

Your ref: PO/116/15329

Our ref: SKZ\_546/15 and SKZ\_546/15-2

15<sup>th</sup> July 2015

The Royal Parks  
The Old Police  
House  
Hyde Park  
London  
W2 2UH

For the attention of Mr Edward Strickland

Dear Mr Strickland,

**FACTUAL REPORT ON GROUND INVESTIGATION  
SITE AT HYDE PARK, LONDON, W2 3XA**

**INTRODUCTION**

On the instructions of Mr Edward Strickland on behalf of The Royal Parks ("the Client"), AVZGeoEng Ltd has carried out a ground investigation to help provide relevant information about the ground conditions beneath the site, in regards to the installation of proposed groundwater tank.

The ground investigation comprised the following works:

- Boreholes advanced by drive-in sampler techniques;
- In situ testing and logging.

Laboratory geotechnical and chemical testing was not required in the proposal, however limited number of Particle Size Distribution (PSD) tests were agreed with the client and carried out after the completion of the site work.

Any opinions and interpretations expressed in this report are based on the ground conditions encountered during the site work and on the results of tests made in the field, together with AVZGeoEng conjectural interpretation between exploratory holes. There may, however, be other conditions prevailing at the site which have not been revealed by the investigation and which have therefore not been taken into account in this report.

**THE SITE**

The site, which may be located by National Grid reference (TQ 26840 79855), is situated on the southern part of Hyde Park, off the South Carriage Road, City of Westminster, London. An extract of the Ordnance Survey map showing the location of the site is included in **Figure 1**.

The published BGS online geological map of the area indicates that the site is underlain by Lynch Gravel - River Terrace Deposits of the Superficial geology and the London Clay formation of the Bedrock geology.

The existing topography and history of development of the site suggests that in addition to these natural strata made ground may be present on the site.

### **SITE WORK**

The site work was carried out on 9<sup>th</sup> & 10<sup>th</sup> July 2015 and included 4No. drive-in sampling boreholes and 2No inspection pits, with a maximum of 6.0m depth and associated in situ testing. Obstructions in the ground were encountered in the BH1 at 1.8mbgl and the borehole was terminated. Also during the excavation of the inspection pits at the locations of BH2 and BH2' obstructions were encountered at shallow depth in a form of concrete slab and unknown brick structure. On instruction of the archaeologist who carried out an archaeological watching brief during the site work, the inspection pits were terminated and backfilled.

Due to the presence of granular materials and high groundwater table the boreholes were becoming unstable causing difficulties in progressing the drilling.

Dense to very dense layer of gravel was encountered in all boreholes at approximately 3.0mbgl, with SPT N-value > 50. Such ground conditions are deemed inappropriate for the drive in sampling method of drilling and after consultation with the client the borehole BH3 was terminated at 3.7mbgl.

A 19mm diameter and 3m long standpipe was installed in the BH3 to allow for monitoring of the groundwater levels.

The location of the borehole position was determined approximately by reference to physical features present on the site at the time of investigation and the ground level at the borehole location was not determined.

A site plan showing the main features and the location of the investigation point of the site is given in **Figure 2**.

We trust that the above meets with your requirements, however, if should wish to discuss any of the matters further, please do not hesitate to contact us.

Yours sincerely,

Yours Sincerely,  
For AVZGeoEng Ltd



**Dipl. Ing. Boban Zarkovski CEng MICE**

Enc:

**Figure 1:** Site Location Plan

**Figure 2:** Borehole Location Plan

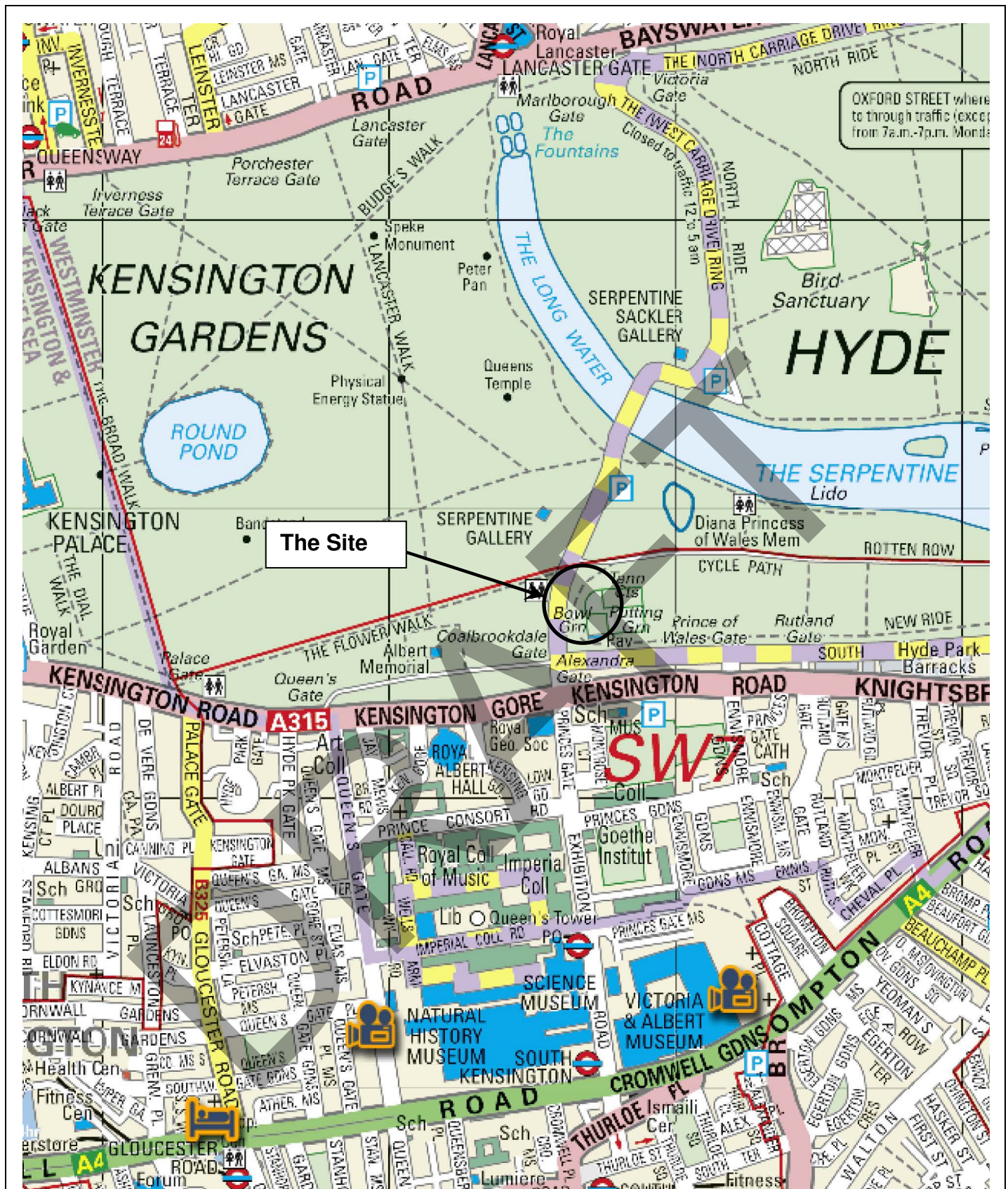
**Figure 3:** Borehole Logs

**Figure 4:** Laboratory Test Results

DRAFT

FIGURES





## SITE LOCATION PLAN

Client: The Royal Parks

Site: Hyde Park, Proposed Groundwater Tank

Scale: NTS

Figure No: 1

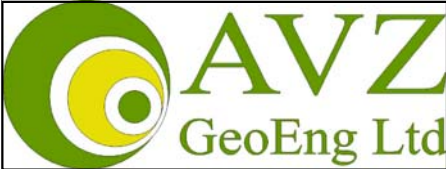
Job No: 546/15

Source: Streetmap





LEGEND:  
BH1 - Borehole





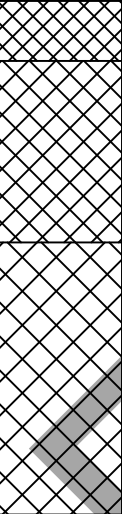
8 Tanyard Avenue  
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West Sussex  
RH19 4LU  
United Kingdom  
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Mob: 07885977732  
Tel: 01342457117


Client  
The Royal Parks


Project Title  
Hyde Park, Proposed  
Groundwater Tank

Drawing Title  
Layout Investigation  
Points Plan


Drawn	Date	Checked	Date	Approved	Date
SKZ	13/07/15	BZ	13/07/15	BZ	13/07/15
Scale		Orig Size		Dimensions	
NTS				M	
Project No.				Drawing File	
546/15					
Drawing No.				Rev.	
FIGURE_2					

<b>AVZ GeoEng Ltd</b> 8 Tanyard Avenue East Grinstead, West Sussex RH19 4LU						<b>BOREHOLE RECORD</b>			<b>Borehole Number: BH1</b>					
<b>Site:</b> Hyde Park, Proposed Groundwater Tank						<b>Location:</b> Hyde Park			<b>E:-</b> <b>N:-</b>					
<b>Client:</b> The Royal Parks						<b>Ground Level:</b> -		<b>Date:</b> 10 July 15		<b>Job No.:</b> 546/15				
<b>GROUND WATER</b>			<b>SAMPLES/TESTS</b>				<b>STRATA RECORD</b>			Sheet 1 of 1				
Strike	Well	Depth (m)	Type/Depth (m)	In-situ Tests	Depth (m)	Level (m AOD)	Key	Description						
					0.20	0.20		MADE GROUND: Grass over sandy loam topsoil						
					0.80	0.80		MADE GROUND: Brown occasionally grey, slightly clayey sand and fine gravel with bricks, brick and ceramic fragments						
						1.90		1.90	MADE GROUND: Very loose, brown grey clayey sand and fine gravel					
									Obstruction in the ground, further advancement refused					
<b>Borehole cancelled</b>														
<b>Remarks and Water Observations</b> The location was CAT scanned prior the excavation. Associated in situ testing and sampling was carried out and the borehole backfilled on completion.											<b>Key for Insitu tests</b> HV-Hand Vane (kN/m²) PP-Pocket Penotometer (kN/m²) MP-Mackintosh Probe (N150)		<b>Scale:</b> 1:25 <b>Logged by:</b> BZ <b>Figure:</b> 3_1	

<b>AVZ GeoEng Ltd</b> 8 Tanyard Avenue East Grinstead, West Sussex RH19 4LU						<b>BOREHOLE RECORD</b>			<b>Borehole Number: BH1'</b>		
<b>Site:</b> Hyde Park, Proposed Groundwater Tank						<b>Location:</b> Hyde Park				<b>E:-</b> <b>N:-</b>	
<b>Client:</b> The Royal Parks						<b>Ground Level:</b> -		<b>Date:</b> 9 July 15		<b>Job No.:</b> 546/15	
<b>GROUND WATER</b>			<b>SAMPLES/TESTS</b>				<b>STRATA RECORD</b>			Sheet 1 of 1	
Strike	Well	Depth (m)	Type/Depth (m)	In-situ Tests	Depth (m)	Level (m AOD)	Key	Description			
					0.20	0.20		MADE GROUND: Grass over sandy loam topsoil			
					0.70	0.70		MADE GROUND: Brown occasionally grey, slightly clayey sand and fine gravel with brick, brick and ceramic fragments			
				N=2 (1,2,0,1,0,1)	1.80	1.80		Very loose, brown grey clayey sand and fine gravel			
				N=62 (3,12,20,19,13,10)							
				N=23 (4,5,6,5,6,6)	4.00	4.00		Medium dense to dense, brown to light grey sand and gravel, gravel is fine to medium flint (Lynch Gravel - River Terrace Deposits)			
								End of Borehole at 4.00 m			
<b>Remarks and Water Observations</b> The location was CAT scanned prior the excavation. Associated in situ testing and sampling was carried out and the borehole backfilled on completion. The borehole walls were collapsing after 2.5mbgl. Groundwater was encountered at approximately 1.5mbgl.							<b>Key for Insitu tests</b> HV-Hand Vane (kN/m²) PP-Pocket Penotometer (kN/m²) MP-Mackintosh Probe (N150)		<b>Scale:</b> 1:25 <b>Logged by:</b> BZ <b>Figure:</b> 3_2		

<b>AVZ GeoEng Ltd</b> 8 Tanyard Avenue East Grinstead, West Sussex RH19 4LU						<b>BOREHOLE RECORD</b>			<b>Borehole Number: BH2</b>		
<b>Site:</b> Hyde Park, Proposed Groundwater Tank						<b>Location:</b> Hyde Park			<b>E:-</b> <b>N:-</b>		
<b>Client:</b> The Royal Parks						<b>Ground Level:</b> -		<b>Date:</b> 9 July 15		<b>Job No.:</b> 546/15	
<b>GROUND WATER</b>			<b>SAMPLES/TESTS</b>				<b>STRATA RECORD</b>			Sheet 1 of 1	
Strike	Well	Depth (m)	Type/Depth (m)	In-situ Tests	Depth (m)	Level (m AOD)	Key	Description			
					0.20 0.25	0.20 0.25		MADE GROUND: Grass over sandy loam topsoil MADE GROUND: Mass concrete obstruction  <i>Borehole cancelled</i>			
		1									
		2									
		3									
		4									
		5									
<b>Remarks and Water Observations</b> The location was CAT scanned prior the excavation. Associated in situ testing and sampling was carried out and the borehole backfilled on completion.							<b>Key for Insitu tests</b> HV-Hand Vane (kN/m²) PP-Pocket Penotometer (kN/m²) MP-Mackintosh Probe (N150)		<b>Scale:</b> 1:25 <b>Logged by:</b> BZ <b>Figure:</b> 3_3		



<b>AVZ GeoEng Ltd</b> 8 Tanyard Avenue East Grinstead, West Sussex RH19 4LU						<b>BOREHOLE RECORD</b>			<b>Borehole Number:</b> <b>BH2'</b>		
<b>Site:</b> Hyde Park, Proposed Groundwater Tank						<b>Location:</b> Hyde Park			<b>E:-</b> <b>N:-</b>		
<b>Client:</b> The Royal Parks						<b>Ground Level:</b> -		<b>Date:</b> 10 July 15		<b>Job No.:</b> 546/15	
<b>GROUND WATER</b>			<b>SAMPLES/TESTS</b>				<b>STRATA RECORD</b>			Sheet 1 of 1	
Strike	Well	Depth (m)	Type/Depth (m)	In-situ Tests	Depth (m)	Level (m AOD)	Key	Description			
					0.20	0.20		MADE GROUND: Grass over sandy loam topsoil			
					0.35	0.35		MADE GROUND: Brown occasionally grey, slightly clayey sand and fine gravel with bricks, brick and ceramic fragments			
								Brick structure obstruction			
								Borehole cancelled			
		1									
		2									
		3									
		4									
		5									
<b>Remarks and Water Observations</b> The location was CAT scanned prior the excavation. Associated in situ testing and sampling was carried out and the borehole backfilled on completion.							<b>Key for Insitu tests</b> HV-Hand Vane (kN/m²) PP-Pocket Penotometer (kN/m²) MP-Mackintosh Probe (N150)		<b>Scale:</b> 1:25 <b>Logged by:</b> BZ <b>Figure:</b> 3_4		



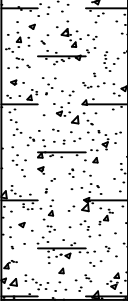
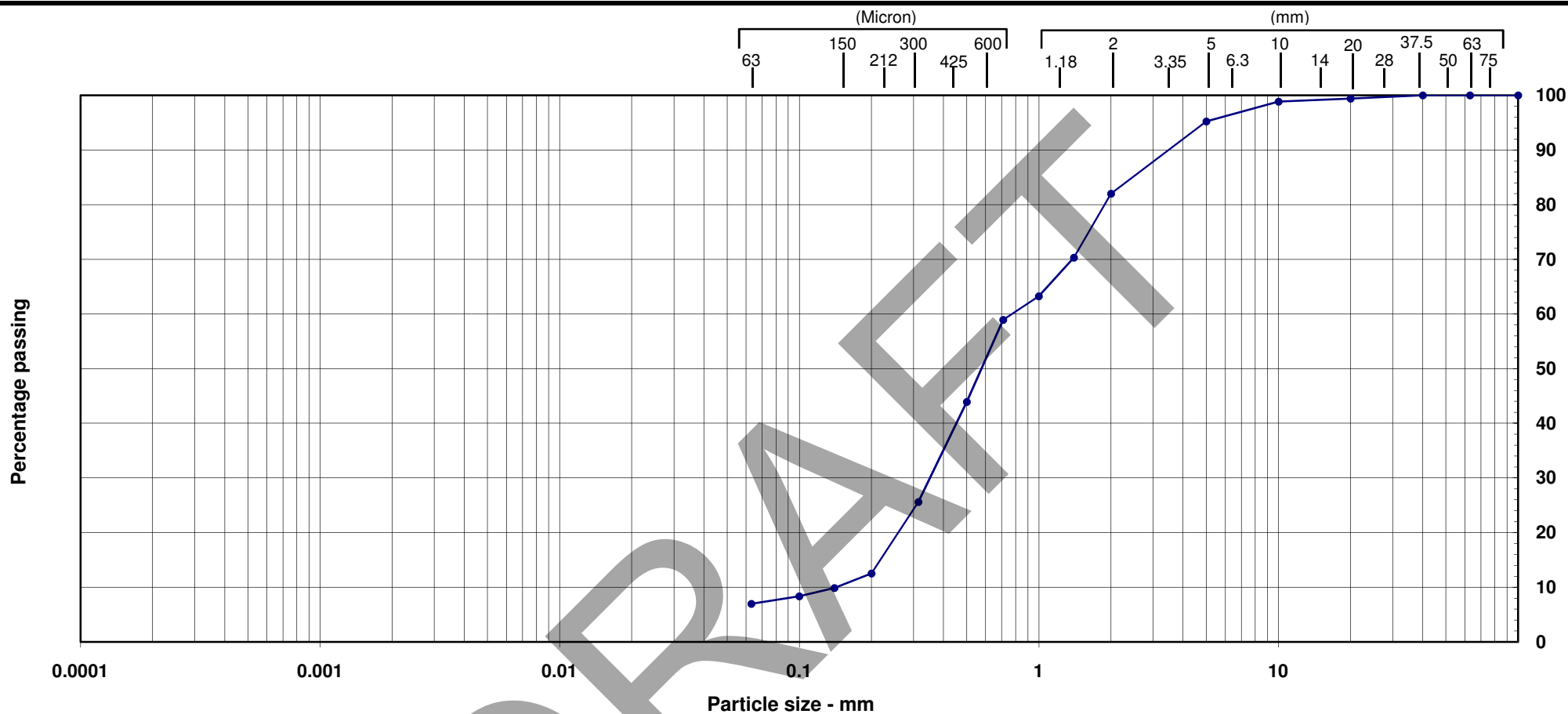
<b>AVZ GeoEng Ltd</b> 8 Tanyard Avenue East Grinstead, West Sussex RH19 4LU						<b>BOREHOLE RECORD</b>			<b>Borehole Number: BH3</b>			
<b>Site:</b> Hyde Park, Proposed Groundwater Tank						<b>Location:</b> Hyde Park				<b>E:-</b> <b>N:-</b>		
<b>Client:</b> The Royal Parks						<b>Ground Level:</b> -		<b>Date:</b> 10 July 15		<b>Job No.:</b> 546/15		
<b>GROUND WATER</b>			<b>SAMPLES/TESTS</b>				<b>STRATA RECORD</b>				Sheet 1 of 1	
Strike	Well	Depth (m)	Type/Depth (m)	In-situ Tests	Depth (m)	Level (m AOD)	Key	Description				
					0.15	0.15		MADE GROUND: Grass over sandy loam topsoil				
					0.50	0.50		MADE GROUND: Brown occasionally grey, slightly clayey sand and fine gravel with bricks and brick fragments				
					1.20	1.20		MADE GROUND: Brown occasionally grey, slightly clayey SAND and occasional gravel and brick fragments				
				N=7 (2,2,3,2,1,1)				Very loose, grey to dark grey very clayey SAND and GRAVEL, with slight organic peat odour. (Lynch Gravel - River Terrace Deposits)				
				N=2 (0,0,1,0,1,0)				Loose grey clayey SAND and GRAVEL. (Lynch Gravel - River Terrace Deposits)				
				N=69 (8,10,16,18,17,18)				Dense to very dense, light grey slightly clayey sandy GRAVEL. Gravel is fine to medium flint. (Lynch Gravel - River Terrace Deposits)				
					3.70	3.70		The borehole was terminated in very dense gravel				
				N=98 (18,17,24,27,24,23)				End of Borehole at 3.70 m				
<b>Remarks and Water Observations</b> The location was CAT scanned prior the excavation. Associated in situ testing and sampling was carried out and 19mm groundwater monitoring stand pipe was installed on completion. Groundwater was encountered at approximately 1.7mbgl.						<b>Key for Insitu tests</b> HV-Hand Vane (kN/m²) PP-Pocket Penotometer (kN/m²) MP-Mackintosh Probe (N150)			<b>Scale:</b> 1:25 <b>Logged by:</b> BZ <b>Figure:</b> 3_5			

Figure: 3\_6\_1

<b>AVZ GeoEng Ltd</b> 8 Tanyard Avenue East Grinstead, West Sussex RH19 4LU						<b>BOREHOLE RECORD</b>			<b>Borehole Number: BH4</b>		
<b>Site:</b> Hyde Park, Proposed Groundwater Tank						<b>Location:</b> Hyde Park			<b>E:-</b> <b>N:-</b>		
<b>Client:</b> The Royal Parks						<b>Ground Level:</b> -		<b>Date:</b> 10 July 15		<b>Job No.:</b> 546/15	
<b>GROUND WATER</b>			<b>SAMPLES/TESTS</b>				<b>STRATA RECORD</b>			Sheet 2 of 2	
Strike	Well	Depth (m)	Type/Depth (m)	In-situ Tests	Depth (m)	Level (m AOD)	Key	Description			
		6		N=34 (9,9,8,9,9,8)  N=40 (8,9,7,12, 11,10)	6.00	0.60		Medium dense to dense slightly clayey sandy GRAVEL. 50mm fragment of blue clay encountered in the liner recovered after the last run.			
		7						<i>End of Borehole at 6.00 m</i>			
		8									
		9									
		10									
<b>Remarks and Water Observations</b> The location was CAT scanned prior the excavation. The borehole walls were collapsing after 2.5mbgl and the sampling tube is likely to had been partially filled with collapsed material, thus affecting the accuracy of the logging. The borehole was backfilled on completion.							<b>Key for Insitu tests</b> HV-Hand Vane (kN/m²) PP-Pocket Penotometer (kN/m²) MP-Mackintosh Probe (N150)		<b>Scale:</b> 1:25 <b>Logged by:</b> BZ <b>Figure:</b> 3_6_2		





CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
	SILT			SAND			GRAVEL		

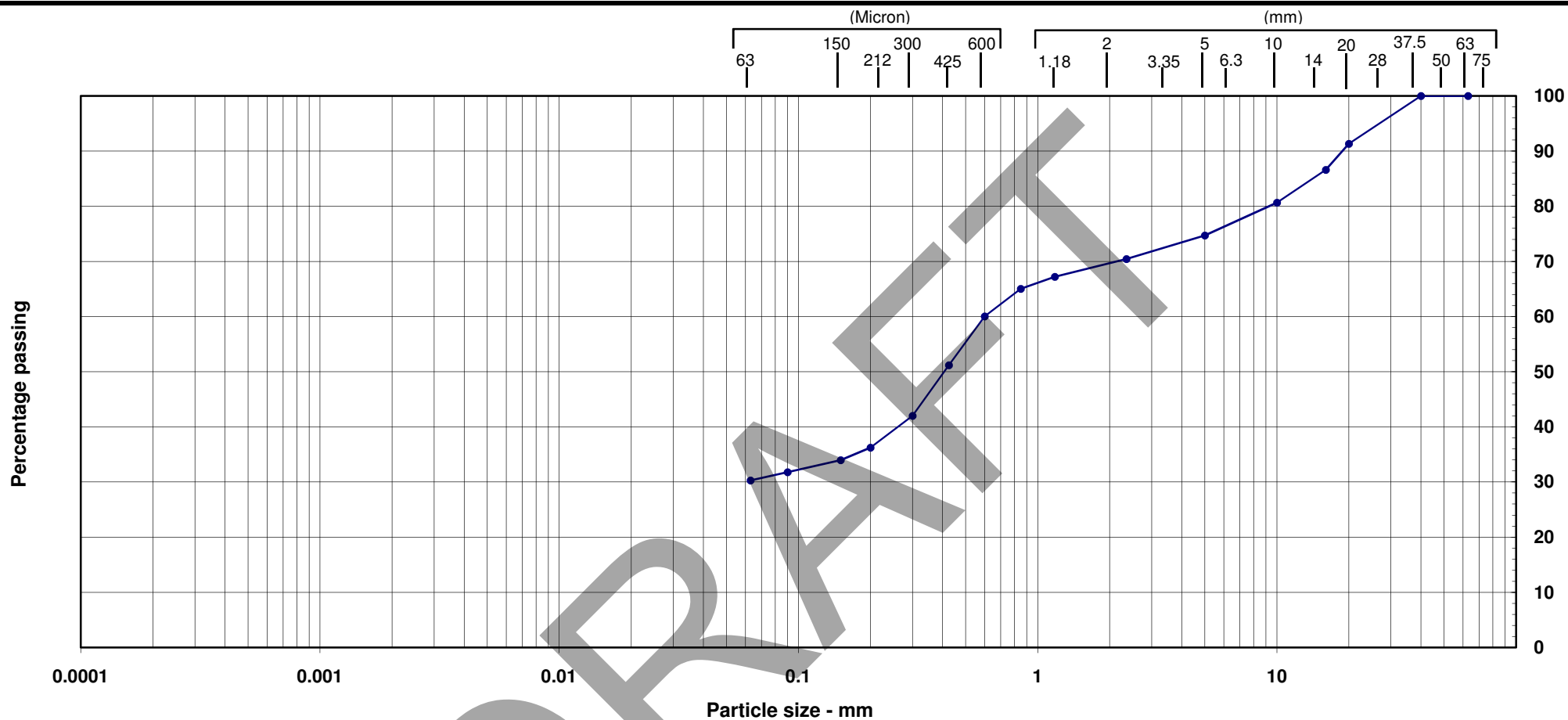


**PARTICLE SIZE  
DISTRIBUTION**

Job No: 546/15  
 Client: The Royal Parks  
 Site: Hyde Park, Proposed Groundwater Tank  
 Certificate no:

BH/TP no: BH1'  
 Batch no:  
 Depth (m): 3.00-4.00

Figure 4\_1



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
	SILT			SAND			GRAVEL		

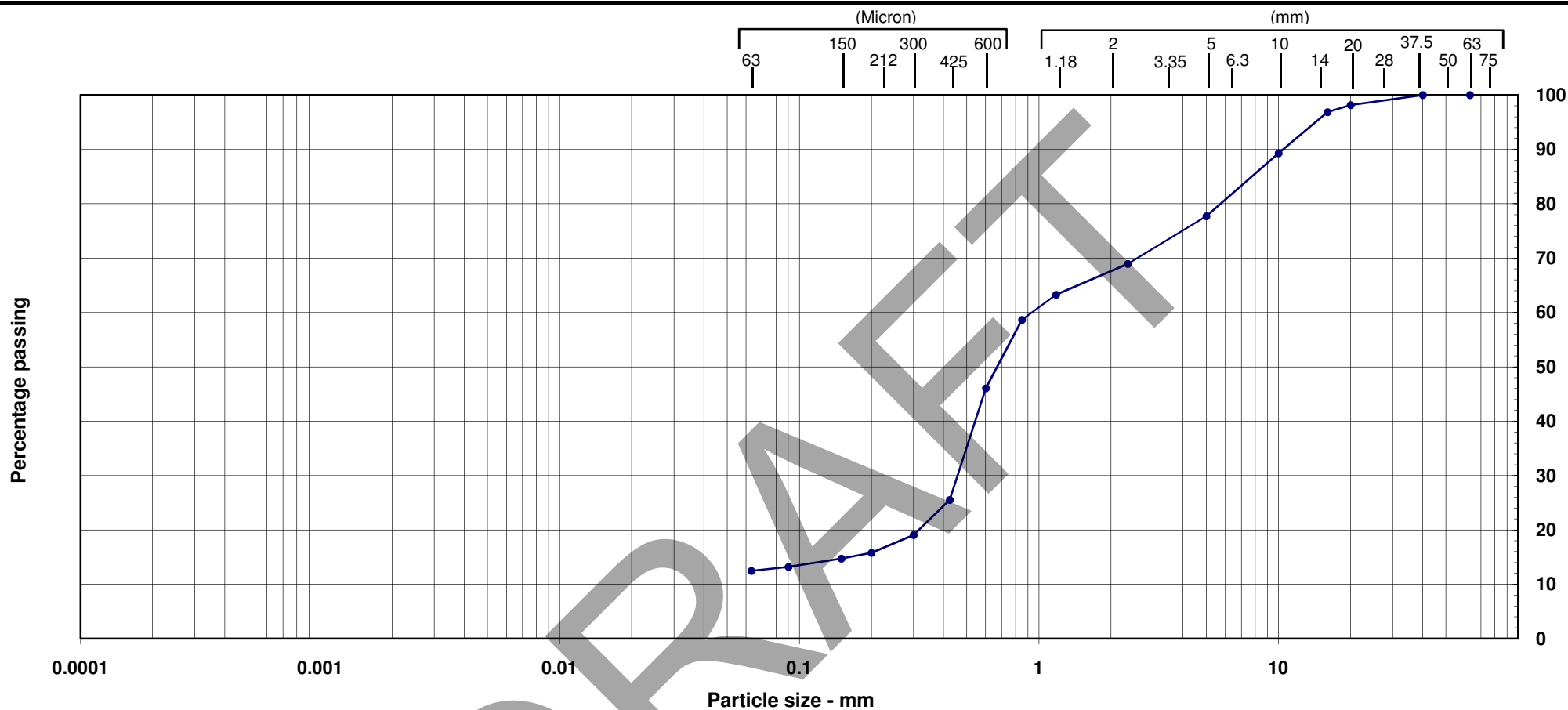


# **PARTICLE SIZE DISTRIBUTION**

Job No: 546/15  
 Client: The Royal Parks  
 Site: Hyde Park, Proposed Groundwater Tank  
 Certificate no:

BH/TP no: BH3  
 Batch no:  
 Depth (m): 1.20-2.00

**Figure 4.2**



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
	SILT			SAND			GRAVEL		

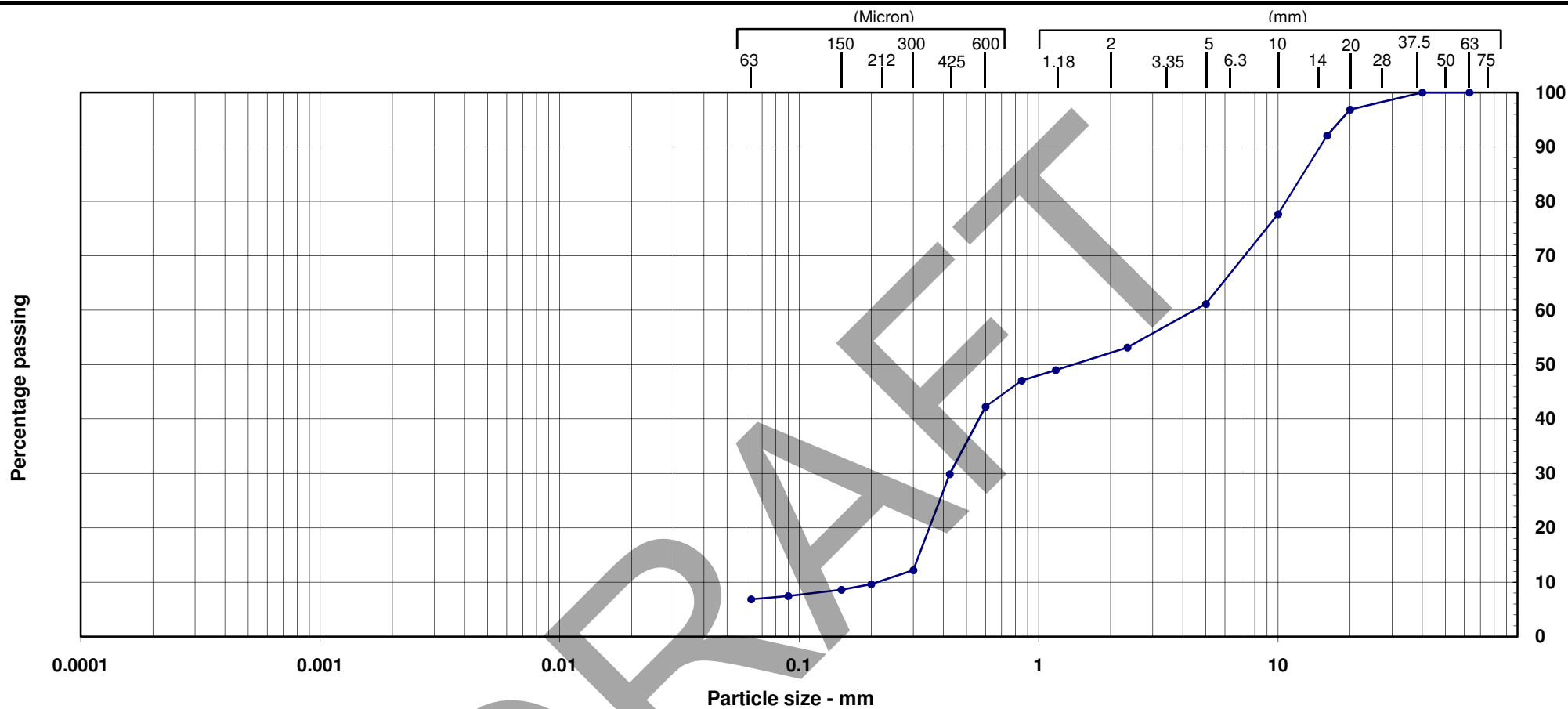


**PARTICLE SIZE DISTRIBUTION**

Job No: 546/15  
 Client: The Royal Parks  
 Site: Hyde Park, Proposed Groundwater Tank  
 Certificate no:

BH/TP no: BH3  
 Batch no:  
 Depth (m): 2.40-2.80

Figure 4\_3



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
	SILT			SAND			GRAVEL		



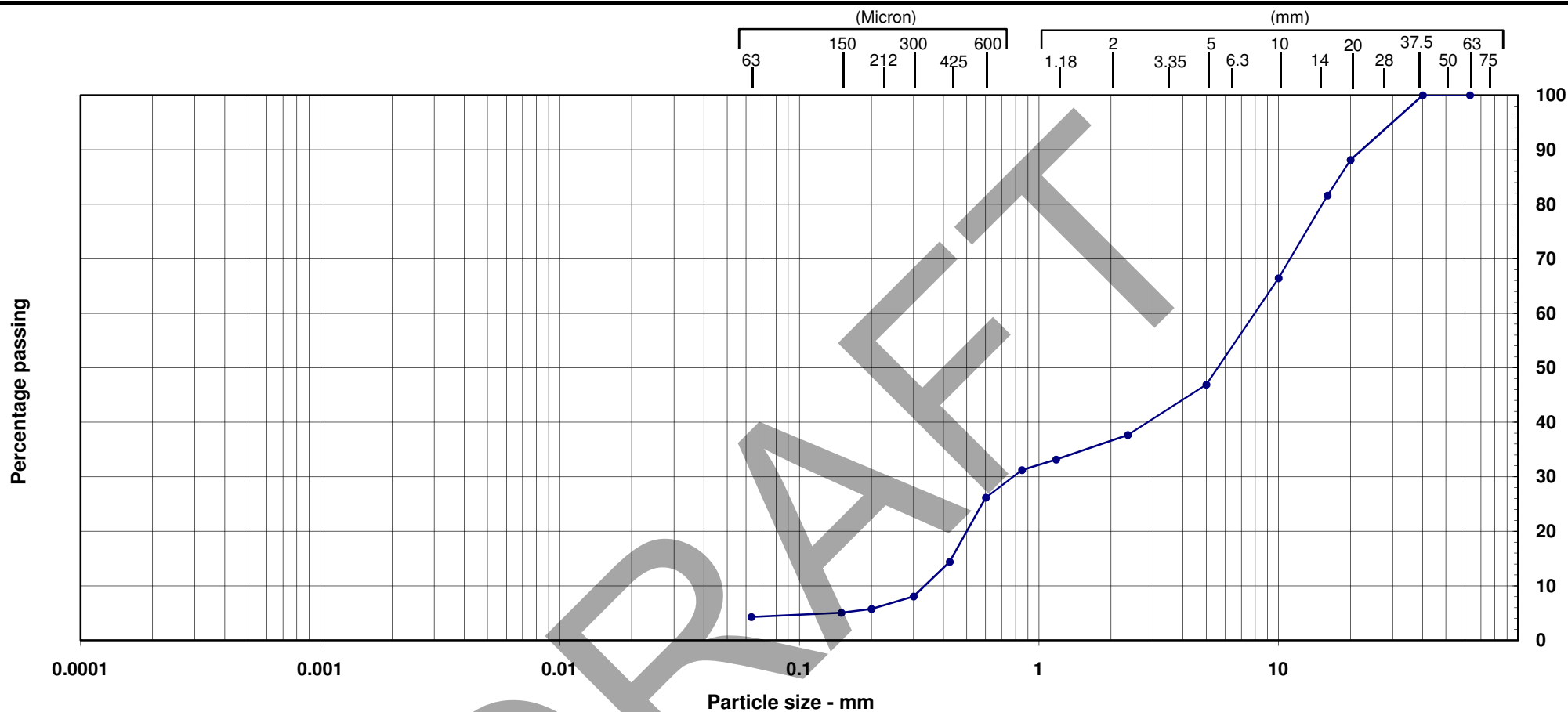
# **PARTICLE SIZE DISTRIBUTION**

Job No: 546/15  
 Client: The Royal Parks  
 Site: Hyde Park, Proposed Groundwater Tank  
 Certificate no:

BH/TP no: BH3  
 Batch no:  
 Depth (m): 3.00-3.70

Figure 4\_4





CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse
	SILT			SAND			GRAVEL		



# **PARTICLE SIZE DISTRIBUTION**

Job No: 546/15  
 Client: The Royal Parks  
 Site: Hyde Park, Proposed Groundwater Tank  
 Certificate no:

BH/TP no: BH4  
 Batch no:  
 Depth (m): 3.50-4.50

Figure 4\_5