Newlands Nursery
Factual Letter Report
FAO: John Hall

Date: 18/03/2024
Our Ref: 23.1116
Client: John Hall Consulting

constructiveevaluation
site investigation ⊗ building pathology
Units 15 & 16 • Ford Lane Business Park •
Ford • Arundel • West Sussex • BN18 0UZ
[redacted]
Web: www.ceiduk.com

Dear John,

Re: Newlands Nursery Shallow Borehole - Winter Groundwater Monitoring

We are writing following the completion of winter groundwater level monitoring at BH1, Newlands Nursery, Pagham Road, Lagness PO20 1LL. The instruction for the works was received from the client, John Hall Consulting, via an email dated 3rd October 2023.

Anticipated Geology

Reference to the publications of the British Geological Survey (BGS), indicate the site is underlain by bedrock of the White Chalk Group (WHCK). Superficial deposits for the area are recorded as River Terrace Deposits.

River Terrace Deposits – sand and gravel. Superficial deposits formed up to 3 million years ago. Local environment previously dominated by rivers.

White Chalk Group (WHCK) – The formations consist of white chalks with numerous marl and flint seams, forming nodular to tabular bands. Flint nodules range between large to very large, some are semi-continuous and lumpy localised iron staining is present. Hardgrounds and soft, smooth white chalk vary throughout each formation with the absence and occurrence of marl seams. The sedimentary bedrock formed between 93.9 and 72.1 Ma during the Cretaceous period.

Hydrogeology

The White Chalk Subgroup (WHCK) across Lagness is a Principal Aquifer.

Physical Site Setting

The subject site located within a large crop field to the east of Newlands Nursery. The site was accessed through a private road via the B2166 Pagham Road. It has an approximate grid reference of SU 89990 01379. The site plan is located within Figure 1. At the time of the investigation, the subject site comprised of an open field with access through an opening near to Butterlees Barn. Overall, the site was noted to be generally level. The site photographs are presented within **Appendix A**.

Intrusive Works

One windowless sampling borehole (BH1) was completed on the 18th October 2023 with a final depth of 3.00mbgl. Installation of a 50mm standpipe was completed to a depth of 3.0mbgl in BH1, consisting of 2.0m slotted and 1.0m plain pipe. The installation was finished with a flush cover and concrete seal. The stratigraphic log is presented within **Appendix B**.

Observed Stratigraphic Units

The following stratigraphical units were encountered during the intrusive works:

Table 1: Observed Stratigraphical Units.

Material	Top Depth (mbgl)	Bottom Depth (mbgl)	Description
TOPSOIL	0.0	0.35	Brown slightly gravelly CLAY.
RIVER TERRACE DEPOSITS	0.35	2.00	Light brown silty CLAY.
RIVER TERRACE DEPOSITS	2.00	2.70	Grey CLAY.
RIVER TERRACE DEPOSITS	2.70	2.80	Light brown sandy CLAY.
RIVER TERRACE DEPOSITS	2.80	3.00	Grey slightly gravelly CLAY. Gravel is fine sub-rounded to rounded white chalk.

Reference should be made to the stratigraphic log attached to this Letter Report.

Winter Groundwater Monitoring

The monitoring period extended from the 18th October 2023 to the 20th March 2024.

The following information was retrieved from the Met Office monthly weather report:

"The weather during the second half of October 2023 was unsettled with widespread, prolonged, and heavy rainfall from storm Babet from the 18th through to the 25th of October, which caused severe flooding problems within some areas in the south. Overall England encountered an average rainfall of 147.2mm. November 2023 began unsettled and stormy from the influence of Atlantic low-pressure systems accumulating between 30 to 50mm of rainfall within England. Drier and colder conditions concluded the second half of November. The 9th and 10th of December 2023 was subjected to very wet, windy and disruptive weather conditions via storms Elin and Fergus. The year closed out with Atlantic low-pressure systems bringing further very wet and windy weather, which continued into early January 2024."

"By the 5th of January 2024 south-east England had already received two-thirds of the whole-month average rainfall that led to significant flooding problems in the south. The second half of the month saw high pressure becoming established within the UK and brought dry and sunny conditions. February 2024 had mild conditions throughout the month with a band of heavy rain moving east across the south coast on the 22nd of February leading to extensive flooding."

Table 2 below summarises the results.

Table 2: Groundwater monitoring results BH1

Date/time	Groundwater Level (mbgl)	Base of Borehole (mbgl)	Weather/Site
18/10/2023 11:00	DRY	3.00	Cloudy with rain showers. 13-14°C
13/11/2023 14:30	0.05	2.92	Partial cloud, blue sky. Very wet ground, flooding. 10-12°C
18/12/2023 11:00	0.25	2.92	Cloudy. Wet ground 8°C
22/01/2024 11:00	0.35	2.92	Clear sky. Relatively dry ground 10°C
20/02/2024 11:00	0.15	2.92	Cloudy sky. Dry and wet ground 10°C.
18/03/2024 11:00	0.10	2.92	Cloudy sky. Wet ground. 10°C

Conclusions

Groundwater levels have been recorded to range at a depth of 0.05 to 0.35mbgl in BH1. There was a total range over the winter period of around 300mm in BH1. Observations of flooding within surrounding fields and long periods of rain within November correlate with the highest groundwater level recorded. Given the relatively small range in levels and the distance from the south coast it is unlikely that the variation in groundwater level is due to tidal influence.

We trust the above information meets your requirements and should you require any further clarification or assistance please do not hesitate to contact CE Ltd.

Kind regards,

[redacted]

Lee Saxton BSc
Graduate Geologist
Constructive Evaluation Limited

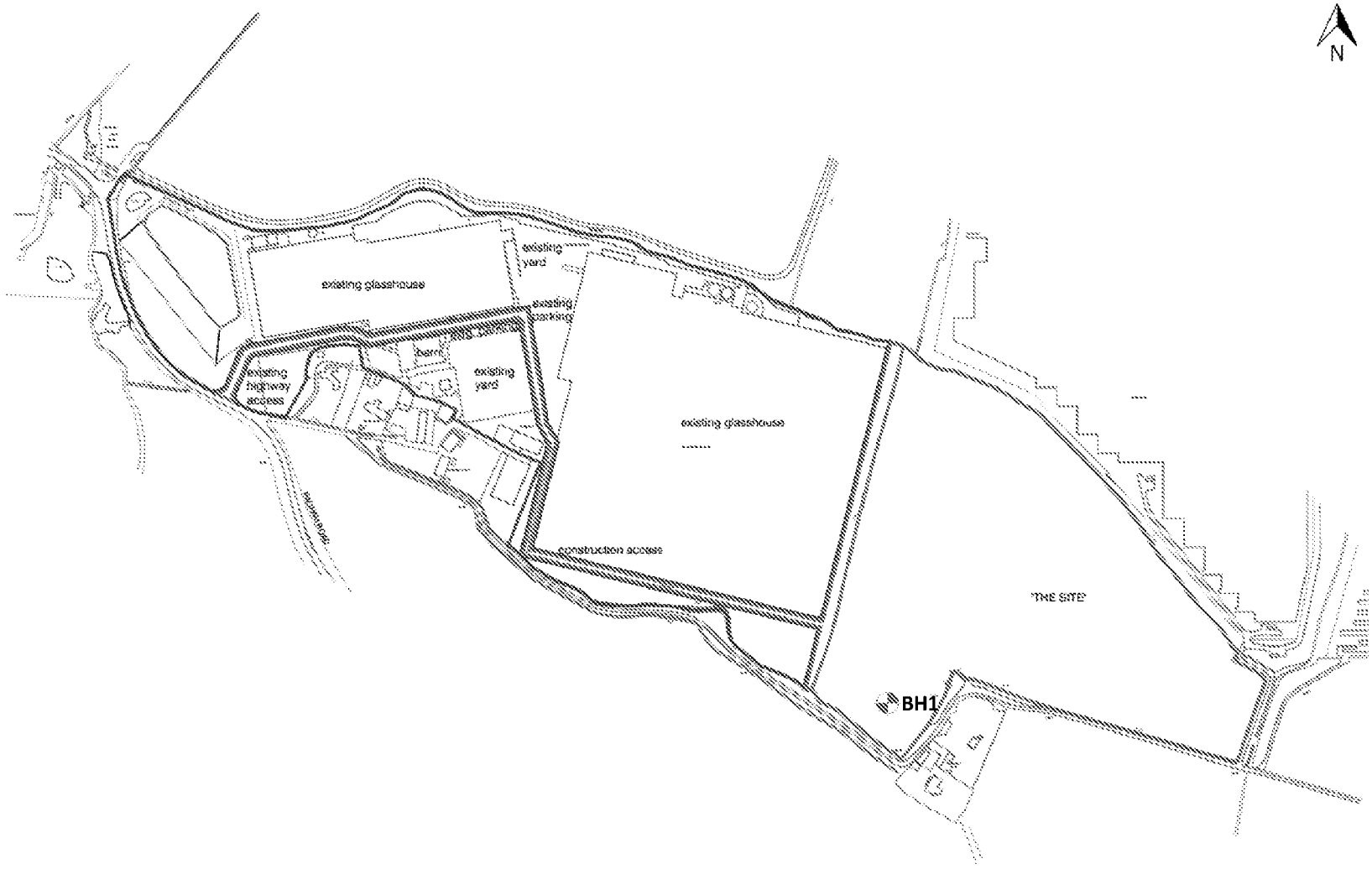


Figure 1:

Notes:
1. Do not scale from this drawing.
2. All dimensions must be checked on site prior to commencement of work.
3. Where applicable this drawing is to be read in conjunction with other consultants drawings.
4. This drawing is the copyright of Constructive Evaluation Ltd.

KEY

BH

Drawing Title:

Site Investigation Plan

Project Reference:

23.1116

Site Name:

Newlands Nursery

Revision: 0
Drawn by: Soils
Scale: Not to Scale

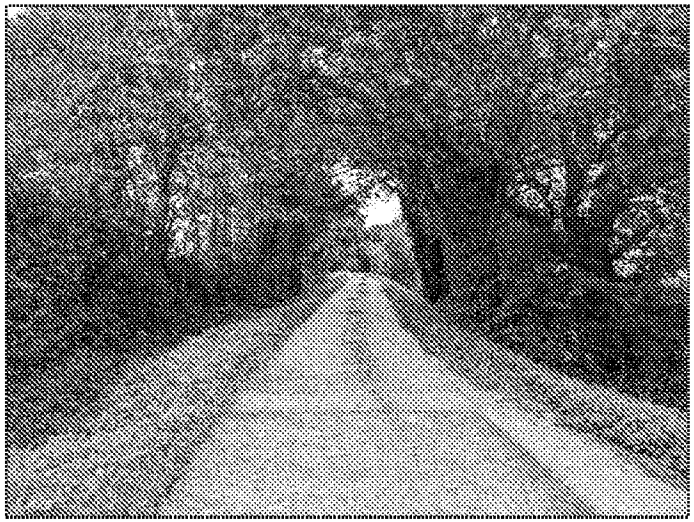
constructiveevaluation

Site Photographs

Project Ref: 23.1116

Site Name: Newlands Nursery, Lagness

1.



2.



3.



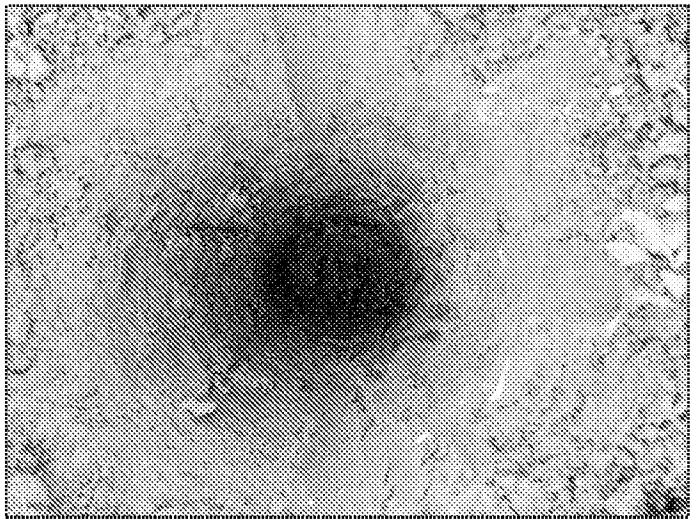
4.



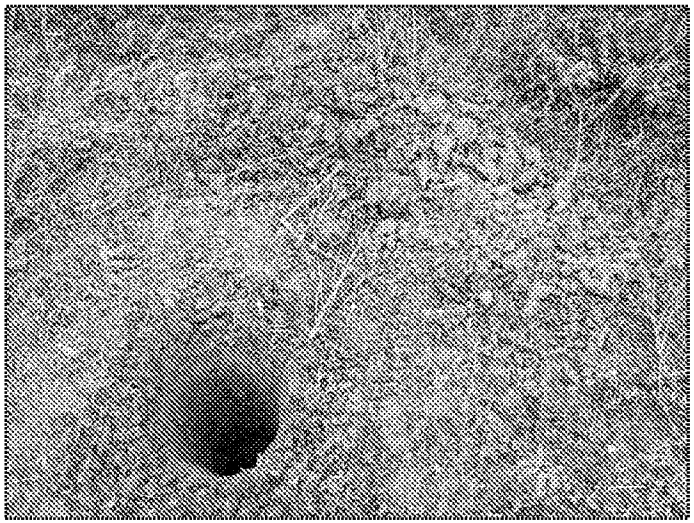
1) Road leading to site.
2) Site Entrance.
3) Looking southeast.
4) Looking northwest.

Site Photographs

5.



6.



7.



8.



5) BH1 general view.

6) BH1 with spoil.

7) BH1 standpipe installed to 3mbgl.

8) BH1 installation completed with flush cover.

constructiveevaluation
site investigation • building technology

constructiveevaluation
site investigation • building pathology

Borehole Log

Borehole No.
BH1
Sheet 1 of 1

Project Name:	Newlands Nursery	Project No. 23.1116	Co-ords:	489980E - 101384N	Hole Type WLS
Location:	Pagham Road, Lagness PO20 1LL		Level:	4.50	Scale 1:15
Client:	John Hall Consulting		Dates:	18/10/2023	Logged By LS

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Brown slightly gravelly CLAY. Gravel is fine angular to sub-angular flint and red brick.(TOPSOIL)
					0.35	4.15		Light brown silty CLAY. Rare cobble flint.
					2.00	2.50		Grey CLAY. Abundant iron staining.
					2.70	1.80		Light brown sandy CLAY. Sand is fine to medium.
					2.80	1.70		Grey slightly gravelly CLAY. Gravel is fine sub-rounded to rounded white chalk.
					3.00	1.50		End of Borehole at 3.000m

1 2 3

Remarks

1. CAT scanned prior to manual excavation. 2. Inspection pit to 1.0mbgl. 3. No groundwater was observed. 4. Final depth of 3.0mbgl. 5. On completion the borehole was installed with a 50mm standpipe for WGWM.

AGS