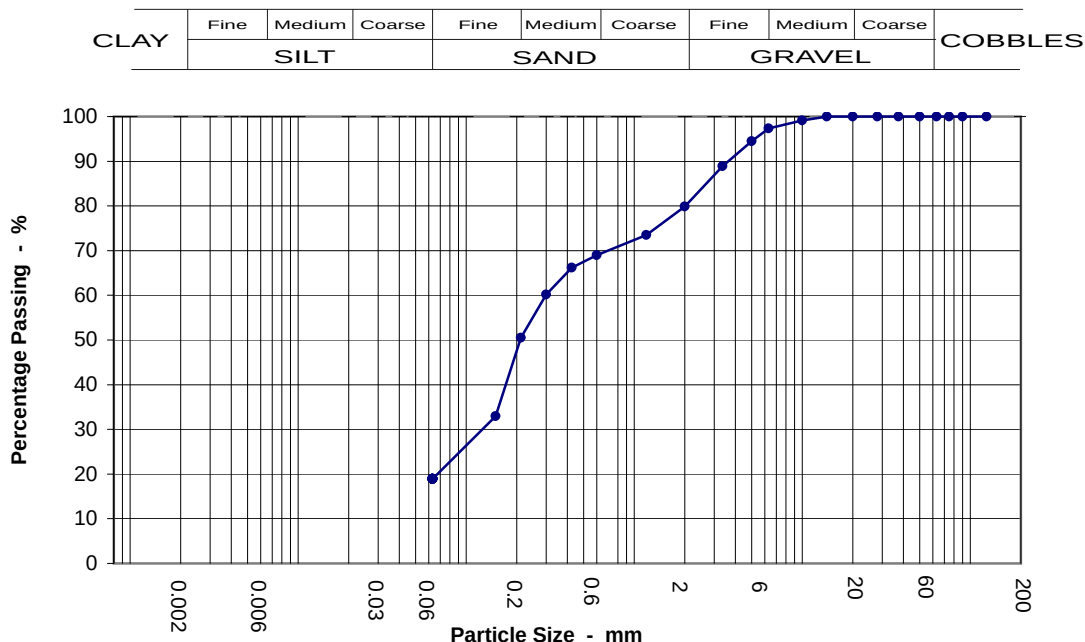
Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause
Sedimentation	N/A
Suitable Amount Of Sample Received	Yes

Sample Proportions	
Cobbles	0.0
Gravel	26.5
Sand	31.9
Silt & Clay	41.6

Grading Analysis	
D100	125.0
D60	0.2
D10	
Uniformity Coefficient	N/A

K4 SOILS LABORATORY	Approved Signatories:	Checked and Approved	
Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU. E-mail: k4soils@aol.com	K.Phaure(Tech.Mgr) J.Phaure(Lab.Mgr)	Initials: kp	
	Test results relate only to the sample numbers shown above	Date: 07/09/2011	
All samples connected with this report, incl any on 'hold' will be disposed off according to company policy. A copy of this policy is available on request. Sheet 3/3 MSF-11/R9			2519

K4 SOILS 	PARTICLE SIZE DISTRIBUTION BS 1377 : Part 2 : 1990 : Clause 9	Our Report No:	11513
		Project No:	-
Location	Portsdown Hill	Borehole / Trial Pit No:	TP7
		Depth	2.00m
Visual Soil Description	Brown slightly clayey slightly gravelly SAND with occasional fm chalk fragments (gravel is fm and sub-rounded to sub-angular)	Sample Type/No	- 0



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	97		
5	94		
3.35	89		
2	80		
1.18	73		
0.6	69		
0.425	66		
0.3	60		
0.212	50		
0.15	33		
0.063	19		

Test Method	
BS 1377 : Part 2 : 1990	
Sieving	Clause
Sedimentation	N/A
Suitable Amount Of Sample Received	Yes

Sample Proportions	
Cobbles	0.0
Gravel	20.1
Sand	61.0
Silt & Clay	18.9

Grading Analysis	
D100	125.0
D60	0.3
D10	
Uniformity Coefficient	N/A

K4 SOILS LABORATORY	Approved Signatories:		Checked and Approved	
Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU. E-mail: k4soils@aol.com	K.Phaure(Tech.Mgr)	J.Phaure(Lab.Mgr)	Initials: kp	
	Test results relate only to the sample numbers shown above		Date: 07/09/2011	
All samples connected with this report, incl any on 'hold' will be disposed off according to company policy. A copy of this policy is available on request. Sheet 3/3 MSF-11/R9				
				2519



Dominic Brightman
Wilson Bailey Ltd
Forge Farm Yard
Compton Chamberlayne
Wiltshire SP3 5DS



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t: 01622 851105
russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 6923

Site Reference: Portsdown Hill

Project / Job Ref: None Supplied

Order No: None Supplied

Sample Receipt Date: 16/08/2011

Sample Scheduled Date: 16/08/2011

Report Issue Number: 1

Reporting Date: 23/08/2011

Authorised by:

Russell Jarvis
Director

On behalf of QTS Environmental Ltd

Authorised by:

Kevin Old
Director

On behalf of QTS Environmental Ltd



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Soil Analysis Certificate

QTS Environmental Report No: 6923	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Portsdown Hill	TP / BH No	TP1	TP2	TP4	TP7	BH2
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.25	0.25	0.30	0.20
Reporting Date: 23/08/2011	QTSE Sample No	31130	31131	31132	31133	31134

Determinand	Unit	MDL	Accreditation					
Stone Content	%	<0.1	NONE	<0.1	<0.1	<0.1	<0.1	<0.1

General Inorganics	Unit	MDL	Accreditation					
pH	pH Units	+ / - 0.1	MCERTS	7.5	7.3	6.5	7.1	7.8
Total Organic Carbon (TOC)	%	<0.1	NONE	1.6	1.8	0.7	1.1	1.3
Total Phenols (monohydric)	mg/kg	<2	NONE	<2	<2	<2	<2	<2

Metals	Unit	MDL	Accreditation					
Arsenic (As)	mg/kg	<2	MCERTS	8	8	7	7	5
W/S Boron	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Cadmium (Cd)	mg/kg	<0.5	MCERTS	0.7	1	0.6	0.5	0.7
Chromium (hexavalent)	mg/kg	<2	NONE	<2	<2	<2	<2	<2
Chromium (Cr)	mg/kg	<2	MCERTS	25	23	20	18	20
Copper (Cu)	mg/kg	<4	MCERTS	14	14	16	13	10
Lead (Pb)	mg/kg	<3	MCERTS	24	28	38	27	13
Mercury (Hg)	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Nickel (Ni)	mg/kg	<3	MCERTS	19	17	14	13	16
Selenium (Se)	mg/kg	<3	NONE	<3	<3	<3	<3	<3
Zinc (Zn)	mg/kg	<3	MCERTS	60	61	56	52	59

Analytical results are expressed on a dry weight basis where samples are dried at less than 30°C

Analysis carried out on the dried sample is corrected for the stone content

Stone content is classified as material greater than 10mm in diameter



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Soil Analysis Certificate						
QTS Environmental Report No: 6923	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Portsdown Hill	TP / BH No	TP9	TP13	TP15	TP17	BH4
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.20	0.30	0.30	0.30
Reporting Date: 23/08/2011	QTSE Sample No	31135	31136	31137	31138	31139

Determinand	Unit	MDL	Accreditation					
Stone Content	%	<0.1	NONE	<0.1	<0.1	<0.1	<0.1	<0.1

General Inorganics	Unit	MDL	Accreditation					
pH	pH Units	+ / - 0.1	MCERTS	7.8	7.7	7.9	7.7	7.8
Total Organic Carbon (TOC)	%	<0.1	NONE	1.1	1.5	1.1	0.8	1.5
Total Phenols (monohydric)	mg/kg	<2	NONE	<2	<2	<2	<2	<2

Metals	Unit	MDL	Accreditation					
Arsenic (As)	mg/kg	<2	MCERTS	8	7	8	7	7
W/S Boron	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Cadmium (Cd)	mg/kg	<0.5	MCERTS	0.6	0.7	0.9	0.6	0.7
Chromium (hexavalent)	mg/kg	<2	NONE	<2	<2	<2	<2	<2
Chromium (Cr)	mg/kg	<2	MCERTS	12	22	29	28	13
Copper (Cu)	mg/kg	<4	MCERTS	6	9	13	12	8
Lead (Pb)	mg/kg	<3	MCERTS	10	14	15	15	13
Mercury (Hg)	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Nickel (Ni)	mg/kg	<3	MCERTS	11	15	22	20	9
Selenium (Se)	mg/kg	<3	NONE	<3	<3	<3	<3	<3
Zinc (Zn)	mg/kg	<3	MCERTS	36	49	74	66	40

Analytical results are expressed on a dry weight basis where samples are dried at less than 30°C

Analysis carried out on the dried sample is corrected for the stone content

Stone content is classified as material greater than 10mm in diameter



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Soil Analysis Certificate - Speciated PAHs

QTS Environmental Report No: 6923	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Portsdown Hill	TP / BH No	TP1	TP2	TP4	TP7	BH2
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.25	0.25	0.30	0.20
Reporting Date: 23/08/2011	QTSE Sample No	31130	31131	31132	31133	31134

Determinand	Unit	MDL	Accreditation					
Naphthalene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1

Total EPA-16 PAHs	mg/kg	<1.6	MCERTS	<1.6	<1.6	<1.6	<1.6	<1.6
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Analytical results are expressed on a dry weight basis where samples are dried at less than 30°C



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Soil Analysis Certificate - Speciated PAHs

QTS Environmental Report No: 6923	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Portsdown Hill	TP / BH No	TP9	TP13	TP15	TP17	BH4
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.20	0.30	0.30	0.30
Reporting Date: 23/08/2011	QTSE Sample No	31135	31136	31137	31138	31139

Determinand	Unit	MDL	Accreditation					
Naphthalene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b)fluoranthene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	<0.1	MCERTS	<0.1	<0.1	<0.1	<0.1	<0.1

Total EPA-16 PAHs	mg/kg	<1.6	MCERTS	<1.6	<1.6	<1.6	<1.6	<1.6
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Analytical results are expressed on a dry weight basis where samples are dried at less than 30°C



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Soil Analysis Certificate - TPH CWG Banded						
QTS Environmental Report No: 6923	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Portsdown Hill	TP / BH No	TP1	TP2	TP4	TP7	BH2
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.25	0.25	0.30	0.20
Reporting Date: 23/08/2011	QTSE Sample No	31130	31131	31132	31133	31134

Determinand	Unit	MDL	Accreditation					
Aliphatic >C5 - C6	mg/kg	<0.01	NONE	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatic >C6 - C8	mg/kg	<0.05	NONE	<0.05	<0.05	<0.05	<0.05	<0.05
Aliphatic >C8 - C10	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aliphatic >C10 - C12	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aliphatic >C12 - C16	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aliphatic >C16 - C21	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aliphatic >C21 - C34	mg/kg	<6	NONE	<6	<6	<6	<6	<6

Aliphatic (C5 - C34)	mg/kg	<6	NONE	<6	<6	<6	<6	<6
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Aromatic >C5 - C7	mg/kg	<0.01	NONE	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatic >C7 - C8	mg/kg	<0.05	NONE	<0.05	<0.05	<0.05	<0.05	<0.05
Aromatic >C8 - C10	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aromatic >C10 - C12	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aromatic >C12 - C16	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aromatic >C16 - C21	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aromatic >C21 - C35	mg/kg	<6	NONE	<6	<6	<6	<6	<6

Aromatic (C5 - C35)	mg/kg	<6	NONE	<6	<6	<6	<6	<6
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Analytical results are expressed on a dry weight basis where samples are dried at less than 30°C



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Soil Analysis Certificate - TPH CWG Banded

QTS Environmental Report No: 6923	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Portsdown Hill	TP / BH No	TP9	TP13	TP15	TP17	BH4
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.20	0.30	0.30	0.30
Reporting Date: 23/08/2011	QTSE Sample No	31135	31136	31137	31138	31139

Determinand	Unit	MDL	Accreditation					
Aliphatic >C5 - C6	mg/kg	<0.01	NONE	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatic >C6 - C8	mg/kg	<0.05	NONE	<0.05	<0.05	<0.05	<0.05	<0.05
Aliphatic >C8 - C10	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aliphatic >C10 - C12	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aliphatic >C12 - C16	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aliphatic >C16 - C21	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aliphatic >C21 - C34	mg/kg	<6	NONE	<6	<6	<6	<6	<6

Aliphatic (C5 - C34)	mg/kg	<6	NONE	<6	<6	<6	<6	<6
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Aromatic >C5 - C7	mg/kg	<0.01	NONE	<0.01	<0.01	<0.01	<0.01	<0.01
Aromatic >C7 - C8	mg/kg	<0.05	NONE	<0.05	<0.05	<0.05	<0.05	<0.05
Aromatic >C8 - C10	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aromatic >C10 - C12	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aromatic >C12 - C16	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aromatic >C16 - C21	mg/kg	<1	NONE	<1	<1	<1	<1	<1
Aromatic >C21 - C35	mg/kg	<6	NONE	<6	<6	<6	<6	<6

Aromatic (C5 - C35)	mg/kg	<6	NONE	<6	<6	<6	<6	<6
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Analytical results are expressed on a dry weight basis where samples are dried at less than 30°C



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Soil Analysis Certificate - BTEX						
QTS Environmental Report No: 6923	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Portsdown Hill	TP / BH No	TP1	TP2	TP4	TP7	BH2
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.25	0.25	0.30	0.20
Reporting Date: 23/08/2011	QTSE Sample No	31130	31131	31132	31133	31134

Determinand	Unit	MDL	Accreditation					
Benzene	µg/kg	<2	MCERTS	<2	<2	<2	<2	<2
Toluene	µg/kg	<5	MCERTS	<5	<5	<5	<5	<5
Ethylbenzene	µg/kg	<10	MCERTS	<10	<10	<10	<10	<10
p & m-xylene	µg/kg	<10	MCERTS	<10	<10	<10	<10	<10
o-xylene	µg/kg	<10	MCERTS	<10	<10	<10	<10	<10

Analytical results are expressed on a dry weight basis where samples are dried at less than 30°C



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Soil Analysis Certificate - BTEX						
QTS Environmental Report No: 6923	Date Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Wilson Bailey Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Portsdown Hill	TP / BH No	TP9	TP13	TP15	TP17	BH4
Project / Job Ref: None Supplied	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	Depth (m)	0.20	0.20	0.30	0.30	0.30
Reporting Date: 23/08/2011	QTSE Sample No	31135	31136	31137	31138	31139

Determinand	Unit	MDL	Accreditation					
Benzene	µg/kg	<2	MCERTS	<2	<2	<2	<2	<2
Toluene	µg/kg	<5	MCERTS	<5	<5	<5	<5	<5
Ethylbenzene	µg/kg	<10	MCERTS	<10	<10	<10	<10	<10
p & m-xylene	µg/kg	<10	MCERTS	<10	<10	<10	<10	<10
o-xylene	µg/kg	<10	MCERTS	<10	<10	<10	<10	<10

Analytical results are expressed on a dry weight basis where samples are dried at less than 30°C



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Soil Analysis Certificate - Methodology & Miscellaneous Information	
QTS Environmental Report No: 6923	
Wilson Bailey Ltd	
Site Reference: Portsdown Hill	
Project / Job Ref: None Supplied	
Order No: None Supplied	
Reporting Date: 23/08/2011	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry	E016
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	AR	Asbestos Screening	Visual screening of samples for fibrous material	E024
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water followed by titration using silver nitrate	E021
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by turbidimeter	E020
Soil	D	Fluoride - Water Soluble	Test Kit	E023
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E011
Soil	D	Loss on Ignition @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	D	Phosphorus	Determination of phosphorus by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	AR	Sulphide	Determination of sulphide by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia, potassium iodide/iodate followed by ICP-OES	E002
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E011
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E009
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E009
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E010
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E009
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	VPH (C6 - C10)	Determination of hydrocarbons C6-C10 by headspace GC-MS	E001
Soil	AR	EPH TEXAS	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	TPH CWG	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	TPH LQM	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	EPH (with florilil cleanup)	Determination of acetone/hexane extractable hydrocarbons with florilil cleanup step by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001

Key

D Dried
AR As Received

Radon Risk Report for addresses in England and Wales

Issued by the Health Protection Agency and the British Geological Survey using Address Point®. Fee paid £3.00 + VAT. Email receipt issued by Secure Trading Ltd.

Address searched: 9 Spinnaker View, Havant, PO9 3JD

Numerical grid reference for this address:

469469 East

106239 North

Date of report: 23/09/2011

Guidance for existing properties

Is this property in a radon Affected Area? - NO

The answer to the standard enquiry on house purchase known as CON29 Standard Enquiry of Local Authority; 3.13 Radon Gas: Location of the Property in a Radon Affected Area is:

No, this property is not in a Radon Affected Area as defined by the Health Protection Agency.

The estimated probability of the property being above the Action Level for radon is: 0-1%

The result may not be valid for buildings larger than 25 metres.

This report informs you of the estimated probability that this particular property is above the Action Level for radon. This does not necessarily mean there is a radon problem in the property; the only way to find out whether it is above or below the Action Level is to carry out a radon measurement in an existing property.

Radon Affected Areas are designated by the Health Protection Agency. HPA advises that radon gas should be measured in all properties within Radon Affected Areas.

If you are buying a currently occupied property in a Radon Affected Area, you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were above the Radon Action Level and if so, whether remedial measures were installed, radon levels were re-tested, and the results of re-testing confirmed the effectiveness of the measures.

Further information is available from HPA or www.ukradon.org.

Guidance for new buildings and extensions to existing properties

What is the requirement under Building Regulations for radon protection in new buildings and extensions at the property location? - None

If you are buying a new property in a Radon Affected Area, you should ask the builder whether radon protective measures were incorporated in the construction of the property.

See the Radon and Building Regulations for more details.

Radon Risk Report for addresses in England and Wales

Issued by the Health Protection Agency and the British Geological Survey using Address Point®. Fee paid £3.00 + VAT. Email receipt issued by Secure Trading Ltd.

Address searched: 70 Bedhampton Hill, Havant, PO9 3JP

Numerical grid reference for this address:

469453 East

106053 North

Date of report: 23/09/2011

Guidance for existing properties

Is this property in a radon Affected Area? - NO

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Site Land at Portsdown Hill, Havant, Hampshire

Client Barratt David Wilson Southampton

