

Proposed Industrial
Development
at
Stanbridge Road, Havant
Hampshire

Drainage Strategy & Flood
Risk Statement

Project Ref: NSB / 12044

Second Issue

9th March 2015



Client
BCP (Havant) LLP

Baynham Meikle Partnership Limited
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1.0 Site Description

- 1.1 The development site under consideration is currently occupied by an existing warehouse building and associated service yard. The site has a compliment of car parking facilities including a loading dock area and an internal site circulation access road.

The site area under consideration is 1.95 Hectares.

- 1.2 The boundaries are defined by Stanbridge Road to the west Downley Road to the east with the site being located within the New Lane Industrial Estate. See Location Plan appended to this report.
- 1.3 The site topography is generally flat with the existing building floor slab level at approximately 16.70m AoD, with external site levels ranging from 17.25 to 15.87m AoD.
- 1.4 A phase 1/2 Geo-Environmental Assessment was carried out at the site in February 2015 by Delta Simons.

The report concluded that the identified ground conditions across the site consisted of Made Ground up to 1.5m bgl overlaid on non-continuous firm / stiff Head Deposits over River Terrace Deposits – at an average depth of 2.0m bgl, and the solid geology comprising of a London Clay Formation.

Groundwater was recorded as being stuck in all the boreholes. Post investigation monitoring found the water level to be typically 4.0m bgl within the River Terrace Gravels and London Clay Formation.

A copy of the site investigation borehole data is appended to the report.

2.0 Development Proposals

- 2.1 The works associated with this application propose the initial demolition of the existing building followed by the construction of a new warehouse facility.

A development layout is appended to this report and shows a new 115,000 sq. ft. unit of B1/B2/B8 usage incorporating 5,000 sq. ft. of offices, with associated service yard, loading and car parking facilities. The development will also incorporate a soft landscaping strategy.

3.0 Drainage Strategy and Flood Risk

- 3.1 From review of the Environment Agency's Flood Plain Maps it can be seen that the proposed development site is not within a floodplain area.

The EA flood map suggests that the nearest area at risk from potential flooding is some 0.2m to the northwest of the development site, categorised as flood zone 2 and 3 with the nearest main river being located within this zone.

A copy of the Environment Agency Flood plain map is appended to this report.

- 3.2 The ground conditions, depth of water table and topography would confirm that the development site has not suffered from flooding due to groundwater.

- 3.3 Recent drainage connectivity survey work has established that the site is currently served by a separate private foul and surface water drainage system.

Both the foul and surface waste drainage has been traced to confirm that they run to outfalls located in the north-west corner of the site. The foul water outfall manhole in Stanbridge Road is surveyed at 1.36m deep with a 150mm diameter pipe connection into the site, with the surface water manhole being confirmed to be 1.07m deep with a 450mm diameter connection from the site, refer to record drawings appended to this report.

Both the on-site foul and storm drainage are seen to be a mixture of gravity and pumped systems.

- 3.4 The proposed development will benefit from new separate foul and storm water drainage system.

- 3.5 Given the relatively shallow depth of the existing foul drainage outfall for this site it is likely that the new on-site foul drainage system will need to be pumped via a private package pumping station. However this will need to be reviewed once the final floor level of the building is set to determine if a gravity connections is viable.

- 3.6 The building floor levels will be set so that the buildings will not be at risk of flooding at the 1 in 100 year plus climate change storm event, whilst also trying to balance earthworks volumes to ensure that cart away of material from site is minimised.

External service yards and car park levels will be set such that they route potential flood waters away from the new building frontages, entrances and not into the public highway.

- 3.7 The surface water drainage scheme will reflect the design principles of NPPF and PPS25 incorporating Sustainable Urban Drainage Systems (SUDS), as well as respecting the requirements of the local Authority.

- 3.8 A series of on-site permeability tests have been carried out during the site investigation works have confirmed that average infiltration rates are at values of 1.3×10^{-4} m/s within the existing sand and gravel strata, see results appended to this report. This would suggest that soakaway drainage techniques could feasibly be incorporated into the final proposed surface water drainage solution.

- 3.9 An existing greenfield / brownfield run-off calculation has been carried out to establish the existing discharge rate into the public sewer – see calculation appended to this report.

It is proposed that the drainage system is adopted that allow infiltration directly back into the natural strata. The rate of infiltration will be governed by the porosity of the natural material as identified within the current site investigation work.

In conjunction with this the surface water attenuation will be sized to ensure that the site does not flood for the 1 in 30 year storm return period.

It is proposed that a controlled surface water discharge is also allowed back into the existing public sewer at flow rates that do not exceed the existing values as calculated in the greenfield / brownfield run-off rate.

A full retention oil interceptor will be incorporated into the design of the service yard drainage system.

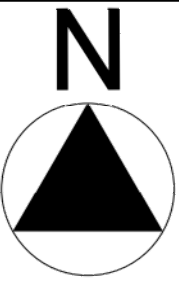
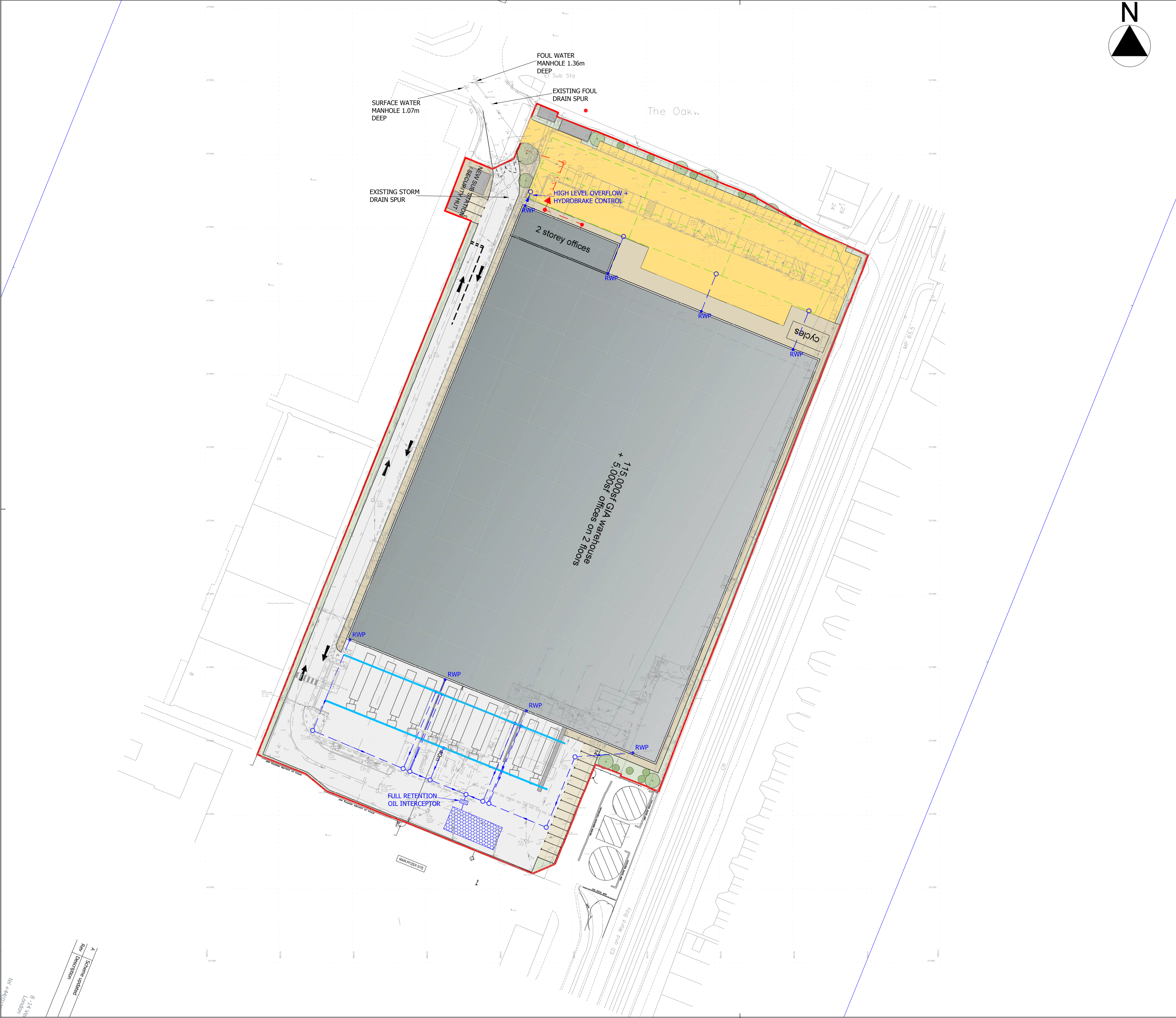
3.10 Attenuation will therefore be provided in the form of the following:

- An on-line cellular infiltration storage tank to the service yard and roof drainage.
- Oversized surface water pipes.
- Permeable paving car park surfacing that incorporates a perforated pipe system to convey flows to the free draining no fines stone subbase blanket.
- Hydro-brake flow control units to restrict flow rates to the public sewer.

A copy of the proposed levels and drainage strategy plan 12044 / 120 is included within the appendices.

3.11 It is believed that the above drainage proposals will provide a significant betterment to the existing drainage conditions and as such offer further flood protection to downstream receiving drainage systems and watercourses.

Appendices



NOTES

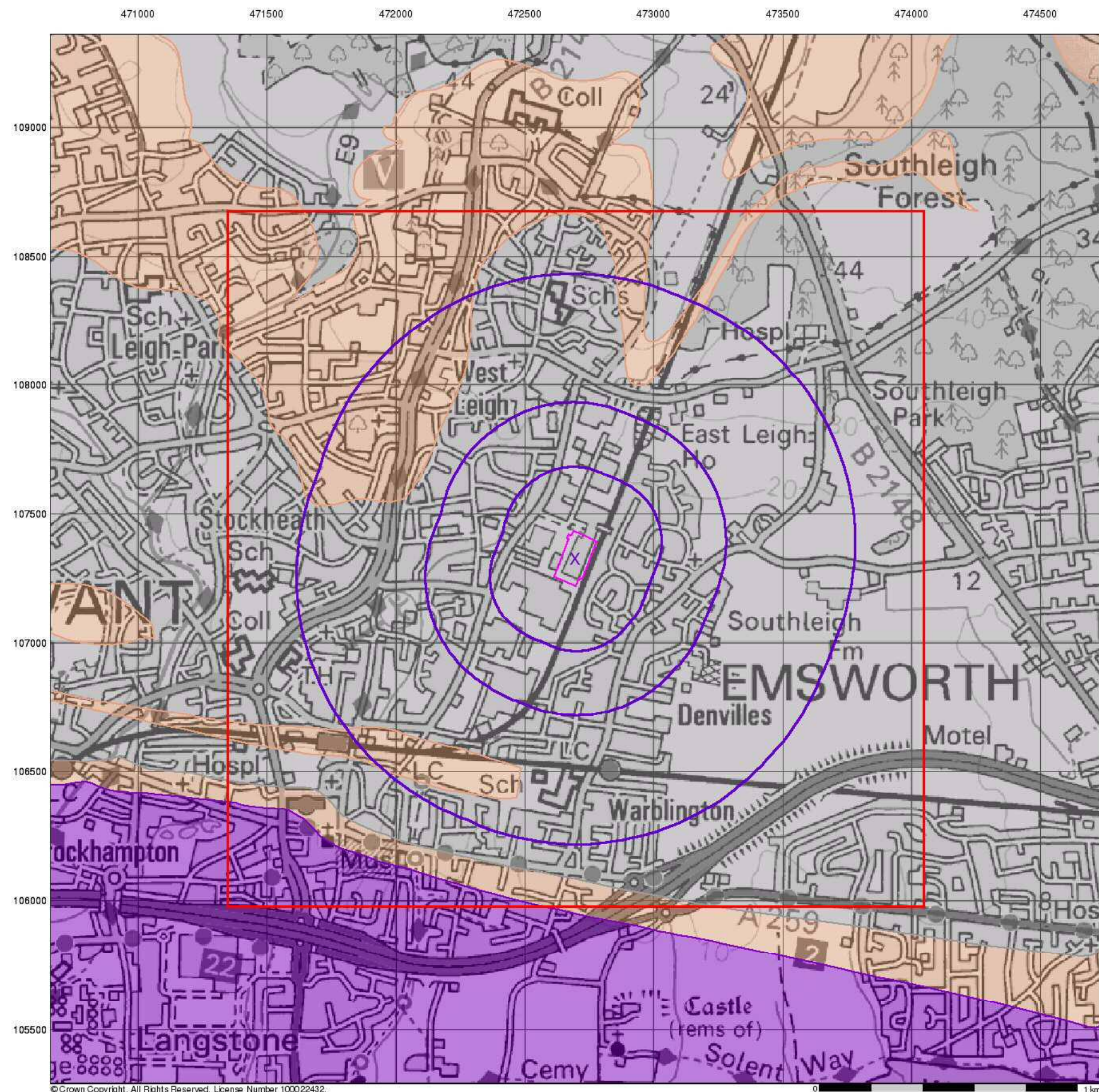
1) Drawing is subject to detailed design.

KEY

- CELLULAR TANK INFILTRATION UNIT
- PROPOSED PERMEABLE PAVING INCORPORATING 100mmØ COLLECTOR PIPE
- PROPOSED STORM
- PROPOSED FOUL
- PROPOSED FOUL PUMPING STATION
- PROPOSED RISING MAIN
- PROPOSED DRAINAGE CHANNELS
- PROPOSED FULL RETENTION OIL INTERCEPTOR

FOR PLANNING

09.03.2015			Proposed layout updated.		JH		NSB	
Rev	Date	Description				By	Checked By	
Project HAVANT STANBRIDGE ROAD						Dwg Number 12044/100	Rev. A	
Scale @ A1 – 1:500						Date MARCH 15		
Title PROPOSED DRAINAGE STRATEGY PLAN								
Drawn by JH			Checked by NSB			Project Engineer NSB		
Baynham Meikle Partnership consulting structural + civil engineers 8 Meadow Road, Edgbaston, Birmingham B17 8BU Telephone: 0121 434 4100 Fax: 0121 434 4073 Email: admin@bm-p.co.uk								



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0 1 km



Bedrock Aquifer Designation

General

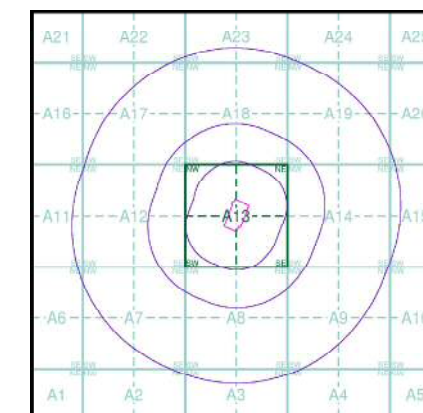
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 62539150_1_1
 Customer Ref: 13-0646.01
 National Grid Reference: 472700, 107330
 Slice: A
 Site Area (Ha): 1.99
 Search Buffer (m): 1000

Site Details

Stanbridge Road, Havant, PO9 2NL



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 Web: www.envirocheck.co.uk

Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Stanbridge Road, Havant				Project No: 13-0646.01		Hole ID: BH1			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 10/12/2014 - 11/12/2014		Client: BCP (Havant) LLP			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Concrete.				16.92 0.15 16.77 0.30 16.57 0.50					
MADE GROUND: Hardcore.					D		0.50		
MADE GROUND: Brown sandy gravelly CLAY. Gravel is fine to coarse chert and brick.				(0.90)			1.00 - 1.45	CPT N=36 3,5/5,8,11,12	
Firm brown mottled grey slightly sandy, slightly gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is angular to subangular fine to medium grained flint. [HEAD DEPOSITS]				15.67 1.40	D		1.50		
Medium dense to very dense light brown sandy GRAVEL. Sand is fine to coarse, gravel is sub-angular fine to medium grained with occasional cobbles of chert/ flint. No soil returns from 3.0m to 4.5m bgl. [RIVER TERRACE DEPOSITS]				(3.10)	B		2.00 - 2.45	CPT N=50/150mm (8,17/70mm/23,27)	
							2.50		
							3.00 - 3.45		
							4.00 - 4.45		
NO RECOVERY (Possible Driving Cobble). [RIVER TERRACE DEPOSITS].				12.57 4.50			5.00 - 5.45	CPT N=36 10,7/6,10,8,12	
Firm brown silty gravelly CLAY. Gravel is angular to sub-angular fine to medium grained chert. [LONDON CLAY FORMATION]			(150mm)	(1.00)			5.50	CPT N=20 7,11/8,4,4,4	
Firm and stiff brown slightly silty CLAY with occasional fine silty partings. [LONDON CLAY FORMATION]				(1.10)	D		6.00 - 6.45	CPT N=12 3,3/2,3,3,4	
							7.00		
Stiff grey silty CLAY with occasional organic laminations. [LONDON CLAY FORMATION]				(2.10)	U		7.50 - 7.95	U=60/450mm	
							9.00 - 9.45		
Very stiff grey silty gravelly CLAY. Gravel is angular to sub-angular, fine to coarse chert, flint and occasional siltstone. [LONDON CLAY FORMATION]				(0.60)	D		9.50	SPT N=29 4,5/6,7,7,9	
							10.00 - 10.45		
				8.37 8.70					
				7.77 9.30					
				(1.15)					

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Water added from 2.00m bgl. 4. Groundwater encountered at 8.70m bgl. 5. Installed with a HDPE standpipe to 9.50m bgl.	CHISELLING			WATER LEVEL OBSERVATIONS					
	Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
	1.40	2.80	03:00	1	11-12-14		8.70	6.10	6.00
	3.50	4.50	02:30						
	BOREHOLE DIAMETER		CASING DIAMETER		DEPTH SEALED				
			150mm to 10.45m						

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 472768 N: 107394 Level: 17.07	Logged By: ML	Checked By: AC Approved By: DW

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Project: **Stanbridge Road, Havant** Project No: **13-0646.01** Hole ID: **BH1**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
10/12/2014 - 11/12/2014

Client:
BCP (Havant) LLP

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
			10.45	6.62 - 10.45				SPT N=43 8,8/9,11,11,12	
Borehole complete at 10.45m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 2.00m bgl.
4. Groundwater encountered at 8.70m bgl.
5. Installed with a HDPE standpipe to 9.50m bgl.

CHISELLING

WATER LEVEL OBSERVATIONS

Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
1.40	2.80	03:00	1	11-12-14		8.70	6.10	6.00
3.50	4.50	02:30						

BOREHOLE DIAMETER

CASING DIAMETER

DEPTH SEALED

150mm to 10.45m

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
 Ground Level to Ordnance Datum

Page 2 of 2

Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 472768 N: 107394 Level: 17.07	Logged By: ML	Checked By: AC	Approved By: DW
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Project: Stanbridge Road, Havant				Project No: 13-0646.01		Hole ID: BH2			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 08/12/2014 - 09/12/2014		Client: BCP (Havant) LLP			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Concrete.				16.62 0.20					
MADE GROUND: Brown sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse with occasional brick cobbles. Gravels comprise brick concrete and chert.				16.32 0.50	D		0.50		
MADE GROUND: Firm brown mottled grey, slightly sandy, slightly gravelly CLAY. Sand is fine to coarse, gravel is angular to sub-rounded fine to coarse flint and brick.				(0.90)			1.00 - 1.45	CPT N=22 5,4/3,4,7,8	
Dense to very dense light brown slightly sandy GRAVEL. Sand is fine to coarse, gravel is angular to sub-angular chert/ flint. [RIVER TERRACE DEPOSITS]				15.42 1.40	B		1.50		
					B		2.00 - 2.45	CPT N=48 13,11/12,11,13,12	
					B		2.50		
					B		3.00 - 3.45	CPT N=50/230mm (12,13/15,16,16,3/5mm)	
				(4.20)	B		3.50		
					B		4.00 - 4.45	CPT N=50/155mm (12,13/65mm/22,23,5/5mm)	
					B		4.50		
							5.00 - 5.45	CPT N=50/225mm (12,13/60mm/15,17,18)	
					D		5.50		
Firm brown blue slightly silty CLAY with occasional fine silty partings. [LONDON CLAY FORMATION]				11.22 5.60	U		6.00 - 6.45	U=40/450mm	
				(0.70)					
				10.52 6.30					
Firm green grey silty sandy CLAY. [LONDON CLAY FORMATION]							7.50 - 7.95		
				(2.00)					
					D		8.00	SPT N=14 2,2/3,3,4,4	
				8.52 8.30					
Very stiff grey silty gravelly CLAY. Gravel is fine to coarse sub-angular to rounded chert/ flint. [LONDON CLAY FORMATION]							9.00 - 9.45	SPT N=42 3,4/9,10,11,12	
				(1.87)					
							9.90 - 10.35	SPT N=50/270mm	

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Water added from 1.50m bgl. 4. Groundwater encountered at 5.90m bgl. 5. Installed with a HDPE standpipe to 9.00m bgl.	CHISELLING			WATER LEVEL OBSERVATIONS					
	Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
	1.80	2.80	02:30	1	09-12-14		5.90	5.10	5.50
	3.00	4.00	03:00						
	4.00	5.50	03:00						
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED			
			150mm to 10.17m						

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 472710 N: 107423 Level: 16.82	Logged By: ML	Checked By: AC
			Approved By: DW

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Project: **Stanbridge Road, Havant** Project No: **13-0646.01** Hole ID: **BH2**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
08/12/2014 - 09/12/2014

Client:
BCP (Havant) LLP

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Borehole complete at 10.17m bgl.			10.17	6.65 – 10.17				(9,13/13,14,14,9/45mm)	

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 1.50m bgl.
4. Groundwater encountered at 5.90m bgl.
5. Installed with a HDPE standpipe to 9.00m bgl.

CHISELLING

Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
1.80	2.80	02:30	1	09-12-14		5.90	5.10	5.50
3.00	4.00	03:00						
4.00	5.50	03:00						

WATER LEVEL OBSERVATIONS

BOREHOLE DIAMETER CASING DIAMETER DEPTH SEALED

150mm to 10.17m

All measurements in metres unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
 Ground Level to Ordnance Datum

Page 2 of 2

Plant Used:
Dando 2000

Coordinates / Level (mAOD):
E: 472710 N: 107423
Level: 16.82

Logged By:
ML

Checked By:
AC

Approved By:
DW

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Project: Stanbridge Road, Havant				Project No: 13-0646.01		Hole ID: BH3			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 16/12/2014 - 17/12/2014		Client: BCP (Havant) LLP			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Concrete.				16.12 0.25					
MADE GROUND: Very gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded brick and chert.				(0.55) 15.57 0.80	D		0.50		
Firm becoming stiff light brown, slightly gravelly CLAY. Gravel is fine to coarse sub-angular to sub-rounded chert/ flint. Becoming coarser with depth. [HEAD DEPOSITS]				(1.80)	D		1.00 - 1.45 1.50	CPT N=16 2,3/4,4,3,5	
					D		2.00 - 2.45	CPT N=19 6,3/3,7,4,5	
				13.77 2.60	D		2.50		
Very dense light brown sandy GRAVEL with occasional cobbles. Gravel is fine to coarse, angular to sub-angular chert/ flint becoming coarser with depth. [RIVER TERRACE DEPOSITS]				(2.70)	D		3.00 - 3.45 3.50	CPT N=50/220mm (13,12/55mm/17,17,16/70mm)	
					D		4.00 - 4.45	CPT N=24/70mm (25,26/24/70mm)	
					D		4.50		
					D		5.00 - 5.45	CPT N=17 11,7/4,4,4,5	
Firm grey brown gravelly CLAY. Gravel is fine to coarse angular to sub-angular flint/ chert. [LONDON CLAY FORMATION]			(150mm)	11.07 5.30 10.87 5.50	D		5.50		
					D		6.00 - 6.45	SPT N=12 2,3/3,3,3,3	
Firm becoming stiff (from c.8m) grey silty CLAY. [LONDON CLAY FORMATION]				(3.40)	D		7.00		
					U		7.50 - 7.95	U=32/315mm	
				7.47 8.90			9.00 - 9.45	SPT N=23 3,4/5,6,6,6	
Stiff grey sandy gravelly CLAY. Sand is fine to coarse, gravel is fine to coarse, angular to sub-angular flint/ chert. [LONDON CLAY FORMATION]				(1.55)	D		9.50		
							10.00 - 10.45		

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Water added from 3.00m bgl. 4. Groundwater encountered at 6.90m bgl. 5. Backfilled with arisings.																			
										CHISELLING			WATER LEVEL OBSERVATIONS						
										Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth	
										2.50	3.00	01:45	1	17-12-14		6.90	5.90	6.00	
										3.00	4.00	02:15							
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED													
			150mm to 10.45m																

All measurements in metres unless otherwise stated		10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum		Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 472642 N: 107311 Level: 16.37		Logged By: ML	Checked By: AC	Approved By: DW

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Project: Stanbridge Road, Havant	Project No: 13-0646.01	Hole ID: BH3
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CABLE PERCUSSION BOREHOLE LOG

Date From / To:
16/12/2014 - 17/12/2014

Client:
BCP (Havant) LLP

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
			10.45	5.92 - 10.45				SPT N=40 5,7/8,9,11,12	
Borehole complete at 10.45m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 3.00m bgl.
4. Groundwater encountered at 6.90m bgl.
5. Backfilled with arisings.

CHISELLING

Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
2.50	3.00	01:45	1	17-12-14		6.90	5.90	6.00
3.00	4.00	02:15						

WATER LEVEL OBSERVATIONS
BOREHOLE DIAMETER
CASING DIAMETER
DEPTH SEALED

150mm to 10.45m

All measurements in metres
 unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
 Ground Level to Ordnance Datum

Page 2 of 2

Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 472642 N: 107311 Level: 16.37	Logged By: ML	Checked By: AC	Approved By: DW
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Delta-Simons 3 Henley Office Park, Doddington Road, Lincoln, LN6 3QR Tel: +44 (0) 870 0400 012 Fax: +44 (0) 1522 698393 Email: info@deltasimons.com									
Project: Stanbridge Road, Havant				Project No: 13-0646.01		Hole ID: BH4			
CABLE PERCUSSION BOREHOLE LOG				Date From / To: 12/12/2014 - 15/12/2014		Client: BCP (Havant) LLP			

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Concrete.				15.74 0.25					
MADE GROUND: Firm brown gravelly CLAY. Gravel is fine to coarse, sub-angular to sub-rounded chert and brick.				15.29 0.70	D		0.50		
Stiff Brown slightly gravelly CLAY. Gravel is fine to medium, angular to sub-angular chert. [HEAD DEPOSITS].				(2.20)	D		1.00 - 1.45	CPT N=25 3,5/5,7,8,5	
					D		1.50		
					D		2.00 - 2.45	CPT N=24 5,7/4,6,7,7	
					D		2.50		
Very dense and dense light brown sandy GRAVEL. Sand is fine to coarse, gravel is fine to medium, angular to sub-angular chert. [RIVER TERRACE DEPOSITS]				(2.30)	D		3.00 - 3.45	CPT N=50/265mm (11,14/11,14,15,10/40mm)	
					D		3.50		
Stiff brown silty gravelly CLAY. Gravel is fine to medium angular to sub-angular chert. [LONDON CLAY FORMATION]				(0.60)	D		4.00 - 4.45	CPT N=48 7,9/12,9,13,14	
					D		4.50		
Stiff grey silty CLAY. [LONDON CLAY FORMATION]				(2.60)	D		5.00 - 5.45	CPT N=19 7,6/5,4,5,5	
					U		7.00		
Stiff to very stiff gravelly CLAY. Gravel is fine to medium, sub-angular to sub-rounded chert. [LONDON CLAY FORMATION]				(1.55)	D		6.00 - 6.45	SPT N=17 2,3/4,4,4,5	
							7.50 - 7.95	U=28/450mm	
				7.59 8.40					
				9.95 6.04 9.95					

REMARKS : 1. Engineer verified logged in general accordance to BS 5930:2010. 2. Area CAT scanned prior to excavation. 3. Water added from 3.00m bgl. 4. Groundwater encountered at 5.80m bgl. 5. Installed with a HDPE standpipe to 9.00m bgl.	CHISELLING			WATER LEVEL OBSERVATIONS					
	Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
	3.20	4.00	01:45	1	15-12-14		5.80	5.40	5.50
	4.00	4.90	02:15						
BOREHOLE DIAMETER			CASING DIAMETER			DEPTH SEALED			
			150mm to 9.95m						

All measurements in metres unless otherwise stated	10m/page Scale: 1:62.50	Coordinates to National Grid Ground Level to Ordnance Datum	Page 1 of 2
Plant Used: Dando 2000	Coordinates / Level (mAOD): E: 472661 N: 107247 Level: 15.99	Logged By: ML	Checked By: AC Approved By: DW

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Project: **Stanbridge Road, Havant** Project No: **13-0646.01** Hole ID: **BH4**

CABLE PERCUSSION BOREHOLE LOG

Date From / To:
12/12/2014 - 15/12/2014

Client:
BCP (Havant) LLP

DESCRIPTION OF STRATA	LEGEND	WATER	CASING DEPTH / (Diam. mm)	REDUCED LEVEL/ DEPTH (Thickness)	Sample Details			Test Results	Backfill Details
					TYPE	REF	Depth	SPT N Value/Drive mm	
Borehole complete at 9.95m bgl.									

REMARKS :

1. Engineer verified logged in general accordance to BS 5930:2010.
2. Area CAT scanned prior to excavation.
3. Water added from 3.00m bgl.
4. Groundwater encountered at 5.80m bgl.
5. Installed with a HDPE standpipe to 9.00m bgl.

CHISELLING

Depth From	Depth To	Time Taken		Date	Time	Water Strike	Standing Level	Casing Depth
3.20	4.00	01:45	1	15-12-14		5.80	5.40	5.50
4.00	4.90	02:15						

WATER LEVEL OBSERVATIONS

BOREHOLE DIAMETER **CASING DIAMETER** **DEPTH SEALED**

150mm to 9.95m

All measurements in metres
 unless otherwise stated

10m/page Scale: 1:62.50

Coordinates to National Grid
 Ground Level to Ordnance Datum

Page 2 of 2

Plant Used:
Dando 2000

Coordinates / Level (mAOD):
E: 472661 N: 107247
Level: 15.99

Logged By:
ML

Checked By:
AC

Approved By:
DW