



Solutions To Your Contaminated Land Issues

Date: 5th June 2025

Beaumont Business Park, Woodlands Road, Mere

Preliminary Findings Of Intrusive Investigation

Groundwater Monitoring Summary

Monitoring took place on the above site to determine depth to groundwater and variability. This took place of five occasion between December 2024 and May 2025. 7 no. boreholes had been advanced on the site with two existing boreholes located (figure 1). Boreholes were advanced to a maximum depth of 5m below ground level. All boreholes had installs as per the attached logs. Details of the installation are shown on the attached borehole logs.

Strata

The general sequence was MADE GROUND underlain by CLAY. MADE GROUND was present in all locations except WS01 and WS03. This stratum does not necessarily imply potential contamination but rather it indicates the presence of anthropogenic materials or reworked natural materials e.g. WS06 comprised limestone cobbles and reworked clay. Where present, made ground extended to a depth of between 0.4-0.8m below ground level (bgl), the deepest occurring in WS05. CLAY comprised a soft to stiff grey material occasionally with inclusions of coarser material such as gravel or sand.

Groundwater observations during groundworks

Groundwater was encountered within the made ground occurring as seepage from the base. In the case of WS02, water was present within the subbase from 0.3m below ground level. In WS07, whilst made ground extended to 0.6m bgl, seepage occurred at 0.3m. Water was absent in WS06 where the made ground appeared to be reworked natural materials such as clay and cobbles. Water was absent in boreholes where made ground was not present and we would conclude that the groundwater represents a perched layer generally within the more granular or permeable materials. This overlay clay which represent a low permeability aquiclude and hence we would consider the water to be perched. This is evidenced by the lack of water strike in other locations.

Monitoring Observations

Groundwater depth was monitored on five separate occasions. On the final occasion, borehole depth was recorded. Table 1 below shows the total borehole depth recorded during drilling on 27th November 2024 compared to the depth recorded during the final monitoring round on 7th May 2025.

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Location	Depth initial (m)	Depth final (m)
WS1	5	4.93
WS2	3	2.77
WS3	3	2.96
WS4	3	2.78
WS5	3	2.855
WS6	3	3.06
WS7	3	2.94
BH01	/	4.12
BH02	/	4.93

Table 1. Well depth recorded during drilling compared to final monitoring round.

This indicates that little silting of the well occurred in the majority of cases the differences in depth may be within margin of error. In the case of BH01 and BH02 no initial data was available.

During monitoring in December, January and February water was noted to be present in the well covers above the level of the monitoring well install in some locations as recorded in table 2.

Date	Location	Notes
19/12/2024	WS4	Water above well level in cover
	WS5	Water at top of well.
30/01/2025	WS1	Water in cover to top
	WS3	Water at top of install
	WS4	Water inside cover to top.
26/02/2025	WS1	Water in cover
	WS2	Water in cover to top of well.
	WS3	Water to top of well
	WS4	Water in well to top of cover.
	WS6	Water flows into well on removing bung continuously

Table 2. Monitoring well observations.

It was also noted during the first monitoring round in December that in BH02 a sulphurous odour was present on opening indicative of anaerobic conditions. In BH01 the water rose on removing the bung and silt was noted at the base retained on the probe. Samples were taken from a limited number of wells BH01, WS02 and WS05 and this was discussed in the previous summary. An attempt was made to recover samples from WS06, but despite using low flow techniques, the well was pumped dry and it was not possible to stabilise the well conditions to take a sample prior to this. The well measured subsequently to determine whether water levels had recovered sufficiently to allow sampling, but it remained dry.

Monitoring Data

A summary of the monitoring data is presented below. Where water level was above the well install i.e. the well was flooded, depth is recorded as 0m below ground level (bgl). The data is summarised in table 3.

Date	WS01	WS02	WS03	WS04	WS05	WS06	WS07	BH01	BH02
19/12/2024	1.19	0.31	0.15	0	0	1.17	0.38	0.34	0.815
30/01/2025	0.838	0.1	0.16	0	0.335	2.195	0.4	0.33	3.23
26/02/2025	0.83	0	0	0	0.305	0.61	0.27	0.1	2.39
24/03/2025	1.39	0.495	0.425	0.68	0.47	0.445	0.49	0.47	1.65
07/05/2025	1.45	0.99	0.76	0.98	0.97	0.605	0.48	0.51	1.155

Table 3. Summary of groundwater monitoring data.

A graphical representation of the data illustrates the overall variability in groundwater levels (Chart 1).

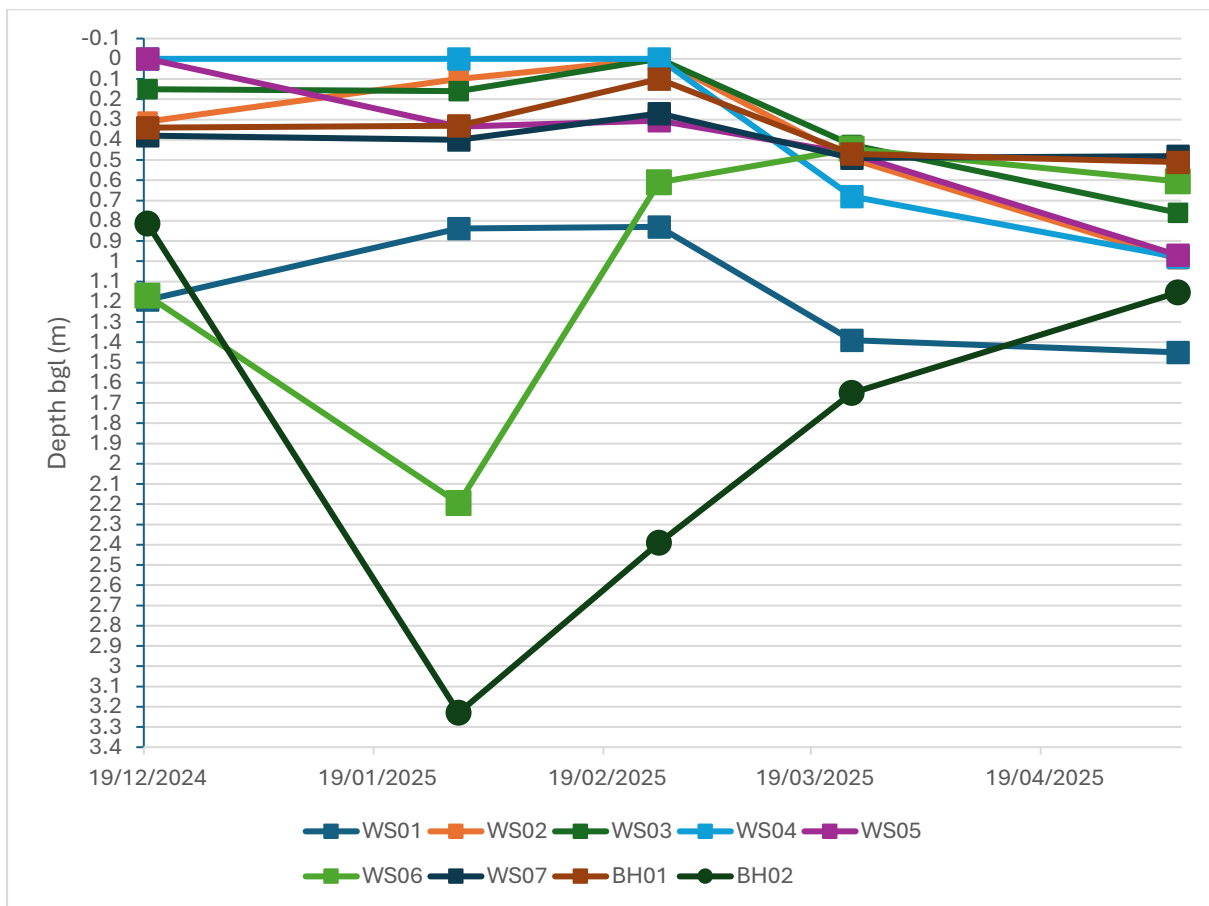
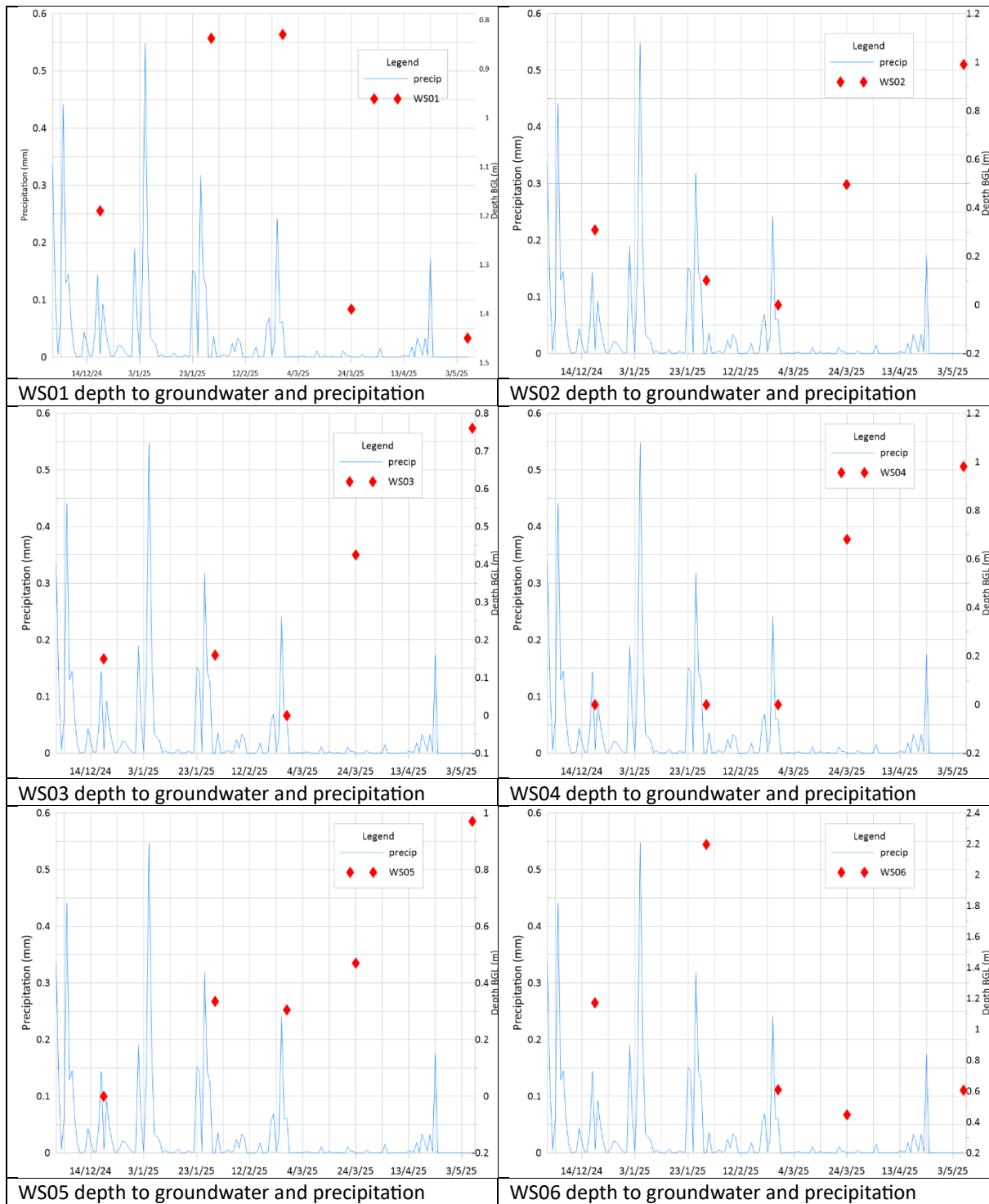
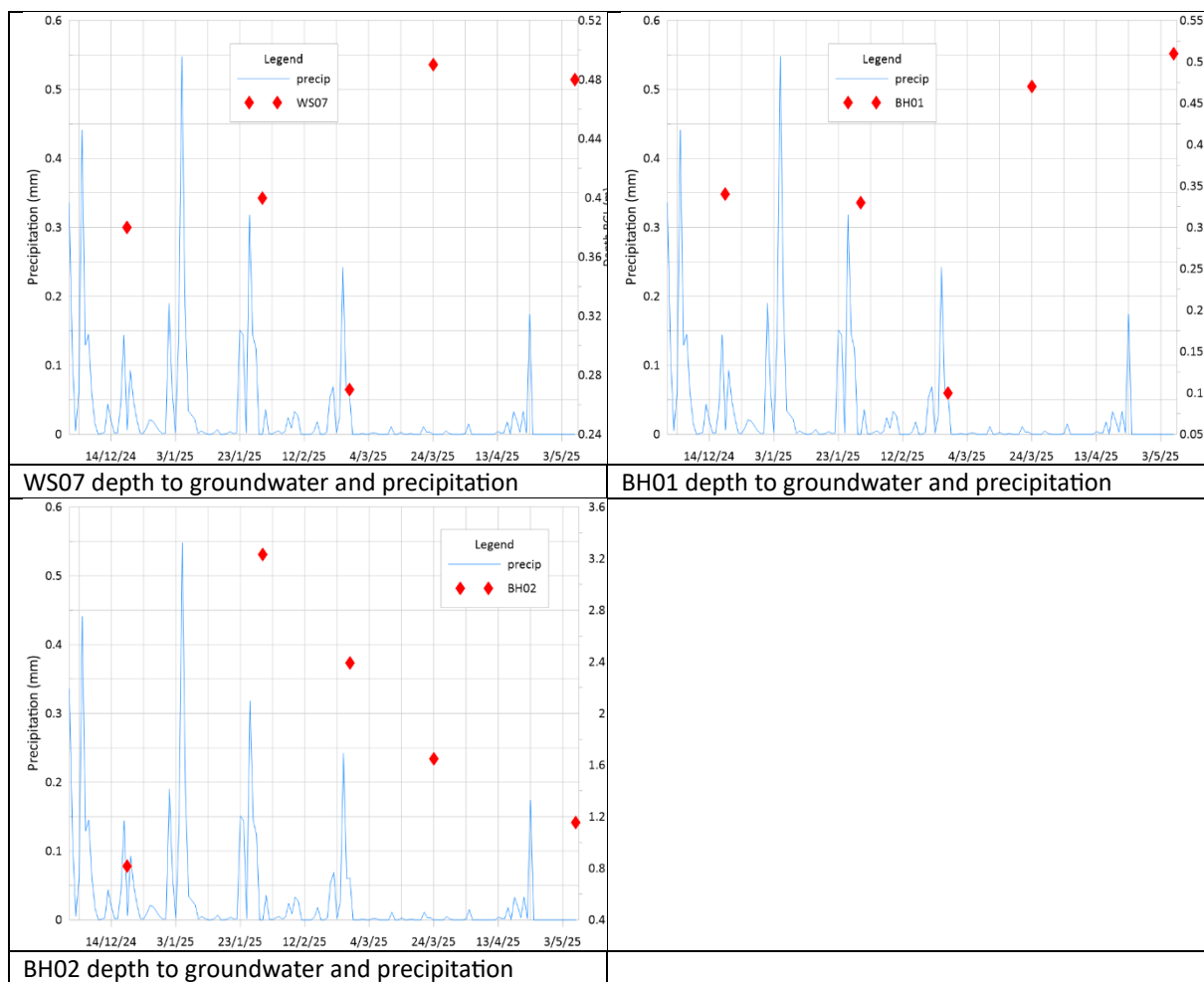


Chart 1. Groundwater levels.

This indicates that in the majority of locations that depth to water decreased up to the February monitoring round or represented flood monitoring and then increased. However, In the case of BH01, BH02 and WS06, the opposite relationship is demonstrated with this particularly apparent in BH02. Except for the latter boreholes, this appears to be in response to rainfall preceding monitoring events. This is demonstrated by comparing rainfall data with depth to water in the wells.





Charts 2-9. Groundwater depth compared to precipitation.

This demonstrates that in the majority of boreholes, depth to water is very responsive to precipitation over the period preceding monitoring with the exception of BH01, BH02 and WS06.

Discussion

It is evident from the borehole logs that a shallow layer of made ground is present which is underlain by clay. Whilst this initially had coarse components present in some locations, this was then underlain by clays without subsidiary sands or gravels with the exception of WS1 where occasional fine sand partings were encountered at 4-5m below ground level. Groundwater strikes were not recorded with the exception of seepage from the made ground and water within subbase which made up part of the made ground in WS2.

The ground was noted to be very wet on the surface with localised flooding on the site. This was particularly notable during the February monitoring round following heavy rain the previous day and during the morning prior to the site visit. Surface water decreased substantially during subsequent visit with none apparent during the final visit following a period of dry weather. These observations are indicative of very low permeability strata underlying the made ground which due to the higher proportion of granular materials present has a greater permeability. The water encountered on the surface if therefore perched.

The borehole data generally indicates that the groundwater encountered was responsive to rainfall. Given that water was not encountered in the boreholes when drilling except for that encountered in the made ground we would contend that this is evidence that the water in the monitoring wells originated in the overlying made ground as opposed to in the deeper clay strata. BH02 and WS06 however appear to contradict this. We would hypothesise that this is due to a lag in response time to precipitation. In the case of BH2, this is located in an area

of substantial hardstanding with buildings adjacent. WS06 is located adjacent to an area of hardstanding with hardstanding to the north with the culverted land drain occurring to the south. In both cases, the location the boreholes and the immediately surrounding environment appears to have reduced the response time to rainfall events. Consequently, water in the strata overlying the clay was not able to enter the monitoring wells which occurred in other locations despite section of plain pipe and bentonite seal. It was notable in WS6 that during sampling despite using low flow techniques with the pump set to the lowest recovery setting achievable the well pumped dry indicating that whilst the source of water in the well was from the overlying strata, ingress was very slow.

The data therefore indicates that water encountered in boreholes originates in shallow strata i.e. it is perched with the underlying clay strata not representing a groundwater body. The stratum is indicated to have a very low permeability and therefore will prevent movement of water through to lower strata i.e. it acts as an aquiclude.

Dr. Richard Wesson

Wesson Environmental Ltd

Figures

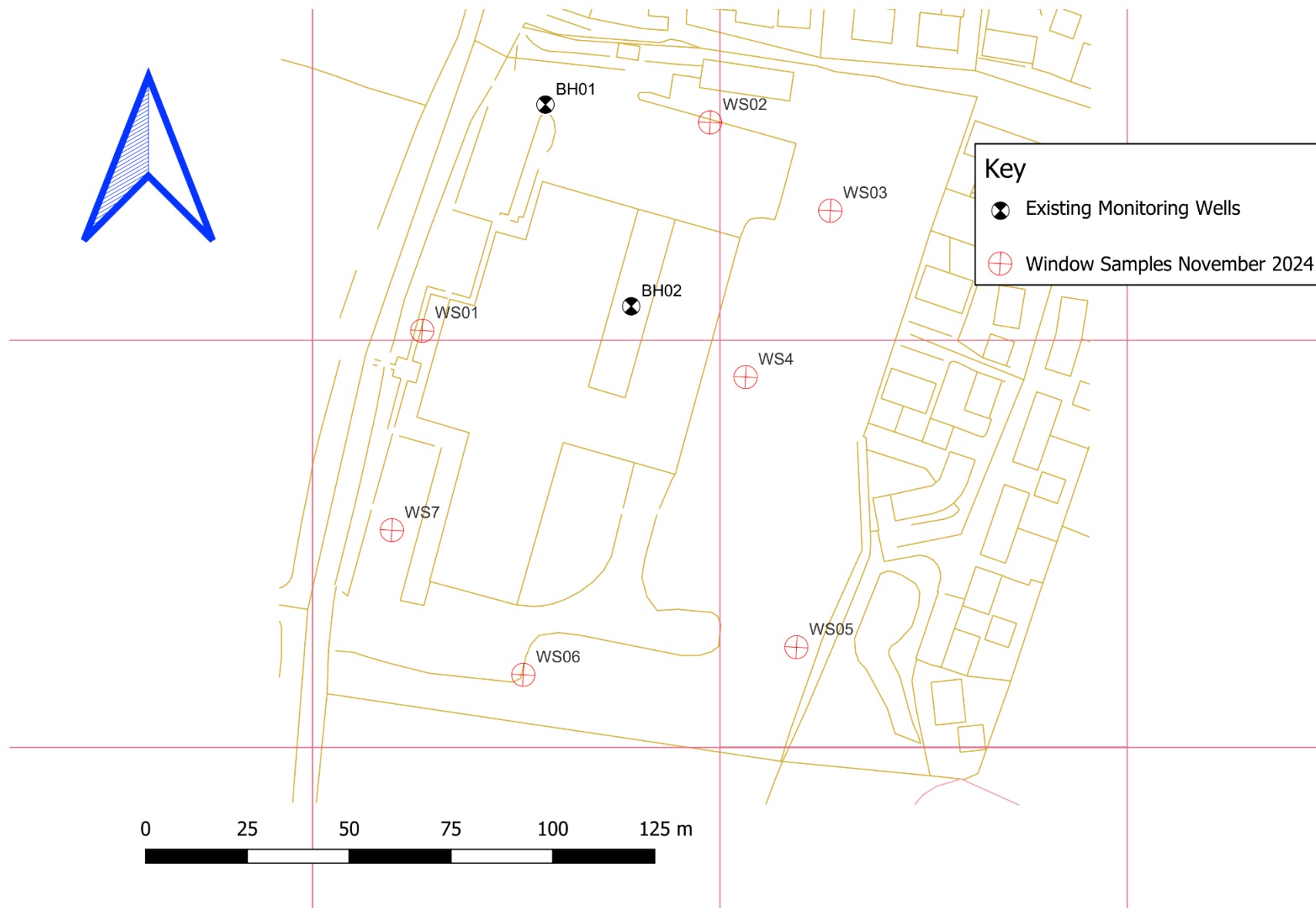
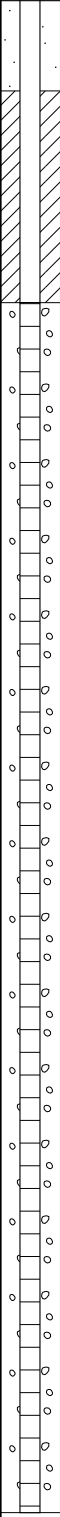
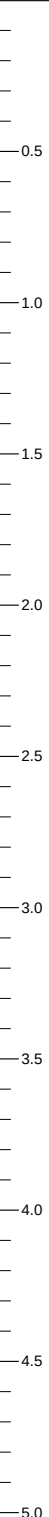
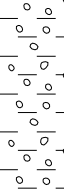
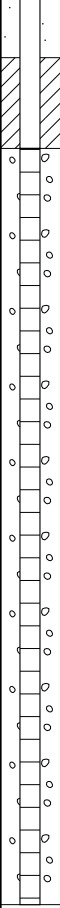
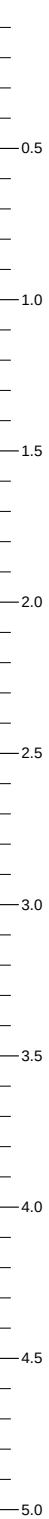
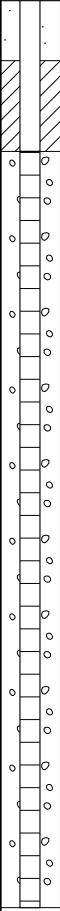
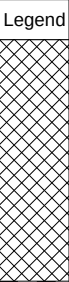
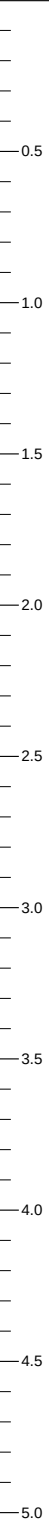


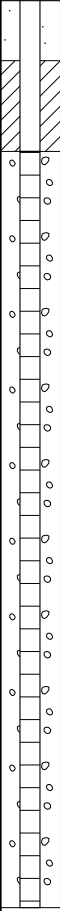
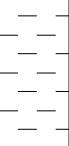
Figure 1. Monitoring well locations

Borehole Logs

				Dynamic (Windowless) Sampler WS01 Sheet 1 of 1											
				Hole Type WLS		Easting -2.26	Northing 51.08	Ground Level (m)	Scale 1:25						
				Project Name Mere		Project No. 001REHOP2	Start Date 2024-11-27	End Date 2024-11-27							
Client Redcliffe Homes				Consultant Richard Wesson		Contractor Jackson Drilling									
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata								
		Depth (m)	Type/ Ref	Results			Legend	Description							
		0.20-0.30	D			(0.10) 0.10		TOPSOIL. Brown slightly sandy occasionally gravelly clay with rootlets.							
		1.00-1.10	D				(0.70)			Soft brown gravelly CLAY. Gravels fine subrounded chalk and medium tabular flint.					
							0.80								
							(1.00)					Soft grey CLAY with occasional orange sand partings.			
													1.80		Firm grey CLAY.
							2.60					Stiff grey CLAY.			
							(1.40)						Stiff grey CLAY with occasional fine sand partings.		
														4.00	
														(1.00)	
5.00		End of Borehole at 5.00m													
Remarks							Method, Plant, Stability, Dimensions		Logger						

				Dynamic (Windowless) Sampler WS04 Sheet 1 of 1					
				Hole Type WLS		Easting -2.26	Northing 51.08	Ground Level (m)	Scale 1:25
				Project Name Mere		Project No. 001REHOP2		Start Date 2024-11-28	End Date 2024-11-28
Client Redcliffe Homes				Consultant Richard Wesson		Contractor Jackson Drilling			
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata		
		Depth (m)	Type/ Ref	Results			Legend	Description	
		0.20-0.30	D			(0.10)		TOPSOIL. Brown slightly sandy occasionally gravelly clay with rootlets.	
						0.10		MADE GROUND. Reworked brown clay with occasional gravel and rare masonry with plastic at base. Seepage from base.	
		0.60-0.70	D			(0.50)			0.5
						0.60		Soft brown CLAY.	
									1.0
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									

				Dynamic (Windowless) Sampler WS05 Sheet 1 of 1						
				Hole Type WLS		Easting -2.26	Northing 51.08	Ground Level (m)	Scale 1:25	
				Project Name Mere		Project No. 001REHOP2		Start Date 2024-11-28	End Date 2024-11-28	
Client Redcliffe Homes				Consultant Richard Wesson		Contractor Jackson Drilling				
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata			
		Depth (m)	Type/ Ref	Results			Legend	Description		
		0.20-0.30	D			(0.80)		MADE GROUND. Reworked clay with layer of occasional ash and suspected asbestos fragments at 0.7-0.8m. Seepage at 0.8m.		
		0.70-0.80	D			(0.80)		Soft brown CLAY with occasional coarse tabular flint gravel.		
						1.00		Soft brown CLAY.		
						(2.00)				
						3.00		End of Borehole at 3.00m		
Remarks								Method, Plant, Stability, Dimensions		Logger

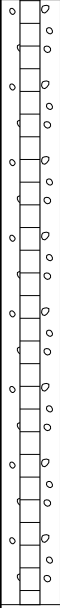
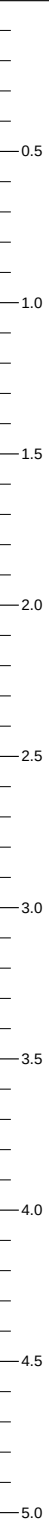
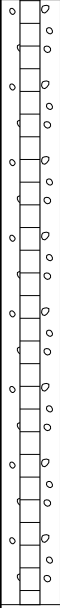
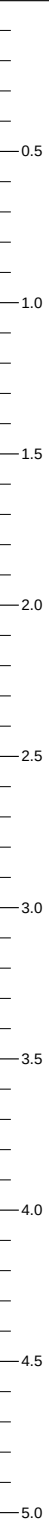
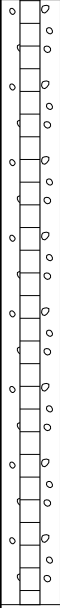
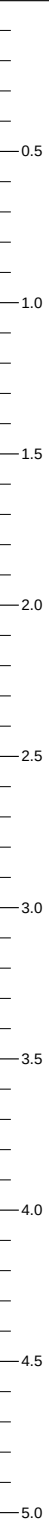
					Dynamic (Windowless) Sampler WS06 Sheet 1 of 1																
Hole Type WLS		Easting -2.26		Northing 51.08		Ground Level (m)		Scale 1:25													
Project Name Mere			Project No. 001REHOP2			Start Date 2024-11-28		End Date 2024-11-28													
Client Redcliffe Homes				Consultant Richard Wesson				Contractor Jackson Drilling													
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata														
		Depth (m)	Type/ Ref	Results			Legend	Description													
		0.40-0.50	D			0.40		MADE GROUND. Limestone cobbles with reworked clay.													
								0.40		Firm brown CLAY.											
										0.90		Soft grey gravelly CLAY. Gravel fine sub round chalk and subangular flint									
												1.10		Soft grey CLAY							
														1.60		Firm grey CLAY.					
																3.00	End of Borehole at 3.00m				

Remarks

Method, Plant, Stability, Dimensions

Logger

Created using Pebble Geo

				Dynamic (Windowless) Sampler WS07 Sheet 1 of 1																																												
Hole Type WLS		Easting -2.26		Northing 51.08		Ground Level (m)		Scale 1:25																																								
Project Name Mere				Project No. 001REHOP2		Start Date 2024-11-28		End Date 2024-11-28																																								
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<table><tr><td rowspan="2">Inst/ Backfill</td><td rowspan="2">Water Levels</td><td colspan="3">Samples and Tests</td><td rowspan="2">Level (m)</td><td rowspan="2">Depth (m)</td><td colspan="2">Strata</td><td rowspan="2"></td></tr><tr><td>Depth (m)</td><td>Type/ Ref</td><td>Results</td><td>Legend</td><td>Description</td></tr><tr><td rowspan="3"></td><td rowspan="3"></td><td rowspan="3">0.60-0.70</td><td rowspan="3">D</td><td rowspan="3"></td><td rowspan="3"></td><td rowspan="3">(0.60)</td><td></td><td>MADE GROUND. Sub base of sand and gravel. Seepage at 0.3m.</td><td rowspan="3"></td></tr><tr><td></td><td>Grey sandy clayey GRAVEL. Gravel fine sub angular.</td></tr><tr><td></td><td>Firm grey CLAY.</td></tr><tr><td colspan="6"></td><td>3.00</td><td colspan="2">End of Borehole at 3.00m</td><td></td></tr></table>										Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata			Depth (m)	Type/ Ref	Results	Legend	Description			0.60-0.70	D			(0.60)		MADE GROUND. Sub base of sand and gravel. Seepage at 0.3m.			Grey sandy clayey GRAVEL. Gravel fine sub angular.		Firm grey CLAY.							3.00	End of Borehole at 3.00m		
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