Our Ref: 2001003.001.01
Your Ref:

10 August 2020

The Old Chapel
35a Southover
Wells
Somerset
BA5 1UH

[redacted]

David West
Seaward Properties Limited
Metro House
Northgate
Chichester
West Sussex
PO19 1BE

Dear David

CANAL MEWS, BARNHAM – GROUNDWATER MONITORING (FEBRUARY 2020 – JUNE 2020)

Further to your instruction, groundwater monitoring has been undertaken at the above site in accordance with our proposal dated 23 January 2020 and referenced 2001003.001.bidlet.

Background

It is understood that it is proposed to redevelop the site for residential purposes and that winter groundwater monitoring is required to support the drainage strategy for the site, following the guidance presented within the Chichester and Arun District Council's 'Surface Water Drainage Proposal Checklist'.

The aim of these works was therefore to provide information on groundwater levels throughout the remaining winter period following instruction for the work in late January 2020 (monitoring period between February – March 2020 inclusive).

All site works were undertaken in accordance with BS5930:2020, BS10175+A2:2017 and, where appropriate, Eurocode 7. Works were supervised by a suitably experienced geoenvironmental consultant from TEC.

The published geology for the site is shown on the British Geological Survey (BGS) Sheet 317&332 (Chichester and Bognor) Solid and Drift Edition, which records the site to be underlain by superficial River Terrace Deposits, described by the BGS as sand and gravel, locally with lenses of silt, clay or peat. Bedrock deposits are recorded as the London Clay Formation Group described by the BGS as blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay.

Intrusive Works

Exploratory works were undertaken on 04 February 2020 and comprised two window sample boreholes to a maximum depth of 4.0m to assist in determining the characteristics of the shallow ground and groundwater conditions. Exploratory hole locations are shown on Figure 1.

Encountered Ground Conditions

A summary of the encountered ground conditions from the current works is presented below, with full engineering descriptions of the encountered materials presented in the exploratory hole logs in Appendix A.

Made Ground

Made ground was encountered at DS01 to a depth of between 0.8m and was recorded to comprise 0.2m of topsoil over gravelly slightly sandy to sandy clay with gravel of flint and brick noted. At DS02, 0.15m of topsoil was recorded over the natural ground materials.

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Registered Office: One New Street, Wells, BA5 2LA Company Registration No. 5186011

Superficial Deposits

Superficial Deposits were encountered to maximum depths of between 3.0m and 4.0mbgl and were noted to comprise firm brown, locally mottled orange-brown, slightly sandy to sandy, locally gravelly, clay to depths of between 1.2m and 1.8mbgl. These were recorded to overlie silty fine to medium sand becoming gravelly sand below 2.4m (DS02) and 3.0mbgl (DS01), where the gravel was observed to be fine to medium subangular to subrounded flint. Below these depths the boreholes were noted to be unstable.

Bedrock Geology

The solid geology (London Clay Formation) was not encountered during the intrusive works.

Groundwater

At the time id the intrusive works groundwater was recorded at DS01 at a depth of 1.39mbgl and at 1.00mbgl at DS02.

Groundwater Monitoring – February 2020 to May 2020

The aim of these works was to provide continual groundwater monitoring for the remaining available winter months - February 2020 to March 2020 - to establish likely maximum groundwater levels at the site. Level loggers (In-Situ Inc. Rugged Troll 100) were installed in both boreholes on 04 February 2020 and were set to record the groundwater level every 30 minutes. The level loggers were recovered on 28 May 2020 at the end of the agreed monitoring period.

It should be noted that due a technical fault with the level logger installed in DS01, the data has not been retrievable and therefore the information provided is from the manual dip data collected for the borehole on

Groundwater Results Summary

A summary of the groundwater monitoring during this period is displayed in Appendix B and is summarised in Table 1 below.

Table 1: Groundwater Monitoring Summary

Borehole	Base of Borehole (mbgl)	Maximum recorded water level (mbgl)[1]
DS01	3.88	1.04[1]
DS02	2.90	0.92[2]

Note:

1 Groundwater depths are estimated to have an accuracy of +/- 0.1m
2 Highest groundwater level recorded at DS01 from manual dip data – 13-03-2020
3 Highest groundwater level recorded at DS02 – 05-02-2020

The average monthly rainfall for the month preceding and over the duration of the monitoring is summarised in Table 2.

Table 2: Monthly Rainfall Average

Month	Rainfall (mm)[1]
January	116.3
February	157.5
March	72.2
April	31
May	10.4

Note:

1 Data provided by WorldWeatherOnline.com

Groundwater was recorded to be present within both boreholes, with maximum recorded groundwater levels between 0.92m and 1.04mbgl.

It should be noted that monitoring has not been undertaken during the whole of the winter period (typically between October and March), although monitoring has been undertaken towards the end of a wet winter period between December and March 2020.

Should you wish to discuss any of the information provided, please do not hesitate to contact the undersigned.

Yours sincerely

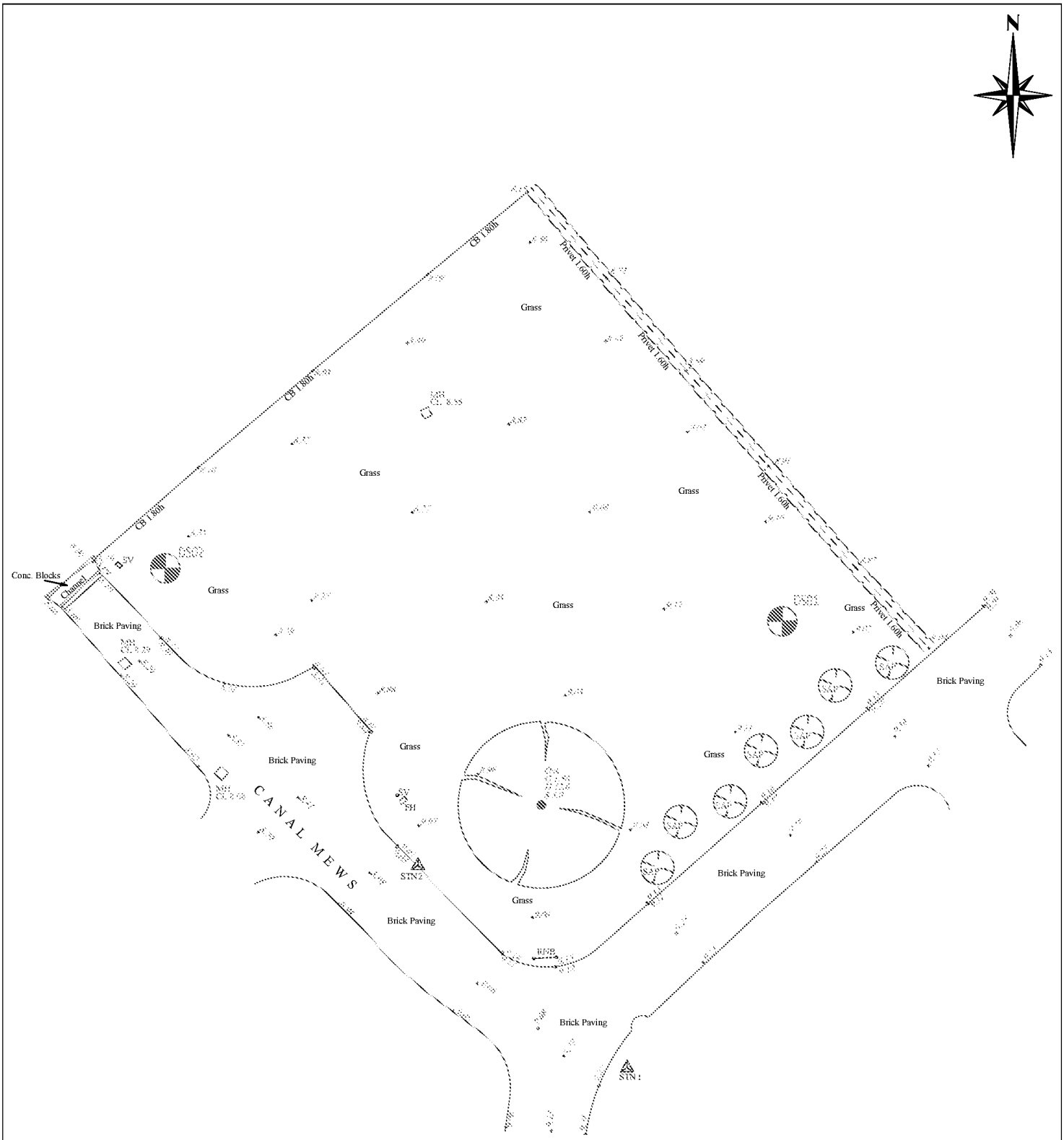
[redacted]

Sophie Thomas
Senior Consultant
TEC

[redacted]

Alexandra Flint
Principal Geoenvironmental Consultant

Enc. Figure 1 – Exploratory Hole Location Plan
Appendix A – Exploratory Hole Logs
Appendix B – Groundwater Graphs



TEC Exploratory Hole Location:

Extract of Stuart Bailey Land Surveys Drawing 1716, dated January 2017

tec	[redacted]	Site Name: Canal Mews, Barnham		Scale: NTS
Drawing Name: Exploratory Hole Location Plan		Client Name: Seaward Properties Ltd	Project No: 2001603 G01	Date: August 2020	Figure No: 1

ARUN DISTRICT COUNCIL BN/44/21/DOC

Borehole Log

Borehole No. **DS01**

Sheet 1 of 1

Project Name: Canal Mews, Barnham	Project No. 2001003.001	Co-ords: -	Hole Type WS
Location: Barnham		Level: mbgl	Scale 1:33
Client: Seaward Properties Limited		Dates: 04/02/2020 - 04/02/2020	Logged By RJE

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.20			TOPSOIL: Dark brown to black slightly sandy slightly gravelly clay. Gravel of fine subangular to subrounded flint.
						0.45			MADE GROUND: Grey-brown gravelly slightly sandy clay. Gravel of flint, brick and sandstone.
		0.9	HV	75kPa		0.85			MADE GROUND: Brown sandy slightly gravelly clay. Gravel of flint and brick.
									Firm medium strength brown mottled orange-brown slightly sandy CLAY. Sand is medium to coarse.
									Becoming speckled black
		1.5	HV	55kPa		1.30			Firm medium strength light grey slightly gravelly sandy CLAY. Sand is medium to coarse. Gravel angular flint.
									Becoming very sandy
						1.80			Orange-brown slightly silty fine SAND, becoming gravelly below 3m. Gravel of subangular to subrounded fine to medium flint
						4.00			End of borehole at 4.0 m

1 2 3 4 5 6

Remarks

Terminated at depth on Engineer's Instruction.
Groundwater not encountered.

AGS

Borehole Log

Borehole No. **DS02**

Sheet 1 of 1

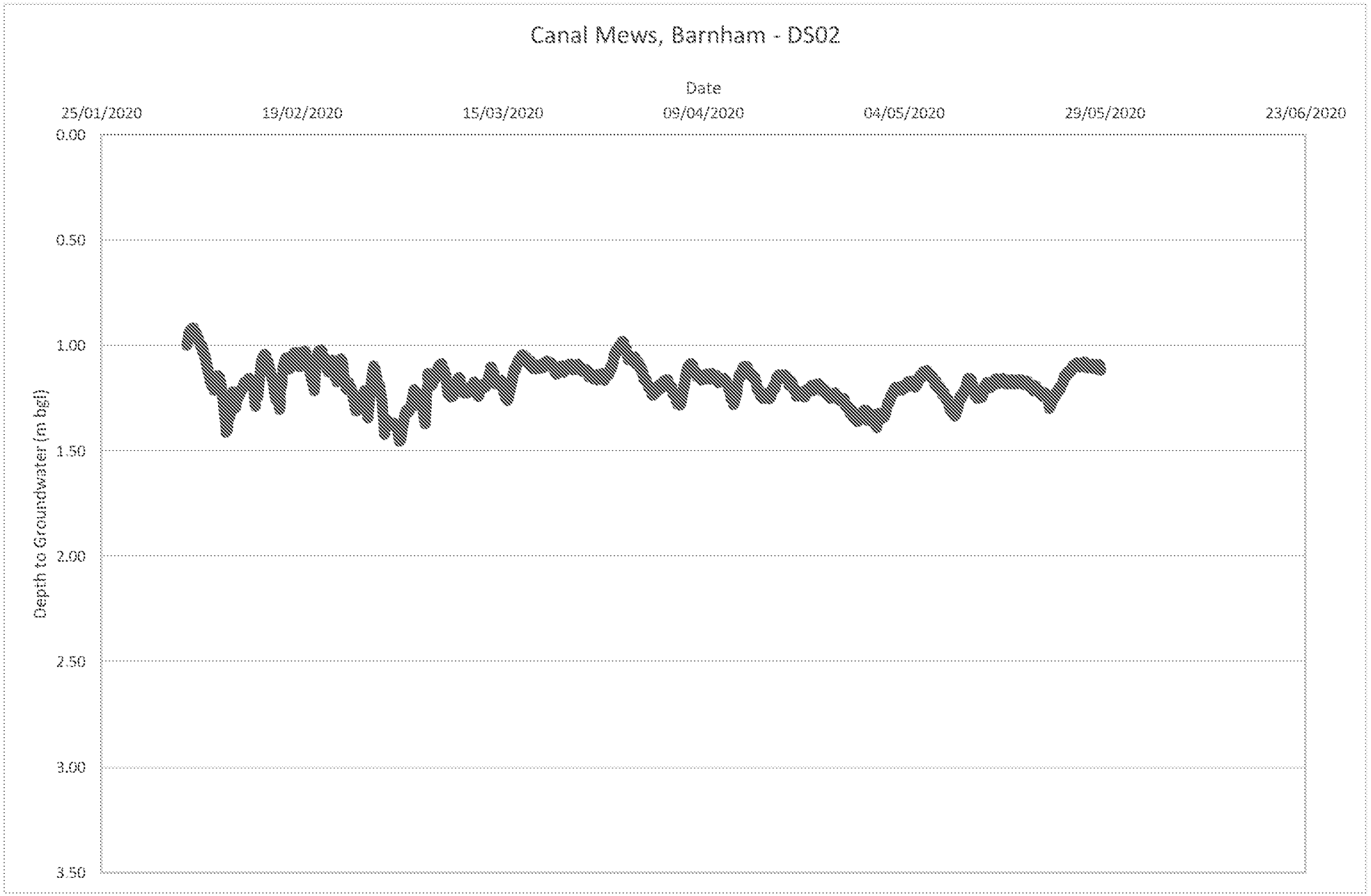
Project Name: Canal Mews, Barnham	Project No. 2001003.001	Co-ords: -	Hole Type WS
Location: Barnham		Level: mbgl	Scale 1:33
Client: Seaward Properties Limited		Dates: 04/02/2020 - 04/02/2020	Logged By RJE

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.15			TOPSOIL: Dark brown sandy slightly gravelly clay. Gravel of fine subangular chert.
						0.50			Firm brown slightly sandy slightly gravelly CLAY. Sand is medium to coarse. Gravel is subangular fine to medium flint.
		0.8	HV	60kPa					Soft to firm orange-brown mottled black silty CLAY, becoming slightly gravelly below 0.8m. Gravel of fine subangular flint.
						1.20			Orange-brown slightly silty fine to medium SAND, becoming gravelly below 2.4m. Gravel of subangular to subrounded fine to medium flint
						3.00			End of borehole at 3.0 m

1 2 3 4 5 6

Remarks

Terminated at depth on Engineer's Instruction.
Groundwater not encountered.


Canal Mews, Barnham - DS02
Date
25/01/2020
19/02/2020
15/03/2020
09/04/2020
04/05/2020
29/05/2020
23/06/2020
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
Depth to Groundwater (m bgl)