

EXPLORATORY HOLE LOGS



GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

WS01

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 09/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES					MADE GROUND: Brown slightly sandy slightly gravelly clayey topsoil. Gravel is angular to subrounded fine to medium of mixed lithology including brick and rare ash.	
		1.00	ES		0.90			Medium dense grey slightly clayey slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to medium of mixed lithology including chert.	1
		1.20		N=17 (4,4/5,4,4,4)					
					1.50				
		2.00		N=2 (3,2/1,0,0,1)				Loose yellow brown slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to medium of mixed lithology including chert.	2
					2.30			Firm grey slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine of mixed lithology.	
		3.00		N=6 (1,1/1,1,2,2)					3
					3.70			Dark brown slightly sandy SILT.	
		4.00		N=14 (1,2/3,3,3,5)					4
					4.45			End of borehole at 4.45 m	

Remarks

1. Hand dug inspection pit to 1.20m bgl. 2. Groundwater encountered at 2.45m bgl. 3. Hole collapsed to 2.10m. 4. No standpipe installed.





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Borehole Log

Borehole No.

WS02

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 09/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.23			MADE GROUND: Grey reinforced concrete.	
								MADE GROUND: Red brown slightly sandy angular fine to coarse gravel of quartzite.	
		0.50	ES		0.55			MADE GROUND: Dark brown slightly sandy angular fine to coarse gravel of mixed lithology including ash.	
					0.75			MADE GROUND: Dark brown slightly gravelly fine to coarse sand. Gravel is angular fine to coarse of mixed lithology including ash.	
		1.00	ES						
		1.20		N=37 (6,9/9,8,10,10)					
		1.50	ES						
		1.70		50 (25 for 0mm/50 for 5mm)	1.70				
End of borehole at 1.70 m									2
									3
									4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. No groundwater encountered. 4. Obstruction encountered at 1.50m bgl. 5. Standpipe installed to 1.50m bgl: 1.00m plain pipe, 0.50m slotted pipe.





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Borehole Log

Borehole No.

WS03

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 09/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.18			MADE GROUND: Grey reinforced concrete.	
		0.50	ES		0.50			MADE GROUND: Light brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		1.10	ES		1.00			MADE GROUND: Soft grey slightly sandy gravelly clay. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		1.20	D					Very soft dark brown slightly sandy silty CLAY.	1
		1.20		N=0 (0,0/0,0,0,0)	1.50			Firm dark brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chert.	
		2.00		N=9 (1,2/3,2,2,2)	1.90			Soft to firm light brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to medium of mixed lithology including chert.	2
		2.50	D					Gravel band encountered at 2.30m to 2.35m bgl.	
								Becoming firm to stiff at 2.50m bgl.	
		3.00		N=0 (0,0/0,0,0,0)				Very Soft at 3.00m bgl.	3
		4.00		N=9 (1,1/2,2,3,2)					4
					4.45			End of borehole at 4.45 m	5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 2.00m bgl. 4. Hole collapsed to 2.00m. 5. No standpipe installed.





GROUNDTECH
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Borehole Log

Borehole No.

WS04

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 09/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								MADE GROUND: Grey reinforced concrete.	
		0.50	ES		0.26			MADE GROUND: Light brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
					0.65			Soft grey brown silty CLAY.	
		1.00	ES		0.80			Firm light brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to medium of mixed lithology including chert.	1
		1.20		N=7 (1,1/1,1,2,3)					
		1.50	D						
		2.00	D		2.00			Soft grey brown silty CLAY.	2
		2.00		N=4 (0,0/0,1,1,2)					
		3.00	D		3.00			Soft grey clayey SILT.	3
		3.00		N=1 (1,0/0,1,0,0)					
		4.00		N=0 (0,0/0,0,0,0)	4.45			End of borehole at 3.45 m	4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.70m bgl. 4. Hole collapsed to 2.80m. 5. No standpipe installed.





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Borehole Log

Borehole No.

WS05

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 09/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25			MADE GROUND: Grey reinforced concrete.	
		0.50	ES		0.60			MADE GROUND: Light brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		1.00	ES		1.10			MADE GROUND: Soft grey slightly sandy gravelly clay. Gravel is angular to subangular fine to coarse of mixed lithology including brick and ash.	1
		1.20	D	N=27 (2,3/6,11,7,3)	1.40			Soft grey slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to medium of mixed lithology including chert.	
		1.20			1.60			Medium dense yellow brown fine to coarse SAND and angular to rounded fine to coarse GRAVEL of mixed lithology including chert.	
		2.00	D					Very soft dark brown slightly sandy silty CLAY.	2
		2.00		N=0 (0,0/0,0,0,0)					
		3.00		N=7 (2,1/2,2,1,2)				Soft to firm at 3.00m bgl.	3
					3.45			End of borehole at 3.45 m	4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.40m bgl. 4. Hole collapsed to 1.50m. 5. No standpipe installed.





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Borehole Log

Borehole No.

WS06

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 09/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			MADE GROUND: Grey reinforced concrete.	1
		0.50	ES					MADE GROUND: Light brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		1.00	ES						
		1.20		N=1 (1,2/1,0,0,0)	1.20				
		1.50	D					Very loose to loose orange brown slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of mixed lithology including chert.	
		2.00		N=4 (1,1/1,1,1,1)					2
					2.50			Soft dark brown clayey SILT.	
		3.00		N=9 (1,1/2,2,2,3)	3.00			Soft to firm lightly grey sandy SILT.	3
		3.10	D						
		3.60	D		3.50			Firm dark brown silty CLAY.	
		4.00		N=14 (2,2/2,3,4,5)					4
					4.45			End of borehole at 4.45 m	5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 3.45m bgl. 4. Hole collapsed to 3.00m. 5. Standpipe installed to 4.00m bgl: 1.00m plain pipe, 3.00m slotted pipe.





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Borehole Log

Borehole No.

WS07

Sheet 1 of 2

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 10/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			MADE GROUND: Grey reinforced concrete.	
		0.50	ES					MADE GROUND: Light brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		0.80	ES						
		1.00	D		0.90			Firm grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chalk.	1
		1.20		N=11 (1,2/2,3,3,3)					
								<u>Becoming stiff at 1.50m bgl.</u>	
		2.00	D						2
		2.00		N=7 (2,2/2,1,2,2)					
		2.50 - 2.95	U					<u>Very high strength at 2.50m bgl.</u>	
		3.00		N=23 (2,3/4,6,6,7)				<u>Stiff at 3.00m bgl.</u>	3
		4.00		N=21 (2,3/4,4,6,7)					4
		5.00		N=23 (3,3/4,6,6,7)					5
								Continued on next sheet	

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. No groundwater encountered. 4. No standpipe installed.





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Borehole Log

Borehole No.

WS07

Sheet 2 of 2

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 10/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.45			End of borehole at 5.45 m	
									6
									7
									8
									9
									10

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. No groundwater encountered. 4. No standpipe installed.





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Borehole Log

Borehole No.

WS08

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 10/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.15			MADE GROUND: Grey reinforced concrete.	
		0.50	ES		0.60			MADE GROUND: Light brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		1.00	ES		1.00			Firm light brown mottled grey slightly gravelly sandy CLAY. Gravel is subangular to rounded fine of mixed lithology.	1
		1.20		N=0 (0,0/0,0,0,0)				Soft yellow sandy SILT.	
		1.50	D		1.40			Loose light yellow silty fine SAND.	
		2.00		N=6 (0,1/1,2,1,2)	2.20			Firm to stiff grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chalk.	2
		2.50	D						
		3.00		N=9 (1,2/2,3,2,2)					3
		4.00		N=14 (3,2/3,3,4,4)					4
					4.45				
								End of borehole at 4.45 m	5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.50m bgl. 4. Hole collapsed to 2.00m. 5. No standpipe installed.





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Borehole Log

Borehole No.

WS09

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 10/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20			0.20			MADE GROUND: Grey reinforced concrete.	1
		0.50	ES					MADE GROUND: Soft grey slightly sandy slightly gravelly clay with moderate hydrocarbon odour. Gravel is angular to subangular fine to coarse of mixed lithology.	
		1.00	ES						
		1.20		N=9 (8,4/1,3,3,2)					
		1.50	ES		1.40			Loose yellow brown silty fine SAND with moderate hydrocarbon odour.	2
		2.00		N=3 (0,0/0,1,1,1)					
		2.50	ES		2.30			Firm to stiff grey slightly sandy slightly gravelly CLAY with slight hydrocarbon odour. Gravel is subangular to rounded fine to medium of mixed lithology including chalk.	3
					3.45			End of borehole at 3.45 m	4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.00m bgl. 4. Hole collapsed to 1.30m. 5. Standpipe installed to 3.00m bgl: 1.00m plain pipe, 2.00m slotted pipe.





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Borehole Log

Borehole No.

WS10

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 10/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25			MADE GROUND: Grey reinforced concrete.	
		0.50	ES		0.65			MADE GROUND: Light brown gravelly fine to coarse sand with slight hydrocarbon odour. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		1.00	D		1.10			Firm yellow brown slightly gravelly sandy CLAY with sli hydrocarbon odour. Gravel is angular subrounded fine to medium of mixed lithology including chert.	1
		1.00	ES						
		1.20		N=50 (6,11/50 for 230mm)	1.65			Very ense yellow brown fine to coarse SAND and subangular to subrounded fine to coarse GRAVEL of mixed lithology including chert.	
								End of borehole at 1.65 m	2
									3
									4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.10m bgl. 4. Hole terminated at 1.65m bgl due to SPT refusal. 5. No standpipe installed.





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Borehole Log

Borehole No.

WS11

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 10/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.18			MADE GROUND: Grey reinforced concrete.	
		0.50	ES					MADE GROUND: Black gravelly fine to coarse sand with moderate hydrocarbon odour. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		1.00	ES						1
		1.20		N=50 (8,12/50 for 225mm)					
		1.50	ES						
		1.65		50 (12,13/50 for 170mm)					
					2.10			End of borehole at 2.10 m	2
									3
									4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.20m bgl. 4. Obstruction encountered at 2.10m bgl. 5. No standpipe installed.





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Borehole Log

Borehole No.

WS12

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 10/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			MADE GROUND: Grey reinforced concrete.	
		0.30	ES		0.40			MADE GROUND: Light brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		0.50	ES					Soft grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chalk.	
		1.00	D						1
		1.20		N=0 (0,0/0,0,0,0)					
		2.00	D						2
		2.00		N=4 (1,0/0,1,1,2)					
		3.00		N=2 (1,0/0,1,0,1)					3
		4.00		N=6 (4,2/1,1,2,2)					4
					4.45			End of borehole at 4.45 m	5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 2.30m bgl. 4. Hole collapsed to 2.50m. 5. Standpipe installed to 4.00m bgl: 1.00m plain, 3.00m slotted.





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Borehole Log

Borehole No.

WS13

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 10/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.23			MADE GROUND: Grey reinforced concrete.	
		0.50	ES		0.60			MADE GROUND: Light brown gravelly fine to coarse sand. Gravel is angular to subangular fine to coarse of mixed lithology including brick.	
		1.00	D					Soft grey silty CLAY.	1
		1.00	ES						
		1.20		N=0 (0,0/0,0,0,0)					
		2.00		N=3 (0,0/0,1,1,1)	2.30			Firm grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chalk.	2
		2.50	D						
		3.00		N=9 (0,1/2,2,3,2)					3
		4.00		N=6 (1,2/1,1,2,2)	4.45			End of borehole at 4.45 m	4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 2.00m bgl. 4. Hole collapsed to 2.20m. 5. No standpipe installed.





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Borehole Log

Borehole No.

WS14

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 11/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.23			MADE GROUND: Grey reinforced concrete.	
		0.30	ES		0.40			MADE GROUND: Soft to firm orange brown slightly sandy gravelly clay. Gravel is angular fine to coarse of mixed lithology including brick.	
		0.50	ES					MADE GROUND: Yellow brown gravelly fine to coarse sand. Gravel is angular fine to coarse of mixed lithology including brick and chert.	
					0.90			Soft grey silty CLAY.	1
		1.20		N=1 (0,0/0,0,0,1)					
		1.50	D						
		2.00		N=8 (0,1/2,1,2,3)	2.30				2
		2.50 - 2.95	U					Firm to stiff grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chalk.	
		3.00		N=15 (3,3/4,4,3,4)	3.45				3
								End of borehole at 3.45 m	4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.00m bgl. 4. Hole collapsed to 1.50m. 5. No standpipe installed.





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Borehole Log

Borehole No.

WS15

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 10/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.17			MADE GROUND: Grey reinforced concrete.	
		0.30	ES		0.40			MADE GROUND: Orange brown gravelly fine to coarse sand. Gravel is angular fine to coarse of mixed lithology including brick.	
					0.80			Dark brown slightly organic silty fine SAND.	
		1.00	D					Soft grey brown sandy CLAY.	1
		1.00	ES						
		1.20		N=25 (3,5/6,6,7,6)					
					1.50			Gravel band encountered at 1.40m to 1.45m bgl.	
		2.00	D					Firm to stiff orange brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of mixed lithology including chert.	2
		2.00		N=9 (1,2/2,3,2,2)					
		3.00		N=11 (1,2/3,3,2,3)					3
					3.45			End of borehole at 3.45 m	4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.10m bgl. 4. Hole collapsed to 2.00m. 5. No standpipe installed.





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Borehole Log

Borehole No.

WS16

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

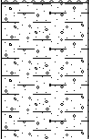
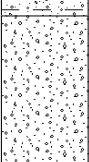
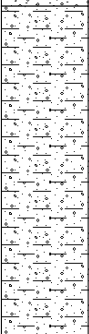
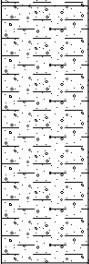
Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 11/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		0.40	ES		0.10			MADE GROUND: Black tarmac.	1			
					0.20			MADE GROUND: Grey reinforced concrete.				
								MADE GROUND: Black sandy angular fine to coarse gravel of mixed lithology including brick and bitumous gravel.				
		1.00	ES	N=33 (8,14/14,9,7,3)	0.50					Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chert.		
					1.20					Dense orange brown fine to coarse SAND and subangular to subrounded fine to coarse GRAVEL of mixed lithology including chert.		
					1.50 - 1.95		U			1.50		
		2.00 2.00	D	N=19 (2,2/4,4,5,6)	2.60						Firm to stiff grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chalk.	2
							3.00			N=24 (6,6/5,6,6,7)		
					3.45						End of borehole at 3.45 m	4
												5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.00m bgl. 4. Hole collapsed to 1.00m bgl. 5. No standpipe installed.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

WS17

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 11/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								MADE GROUND: Grey reinforced concrete.	
		0.60	ES		0.56			Soft grey slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chert.	1
		1.00	ES						
		1.20		N=0 (0,0/0,0,0,0)	1.30			Soft grey slightly sandy silty CLAY.	
		1.50 1.50 - 1.95	D U					<u>Low strength at 1.50m bgl.</u>	2
		2.00		N=3 (0,0/0,0,1,2)	2.10				
		2.50 2.50 - 2.95	D U					Firm grey slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chalk.	
		3.00		N=10 (1,2/2,3,2,3)					3
		4.00		N=12 (3,3/3,2,4,3)					4
					4.45			End of borehole at 4.45 m	5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Soils saturated from 1.50m bgl. 4. Hole collapsed to 3.00m bgl. 5. Standpipe installed to 4.00m bgl: 1.00m plain pipe, 3.00m slotted pipe.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

WS18

Sheet 1 of 2

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 11/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.17			MADE GROUND: Grey reinforced concrete.	
		0.30 - 3.00	ES		0.40			MADE GROUND: Red brown slightly sandy angular fine to coarse gravel of quartzite.	
		0.50	ES		0.70			MADE GROUND: Black slightly sandy angular fine to coarse gravel of mixed lithology including ash.	
		1.00	D					Firm grey slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chert.	1
		1.20		N=1 (1,0/0,1,0,0)				Becoming soft between 1.20m and 1.50m bgl.	
		1.50 - 1.95	U		1.50			Firm to stiff grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chalk.	2
		2.00 2.00	D	N=10 (1,1/1,3,3,3)					
		2.50 - 2.95	U						3
		3.00		N=12 (1,2/2,3,3,4)					
		4.00		N=10 (1,1/1,2,3,4)					4
		5.00	D					Continued on next sheet	5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 2.40m bgl. 4. Standpipe installed to 5.00m bgl: 1.00m plain pipe, 4.00m slotted pipe.





GROUNDTECH
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Borehole Log

Borehole No.

WS18

Sheet 2 of 2

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 11/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00		N=13 (1,1/2,3,4,4)					
					5.45			End of borehole at 5.45 m	
									6
									7
									8
									9
									10

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 2.40m bgl. 4. Standpipe installed to 5.00m bgl: 1.00m plain pipe, 4.00m slotted pipe.





GROUNDTECH
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Borehole Log

Borehole No.

WS19

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 11/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								MADE GROUND: Grey reinforced concrete.	
		0.30							
		0.50	ES		0.60			MADE GROUND: Red brown slightly sandy angular fine to coarse gravel of quartzite.	
		1.00	D					Firm brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chert.	1
		1.00	ES		1.10				
		1.20		N=22 (1,3/5,6,6,5)				Medium dense yellow slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to medium of mixed lithology including chert.	
		1.60	D		1.50			Firm brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chert.	
		2.00		N=11 (1,1/2,2,3,4)				<u>Sand and gravel band at 1.80m bgl.</u>	2
		2.50 - 2.95	U						
		3.00		N=19 (2,3/4,4,5,6)					3
					3.45			End of borehole at 3.45 m	4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.10m bgl. 4. Hole collapsed to 1.50m bgl. 5. No standpipe installed.





GROUNDTECH
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Borehole Log

Borehole No.

WS20

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 11/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.26			MADE GROUND: Grey reinforced concrete.	
		0.50	ES		0.60			MADE GROUND: Yellow gravelly fine to coarse sand. Gravel is angular fine to coarse of mixed lithology including brick.	
		1.00	ES					Firm grey silty CLAY.	1
		1.20		N=0 (0,0/0,0,0,0)				<u>Becoming soft from 1.00m bgl.</u>	
		1.50	D						
		2.00		N=3 (0,0/0,1,1,1)	1.90			Soft grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chalk.	2
		3.00	D					<u>Firm to stiff from 3.00m bgl.</u>	3
		3.00		N=18 (2,2/3,4,5,6)					
		4.00		N=24 (5,4/5,6,6,7)					4
					4.45			End of borehole at 4.45 m	5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. Groundwater encountered at 1.65m bgl. 4. Hole collapsed to 3.00m bgl. 5. No standpipe installed.





GROUNDTECH
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Borehole Log

Borehole No.

WS21

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 11/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40	ES		0.50			MADE GROUND: Brown slightly gravelly slightly sandy clayey topsoil. Gravel is angular to rounded fine to coarse of mixed lithology including brick.	
		1.00 1.00 1.20	D ES	N=18 (0,0/2,3,6,7)				Soft grey brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded fine to medium of mixed lithology including chert.	1
		1.50 - 1.95	U					Low strength at 1.50m	
		2.00		N=24 (2,2/4,7,6,7)	2.30				2
		3.00		N=24 (4,5/5,6,6,7)	2.70			Yellow fine to coarse SAND and subangular to subrounded fine to medium GRAVEL of mixed lithology including chert.	
					3.45			Firm to stiff grey slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chert.	3
								End of borehole at 3.45 m	4
									5

Remarks

1. Hand dug inspection pit to 1.20m bgl. 2. Groundwater encountered at 2.00m bgl. 3. Hole collapsed to 2.00m bgl. 4. No standpipe installed.





GROUNDTECH
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Borehole Log

Borehole No.

WS22

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 12/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30	ES		0.35			MADE GROUND: Grey sandy angular fine to coarse gravel of limestone.	
		1.00	D					Firm to stiff grey slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chalk and chert.	
		1.00	ES						
		1.20		N=16 (2,2/3,4,4,5)					
		1.50 - 1.95	U						
		2.00	D						
		2.00		N=18 (3,2/3,5,5,5)					
		3.00		N=26 (3,5/5,6,7,8)					
		4.00		N=50 (5,7/9,14,13,14)					
					4.45				
								End of borehole at 4.45 m	

Remarks

1. Hand dug inspection pit to 1.20m bgl. 2. No groundwater encountered. 3. No standpipe installed.





GROUNDTECH
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Borehole Log

Borehole No.

WS23

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 12/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	ES		0.20			MADE GROUND: Brown slightly gravelly slightly sandy clayey topsoil. Gravel is angular to rounded fine to coarse of mixed lithology including brick.	
		0.40	ES		0.50			MADE GROUND: Firm light brown slightly gravelly sandy clay. Gravel is angular to subrounded fine to medium of mixed lithology including brick.	
								Loose orange brown fine to coarse SAND and subangular to subrounded fine to medium GRAVEL of mixed lithology including chert.	1
		1.20		N=8 (2,2/2,2,2,2)					
		1.60	D		1.50			Firm orange brown slightly gravelly sandy CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chert.	
		2.00		N=20 (4,4/3,4,5,8)	2.00			Medium dense yellow slightly clayey slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to medium of mixed lithology including chert.	2
					2.50			Firm to stiff grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chalk.	
		3.00		N=32 (5,6/8,7,8,9)					3
					3.45			End of borehole at 3.45 m	
									4
									5

Remarks

1. Hand dug inspection pit to 1.20m bgl. 2. Groundwater encountered at 2.00m bgl. 3. Hole collapsed to 2.00m bgl. 4. Standpipe installed to 3.00m bgl: 1.00m plain pipe, 2.00m slotted pipe.





GROUNDTECH
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Borehole Log

Borehole No.

WS24

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 12/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40 - 4.00	ES		0.50			MADE GROUND: Brown slightly gravelly slightly sandy clayey topsoil. Gravel is angular to rounded fine to coarse of mixed lithology including brick.	
		0.90	D		1.00			Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chert.	
		1.20		N=35 (5,6/8,8,9,10)				Dense yellow fine to coarse SAND and subangular to subrounded fine to medium GRAVEL of mixed lithology including chert.	1
		1.50	D						
		2.00		N=50 (6,9/50 for 230mm)					2
					2.45			End of borehole at 2.45 m	3
									4
									5

Remarks

1. Hand dug inspection pit to 1.20m bgl. 2. No groundwater encountered. 3. No standpipe installed.





GROUNDTECH
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Borehole Log

Borehole No.

WS25

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 12/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			MADE GROUND: Grey reinforced concrete.	
		0.40	ES		0.50			MADE GROUND: Red brown slightly sandy angular fine to coarse gravel of quartzite.	
		1.00	D					Stiff brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chalk.	1
		1.00	ES						
		1.20		N=19 (2,3/4,5,5,5)				Becoming grey from 1.20m bgl.	
		1.50 - 1.95	U					High strength at 1.50m bg	
		2.00	D					Gravel becoming fine to coarse from 2.00m bgl.	2
		2.00		N=21 (3,3/4,5,6,6)					
		3.00		N=50 (9,11/50 for 245mm)					3
					3.45			End of borehole at 3.45 m	4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. No groundwater encountered. 4. Standpipe installed to 3.00m bgl: 1.00m plain pipe, 2.00m slotted pipe.





GROUNDTECH
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Borehole Log

Borehole No.

WS26

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 12/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.16			MADE GROUND: Grey reinforced concrete.	
								MADE GROUND: Red brown slightly sandy angular fine to coarse gravel of quartzite.	
		0.50	ES		0.60				
					0.90			Yellow fine to coarse SAND and subangular to subrounded fine to medium GRAVEL of mixed lithology including chert.	
		1.00	ES					Stiff brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chalk.	1
		1.20		N=14 (2,3/4,3,3,4)				Becoming grey from 1.50m bgl.	
		2.00		N=24 (3,4/4,5,7,8)					2
		3.00	D						3
		3.00		N=50 (8,10/50 for 245mm)					
					3.45				
								End of borehole at 3.45 m	4
									5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. No groundwater encountered. 4. No standpipe installed.





GROUNDTECH
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Borehole Log

Borehole No.

WS27

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 12/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	ES		0.21			MADE GROUND: Grey reinforced concrete.	
								MADE GROUND: Red brown slightly sandy angular fine to coarse gravel of quartzite.	
					0.60				
					0.80			MADE GROUND: Multicoloured angular to rounded medium gravel of mixed lithology.	
								End of borehole at 0.80 m	

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 0.80m bgl, suspected service encountered. 3. No groundwater encountered.





GROUNDTECH
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Borehole Log

Borehole No.

WS28

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 12/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20			MADE GROUND: Black tarmac.	
		0.50	ES		0.60			MADE GROUND: Orange brown sandy angular fine to coarse gravel of mixed lithology including brick.	
		1.00	ES					Yellow fine to coarse SAND and subangular to subrounded fine to medium GRAVEL of mixed lithology including chert.	1
		1.20		N=13 (5,7/5,3,3,2)	1.20				
		1.50 - 1.95	U					Firm to stiff brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chert. <u>Low strength at 1.50m</u>	
		2.00		N=13 (3,2/3,3,4,3)				<u>Becoming stiff from 1.70m bgl.</u>	2
					2.45			End of borehole at 2.45 m	3
									4
									5

Remarks

1. Hand dug inspection pit to 1.20m bgl. 2. Groundwater encountered at 1.00m bgl. 3. Hole collapsed to 1.20m bgl. 4. Standpipe installed to 2.00m bgl: 1.00m plain pipe, 1.00m slotted pipe.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

WS29

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

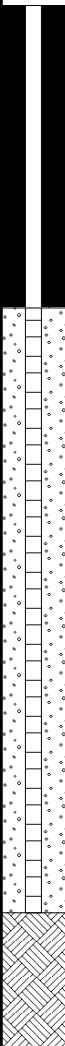
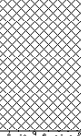
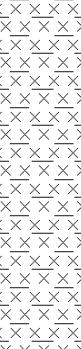
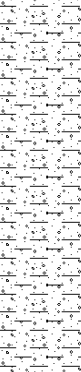
Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 13/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.16			MADE GROUND: Grey reinforced concrete.	
								MADE GROUND: Red brown slightly sandy angular fine to coarse gravel of quartzite.	
		0.50	ES		0.60				
								Yellow fine to coarse SAND and subangular to subrounded fine to medium GRAVEL of mixed lithology including chert.	
		1.00	ES		1.00				1
		1.20		N=1 (0,0/0,0,0,1)				Soft yellow brown clayey SILT.	
		1.50	D						
		2.00 2.00	D	N=2 (0,0/0,0,1,1)	2.20				2
		2.50 - 2.95	U					Firm grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chalk.	
		3.00		N=8 (1,2/2,2,2,2)					3
					3.45			End of borehole at 3.45 m	

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 2.20m bgl. 3. Groundwater encountered at 2.00m bgl. 4. Hole collapsed to 2.00m bgl. 5. Standpipe installed to 3.00m bgl: 1.00m plain pipe, 2.00m slotted pipe.





GROUNDTECH
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Borehole Log

Borehole No.

WS30

Sheet 1 of 1

Project Name: BOWMAN'S MILL

Project No.
19271

Co-ords: -

Hole Type
WS

Location: ICKLEFORD

Level:

Scale
1:25

Client: BOWMAN'S INGREDIENTS

Dates: 13/12/2019 -

Logged By
SF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15	ES		0.12 0.20			MADE GROUND: Grey reinforced concrete.	
		0.50	ES		0.60			MADE GROUND: Yellow gravelly fine to coarse sand. Gravel is angular fine to coarse of mixed lithology including brick. Firm brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chert.	
		1.00	D		0.90			Yellow brown silty fine SAND.	
		1.20		N=2 (1,0/1,1,0,0)				Stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to rounded fine to medium of mixed lithology including chert.	1
		1.50 - 1.95	U		1.50				
		2.00		N=13 (1,2/2,3,4,4)				Stiff grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium of mixed lithology including chalk.	2
		3.00		N=38 (6,7/8,9,9,12)					3
		3.70		N=50 (8,10/50 for 245mm)	4.15				4
								End of borehole at 4.15 m	5

Remarks

1. Concrete surfacing cored out. 2. Hand dug inspection pit to 1.20m bgl. 3. No groundwater encountered. 4. No standpipe installed.



GROUND GAS MONITORING RESULTS

GROUNDTECH
CONSULTING

Pressure Trend:	Steady	Weather:	Overcast			Equipment:	GFM 436
Ambient:	O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)	
Start	19.9	0.0	0.0	0.0	0.0	0.0	
Finish	19.9	0.0	0.0	0.0	0.0	0.0	

PERMANENT GROUND GAS MONITORING FORM



SITE NAME:	BOWMANS MILL, ICKLEFORD	ENGINEER:	Steffan Mullen
CLIENT:	SPAWFORTH'S	DATE:	24/01/2020
JOB NO:	19271		

Pressure Trend:	Falling	Weather:	Overcast			Equipment:	GFM 436	
Ambient:	O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)		
Start	20.3	0.0	0.0	0.0	0.0	0.0		
Finish	20.4	0.0	0.0	0.0	0.0	0.0		

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q _{hg} CO ₂ (l/hr)	Q _{hg} CH ₄ (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady						
WS02	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N	N/A
WS06	0.2	0.2	0.03	0.0	0.0	0.0	1.6	0.8	17.2	19.3	0.0	0.0	0.0	0.0	0.0032	0.0000	1017	-	N	0.85
WS09	0.0	0.0	0.00	0.0	0.0	0.0	0.1	0.1	19.6	19.6	0.0	0.0	10.0	10.0	0.0001	0.0000	1017	-	N	0.60
WS12	0.0	0.0	0.00	0.0	0.0	0.0	0.4	0.3	20.1	20.0	0.0	0.0	0.0	0.0	0.0004	0.0000	1015	-	N	1.60
WS17	-0.7	0.0	-0.04	0.0	0.0	0.0	0.0	0.0	20.3	20.3	0.0	0.0	0.0	0.0	0.0000	0.0000	1015	-	N	0.26
WS18	0.0	0.0	0.00	0.0	0.0	0.0	0.1	0.1	20.1	20.1	0.0	0.0	0.0	0.0	0.0001	0.0000	1015	-	N	0.96
WS23	0.7	0.7	0.11	0.0	0.0	0.0	0.8	0.7	18.9	18.8	0.0	0.0	0.0	0.0	0.0056	0.0000	1014	-	N	0.49
WS25	0.0	0.0	0.00	0.0	0.0	0.0	0.1	0.1	20.3	20.3	0.0	0.0	0.0	0.0	0.0001	0.0000	1015	-	N	0.75
WS28	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.0	20.4	20.4	0.0	0.0	0.0	0.0	0.0000	0.0000	1014	-	N	2.00
WS29	0.0	0.0	0.00	0.0	0.0	0.0	1.4	1.4	19.1	19.1	0.0	0.0	0.0	0.0	0.0014	0.0000	1013	-	N	0.75

Notes: WS02 not monitored due to being obstructed by a car.

GROUNDTECH
CONSULTING

Pressure Trend:	Rising	Weather:	Overcast			Equipment:	GFM 436	
Ambient:	O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)		
Start	19.9	0.0	0.0	0.0	0.0	0.0		
Finish	19.7	0.0	0.0	0.0	0.0	0.0		

GROUNDTECH
CONSULTING

Pressure Trend:	Rising	Weather:	Overcast			Equipment:	GFM 436	
Ambient:	O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)		
Start	20.5	0.0	0.0	0.0	0.0	0.0		
Finish	20.5	0.0	0.0	0.0	0.0	0.0		

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q _{hg} CO ₂ (l/hr)	Q _{hg} CH ₄ (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady						
WS02	0.0	0.0	0.00	0.0	0.0	0.0	0.5	0.2	20.0	20.4	0.0	0.0	0.0	0.0	0.0005	0.0000	1012	-	N	1.31
WS06	2.7	0.5	0.36	0.0	0.0	0.0	0.8	0.8	17.7	17.7	0.0	0.0	0.0	0.0	0.0216	0.0000	1010	-	N	0.42
WS09	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.0	19.9	19.9	0.0	0.0	10.0	10.0	0.0000	0.0000	1011	-	N	1.01
WS12	0.0	0.0	0.00	0.0	0.0	0.0	0.2	0.2	19.5	19.5	0.0	0.0	0.0	0.0	0.0002	0.0000	1009	-	N	0.70
WS17	17.4	17.5	2.33	0.0	0.0	0.0	0.0	0.0	19.9	19.9	0.0	0.0	0.0	0.0	0.0000	0.0000	1008	-	N	0.63
WS18	0.3	0.3	0.04	0.0	0.0	0.0	0.3	0.1	19.8	20.2	0.0	0.0	0.0	0.0	0.0009	0.0000	1009	-	N	0.78
WS23	0.0	0.0	0.00	0.0	0.0	0.0	0.1	0.0	20.1	20.3	0.0	0.0	10.0	0.0	0.0001	0.0000	1009	-	N	2.27
WS25	0.2	0.2	0.03	0.0	0.0	0.0	1.3	0.8	18.9	19.7	0.0	0.0	0.0	0.0	0.0026	0.0000	1008	-	N	0.38
WS28	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.0	20.4	20.4	0.0	0.0	0.0	0.0	0.0000	0.0000	1009	-	N	0.56
WS29	0.0	0.0	0.00	0.0	0.0	0.0	0.2	0.2	19.9	19.9	0.0	0.0	0.0	0.0	0.0002	0.0000	1007	-	N	1.03
Notes:																				

GROUNDTECH
CONSULTING

Pressure Trend:	Falling	Weather:	Overcast			Equipment:	GFM 436	
Ambient:	O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)		
Start	20.3	0.0	0.0	0.0	0.0	0.0		
Finish	20.3	0.0	0.0	0.0	0.0	0.0		

Notes: WS02 Unable to monitor due to a vehicle obstruction. WS18 Not monitored due to water at GL

GROUNDTECH
CONSULTING

Pressure Trend:	Falling	Weather:	Overcast			Equipment:	GFM 436	
Ambient:	O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)		
Start	20.3	0.0	0.0	0.0	0.0	0.0		
Finish	20.2	0.0	0.0	0.0	0.0	0.0		

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q _{hg} CO ₂ (l/hr)	Q _{hg} CH ₄ (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady						
WS02	0.0	0.0	0.00	0.0	0.0	0.0	0.3	0.3	19.8	19.8	0.0	0.0	0.0	0.0	0.0003	0.0000	989	-	N	1.05
WS06	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0	0.0	N/A	N/A	N/A	N/A	N	GL
WS09	0.0	0.0	0.00	0.0	0.0	0.0	0.0	0.0	20.2	20.2	0.0	0.0	0.0	0.0	0.0000	0.0000	989	-	N	0.65
WS12	-0.3	-0.4	-0.02	0.0	0.0	0.0	0.2	0.2	20.0	20.0	0.0	0.0	0.0	0.0	0.0002	0.0000	989	-	N	0.36
WS17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	GL
WS18	0.0	0.0	0.00	0.0	0.0	0.0	0.3	0.2	20.0	19.7	0.0	0.0	0.0	0.0	0.0003	0.0000	989	-	N	0.65
WS23	0.0	0.0	0.00	0.0	0.0	0.0	0.1	0.1	20.1	20.1	0.0	0.0	0.0	0.0	0.0001	0.0000	988	-	N	1.96
WS25	0.0	0.0	0.00	0.0	0.0	0.0	0.9	0.7	19.2	19.1	0.0	0.0	0.0	0.0	0.0009	0.0000	989	-	N	0.75
WS28	0.0	0.0	0.00	0.0	0.0	0.0	0.2	0.0	20.3	19.9	0.0	0.0	0.0	0.0	0.0002	0.0000	989	-	N	0.54
WS29	0.0	0.0	0.00	0.0	0.0	0.0	0.3	0.3	20.2	19.8	0.0	0.0	0.0	0.0	0.0003	0.0000	989	-	N	0.99
Notes:																				

LIMITATIONS

Limitations

This contract was completed by Groundtech Consulting on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with due skill and care, taking into consideration the project brief provided, project objectives, agreed scope of works, prevailing site conditions and budget allocation.

Other than that defined in the paragraph above, Groundtech Consulting provides no other accountability or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted industry practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Groundtech Consulting. A third party who relies on this report, does so at their own and sole risk and no liability to such parties is provided by Groundtech Consulting.

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Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable due to its heterogeneous properties and as investigation exploratory locations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater conditions, together with other constraints such as the position of any existing structures and underground utilities. Geo-Environmental testing was carried out for a limited number of parameters [as stipulated in the contract] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawings provided in this report are not meant to be an accurate base plan, but are preliminary and used to present the general relative locations of features on, and surrounding, the site.



Ground Investigation & Contamination Assessment

Former Bowman's Mill, Arlesey Road, Ickleford

23030-XPL-XX-XX-T-GO-501

April 2024

Revision C01

Revision History

Rev.	Date	Purpose	Prepared	Checked	Approved
C01	12.04.24	-	M Henderson	M King	M Henderson

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Appendix A – Exploratory Hole Logs

Appendix B – Chemical Laboratory Test Results

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Appendix E – Vapour Protection Standards

Appendix F – Defining Risk

1 Executive Summary

<i>Details</i>	<i>Summary of Main Text</i>
Introduction	This Ground Investigation and Contamination Risk Assessment report has been prepared for Logie Property Co. Ltd. The report relates to two historic oil spill zones associated with (1) a mobile compressor unit in the west and (2) an electricity transformer compound in the east.
Site Description	The site comprised the former Bowman's mill on Arlesey Road, Ickleford, which at the time of the investigation was vacant and disused.
Geology and hydrogeology	Superficial deposits of Alluvium and Glaciofluvial Deposits are Secondary A aquifers and unconfined at this location. These are overlying the Lowestoft Formation and a bedrock of the Gault Formation, which are both unproductive strata. The site is not within an SPZ.
Hydrology	The River Oughton runs through the site and is directly downgradient of a transformer oil spill zone in the east.
Investigation findings	The investigation found no evidence of soil or groundwater contamination that could have come from either of the two historic oil spills. Although low concentrations of some hydrocarbon fractions were detected in made ground soils at a depth of 0.5m beside the mobile compressor unit (WS101) they were not of a type used in a compressor unit. In addition, concentrations did not exceed residential human health screening levels and were also not present in the deeper alluvial clay layer. PCBs were not detected in soil or groundwater. Hydrocarbons and PCBs were not present above controlled waters screening levels in soil or groundwater samples from the boreholes located downgradient of the transformer compound in Building 10 (WS102-WS105). No remediation of hydrocarbons or PCBs in soil or groundwater beneath the historic spill zones is required.
Recommendations	Contractors should remain vigilant during demolition for evidence of free phase oils, especially when removing foundations or lifting slabs.

2 Introduction

2.1 General

This Ground Investigation and Contamination Assessment report has been prepared by Xplor Environmental (Xplor) for Logie Property Co. Ltd.

2.2 Scope of Work

The terms of reference for the work were set out in the Xplor proposal 23030-XPL-XX-XX-T-GO-101-C01 dated 07 March 2024.

2.3 Purpose

The purpose of the investigation was to establish if two recent oil spills on site have caused contamination of either soil or groundwater. The two areas in question were as follows:

- A mobile compressor unit adjacent to Building 41 in the west, and;
- An electricity transformer compound in Building 10 in the east.

2.4 Technical Approach

The report has been prepared using data from a ground investigation, involving sampling from boreholes and chemical laboratory testing.

Competent persons have been involved in the preparation and checking of the report.

2.5 Future Development

The assessment is based on future residential land use.

3 Site Information and Setting

3.1 Site Location

The site is located on Arlesey Road, Ickleford, Hertfordshire SG5 3UN, approximately 2km north of Hitchin.

The National Grid Reference for the site is 518218, 231295. A location plan is presented as Figure 1.

3.2 Site Description

The 3.7 hectare site is in two parts, comprising the former Bowman's Mill in the north and a strip of managed grassland in the south. These two parts are separated by the channel of the River Oughton, which flows approximately from west to east.

At the time of the investigation the mill site contained numerous vacant buildings and large silos. Between these structures were site roads, parking zones and yards, most of which were surfaced with concrete.

3.2.1 Area 1 (Mobile Compressor Unit)

Area 1 was located adjacent to the southwest corner of Building 41 (a warehouse) and contained a disused mobile compressor unit. Staining of the ground and a residue of oily sand used as an absorbent were visible. The area was surfaced with concrete and a gulley drain was approximately 4m away downgradient.

3.2.2 Area 2 (Electricity Transformer Compound)

Area 2 comprised the yard located north and east of Buildings 8-10 and 12-13. Based on information provided by the site manager, Building 10 contained three redundant electricity transformers manufactured between 1969 and 2009 (PCB use in transformers was banned in the UK after 1981). The yard was surfaced with a mix of concrete and macadam and is directly adjacent the river.

3.3 Geology

The British Geological Survey (BGS) online geology viewer indicates the site is underlain by superficial Alluvium (clay, silt, sand and gravel) and Glaciofluvial Deposits (sand and gravel). The Lowestoft Formation (diamicton) may be present beneath these deposits.

The underlying bedrock is of the Gault Formation (mudstone).

3.4 Hydrogeology

The superficial Alluvium and Glaciofluvial Deposits are a Secondary A aquifer. The underlying Lowestoft Formation and bedrock Gault Formation are unproductive strata (non-aquifers).

The site is not within a groundwater Source Protection Zone (SPZ).

3.5 Hydrology

The River Oughton runs through the site, approximately from west to east.