



DETAILS OF CRACK MONITORING

GHG Reference	L/2018/54264/S
Name of Insured	[REDACTED]
Risk Address	11 Ketcher Green , Binfield, Bracknell, RG42 5TA
Telephone	[REDACTED] [REDACTED]
Mobile	[REDACTED]

All measurements are in mm.

LOCATION DETAILS

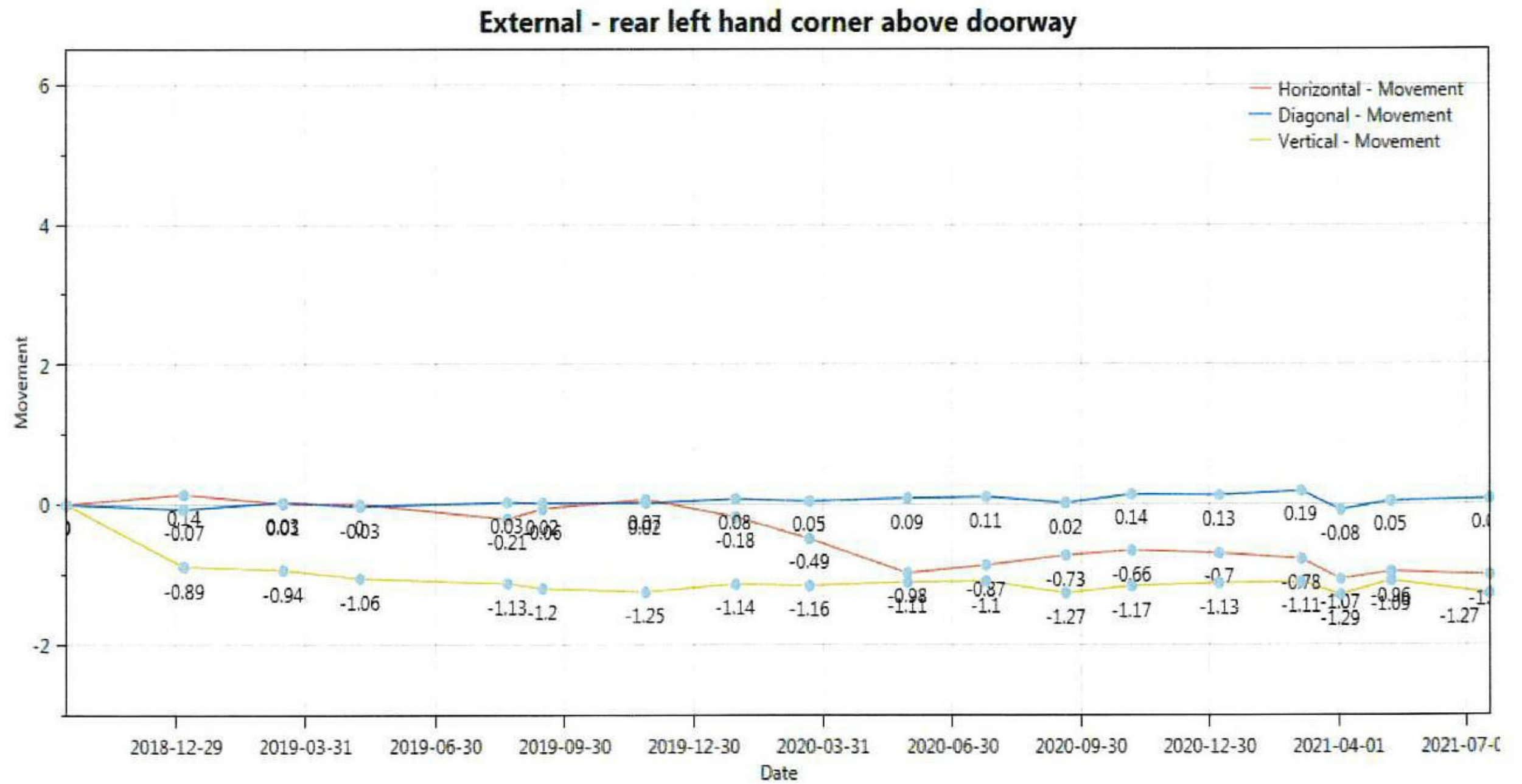
Location External - rear left hand corner above doorway

Crack Width

Alignment Diagonal



GRAPH OF CRACK MOVEMENT



MONITORING READINGS

Date	Notes	Segment	Alignment	Value	+/- Prev	+/- Initial
11/10/2018	Initial reading	A-B	Horizontal	66.80	0.00	0.00
		B-C	Vertical	71.96	0.00	0.00
		A-C	Diagonal	101.37	0.00	0.00
03/01/2019	Slight closure in crack width noted	A-B	Horizontal	66.94	0.14	0.14
		B-C	Vertical	71.07	-0.89	-0.89
		A-C	Diagonal	101.30	-0.07	-0.07
14/03/2019	Readings Taken	A-B	Horizontal	66.81	-0.13	0.01
		B-C	Vertical	71.02	-0.05	-0.94
		A-C	Diagonal	101.40	0.10	0.03

Date	Notes	Segment	Alignment	Value	+/- Prev	+/- Initial
07/05/2019	reading taken	A-B	Horizontal	66.80	-0.01	0.00
		B-C	Vertical	70.90	-0.12	-1.06
		A-C	Diagonal	101.34	-0.06	-0.03
19/08/2019	Readings taken	A-B	Horizontal	66.59	-0.21	-0.21
		B-C	Vertical	70.83	-0.07	-1.13
		A-C	Diagonal	101.40	0.06	0.03
13/09/2019	Readings taken	A-B	Horizontal	66.74	0.15	-0.06
		B-C	Vertical	70.76	-0.07	-1.20
		A-C	Diagonal	101.39	-0.01	0.02
25/11/2019	Reading Taken by BSL	A-B	Horizontal	66.87	0.13	0.07
		B-C	Vertical	70.71	-0.05	-1.25
		A-C	Diagonal	101.39	0.00	0.02
28/01/2020	Readings taken	A-B	Horizontal	66.62	-0.25	-0.18
		B-C	Vertical	70.82	0.11	-1.14
		A-C	Diagonal	101.45	0.06	0.08
20/03/2020	Readings taken	A-B	Horizontal	66.31	-0.31	-0.49
		B-C	Vertical	70.80	-0.02	-1.16
		A-C	Diagonal	101.42	-0.03	0.05
28/05/2020	Readings taken by BSL	A-B	Horizontal	65.82	-0.49	-0.98
		B-C	Vertical	70.85	0.05	-1.11
		A-C	Diagonal	101.46	0.04	0.09
23/07/2020	Reading taken BSL	A-B	Horizontal	65.93	0.11	-0.87
		B-C	Vertical	70.86	0.01	-1.10
		A-C	Diagonal	101.48	0.02	0.11
18/09/2020	Readings taken BSL	A-B	Horizontal	66.07	0.14	-0.73
		B-C	Vertical	70.69	-0.17	-1.27
		A-C	Diagonal	101.39	-0.09	0.02
04/11/2020	Readings taken BSL	A-B	Horizontal	66.14	0.07	-0.66
		B-C	Vertical	70.79	0.10	-1.17
		A-C	Diagonal	101.51	0.12	0.14
05/01/2021	Readings taken BSL	A-B	Horizontal	66.10	-0.04	-0.70
		B-C	Vertical	70.83	0.04	-1.13
		A-C	Diagonal	101.50	-0.01	0.13
04/03/2021	Readings taken BSL	A-B	Horizontal	66.02	-0.08	-0.78
		B-C	Vertical	70.85	0.02	-1.11
		A-C	Diagonal	101.56	0.06	0.19
01/04/2021	GHG Readings Taken by DG	A-B	Horizontal	65.73	-0.29	-1.07
		B-C	Vertical	70.67	-0.18	-1.29
		A-C	Diagonal	101.29	-0.27	-0.08
07/05/2021	Readings taken BSL	A-B	Horizontal	65.84	0.11	-0.96
		B-C	Vertical	70.87	0.20	-1.09
		A-C	Diagonal	101.42	0.13	0.05
16/07/2021	readings taken by BSL	A-B	Horizontal	65.79	-0.05	-1.01
		B-C	Vertical	70.69	-0.18	-1.27
		A-C	Diagonal	101.45	0.03	0.08

LOCATION DETAILS

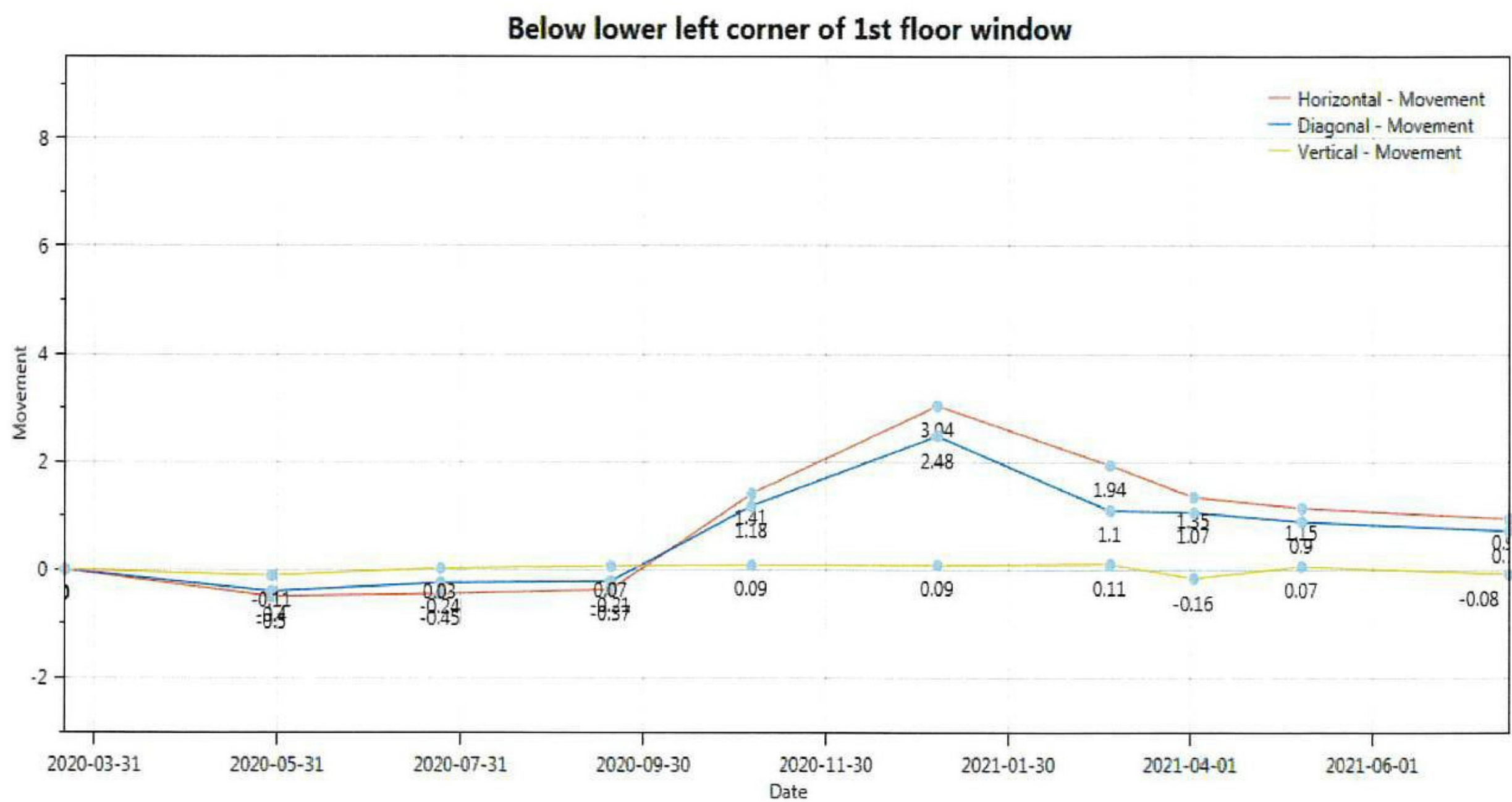
Location Below lower left corner of 1st floor window

Crack Width 3.50 mm

Alignment Diagonal



GRAPH OF CRACK MOVEMENT



MONITORING READINGS

Date	Notes	Segment	Alignment	Value	+/- Prev	+/- Initial
20/03/2020	New location - initial readings	A-B	Horizontal	76.06	0.00	0.00
		B-C	Vertical	62.71	0.00	0.00
		A-C	Diagonal	98.92	0.00	0.00
28/05/2020	Readings taken by BSL	A-B	Horizontal	75.56	-0.50	-0.50
		B-C	Vertical	62.60	-0.11	-0.11
		A-C	Diagonal	98.52	-0.40	-0.40
23/07/2020	Reading taken BSL	A-B	Horizontal	75.61	0.05	-0.45
		B-C	Vertical	62.74	0.14	0.03
		A-C	Diagonal	98.68	0.16	-0.24

Date	Notes	Segment	Alignment	Value	+/- Prev	+/- Initial
18/09/2020	Readings taken BSL	A-B	Horizontal	75.69	0.08	-0.37
		B-C	Vertical	62.78	0.04	0.07
		A-C	Diagonal	98.71	0.03	-0.21
04/11/2020	Readings taken BSL	A-B	Horizontal	77.47	1.78	1.41
		B-C	Vertical	62.80	0.02	0.09
		A-C	Diagonal	100.10	1.39	1.18
05/01/2021	Readings taken BSL	A-B	Horizontal	79.10	1.63	3.04
		B-C	Vertical	62.80	0.00	0.09
		A-C	Diagonal	101.40	1.30	2.48
04/03/2021	Readings taken BSL	A-B	Horizontal	78.00	-1.10	1.94
		B-C	Vertical	62.82	0.02	0.11
		A-C	Diagonal	100.02	-1.38	1.10
01/04/2021	GHG Readings Taken by DG	A-B	Horizontal	77.41	-0.59	1.35
		B-C	Vertical	62.55	-0.27	-0.16
		A-C	Diagonal	99.99	-0.03	1.07
07/05/2021	Readings taken BSL	A-B	Horizontal	77.21	-0.20	1.15
		B-C	Vertical	62.78	0.23	0.07
		A-C	Diagonal	99.82	-0.17	0.90
16/07/2021	readings taken by BSL	A-B	Horizontal	77.01	-0.20	0.95
		B-C	Vertical	62.63	-0.15	-0.08
		A-C	Diagonal	99.65	-0.17	0.73



GHG Solutions

Level Monitoring Readings

Client: GHG Solutions Limited
 Handler: Richard Donavon
 Address: Barclays House
 20 - 24 Upper Market Street
 Eastleigh
 Postcode: SO50 9FD
 Phone: [Redacted]
 Email: [Redacted]

Policy Holder: [Redacted]
 Risk Address: 11 Ketcher Green
 Binfield
 Bracknell
 Postcode: RG42 5TA
 Home: [Redacted]
 Mobile: [Redacted]
 Work: [Redacted]
 Ref: L/2019/54264/S

All readings are in metres.
 Please see site plan for location of datum.

Frequency:

Readings in m		Date	17/10/22	22/12/22	24/05/23	16/08/23	24/10/23	15/12/23						
		Temp	18.0°C	10.0°C	16.0°C	19.0°C	13.0°C	07.0°C						
Point No	X	Y	Rdg 1	Rdg 2	Rdg 3	Rdg 4	Rdg 5	Rdg 6	Rdg 7	Rdg 8	Rdg 9	Rdg 10	Rdg 11	Rdg 12
TBM1	0.00	0.00	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000						
2	0.00	5.00	10.0139	10.0141	10.0149	10.0154	10.0131	10.0147						
	0.00	6.00												
3	-0.50	6.00	10.0140	10.0143	10.0155	10.0157	10.0140	10.0144						
4	-2.00	6.00	10.1791	10.1792	10.1799	10.1782								
5	-2.00	5.50	10.2003	10.2016	10.2020	10.2039	10.2005	10.2013						
6	-7.00	5.50	10.1684	10.1704	10.1704	10.1726	10.1692	10.1700						
7	-7.00	11.00	10.1893	10.1955	10.1959		10.1939	10.1940						
8	1.00	11.00	10.0207	10.0226	10.0228	10.0245	10.0217	10.0215						
9	1.00	10.00	10.0161	10.0195	10.0202	10.0218	10.0186	10.0193						
	6.00	10.00												
10	6.00	10.50	9.9790	9.9842	9.9904	9.9952	9.9868	9.9908						
	7.50	10.50												
	7.50	9.50												
11	10.00	9.50	9.9618	9.9688	9.9774	9.9851	9.9743	9.9802						
12	10.00	5.50	9.9860	9.9891	9.9932	9.9931	9.9889	9.9913						
	10.00	4.50												
	12.50	4.50												
	13.50	3.50												
	13.50	1.00												
13	12.50	0.00	9.9611	9.9628	9.9633	9.9632	9.9622	9.9626						
14	10.00	0.00	9.9727	9.9744	9.9752	9.9749	9.9737	9.9744						
15	5.00	0.00	9.9797	9.9811	9.9815	9.9816	9.9801	9.9807						



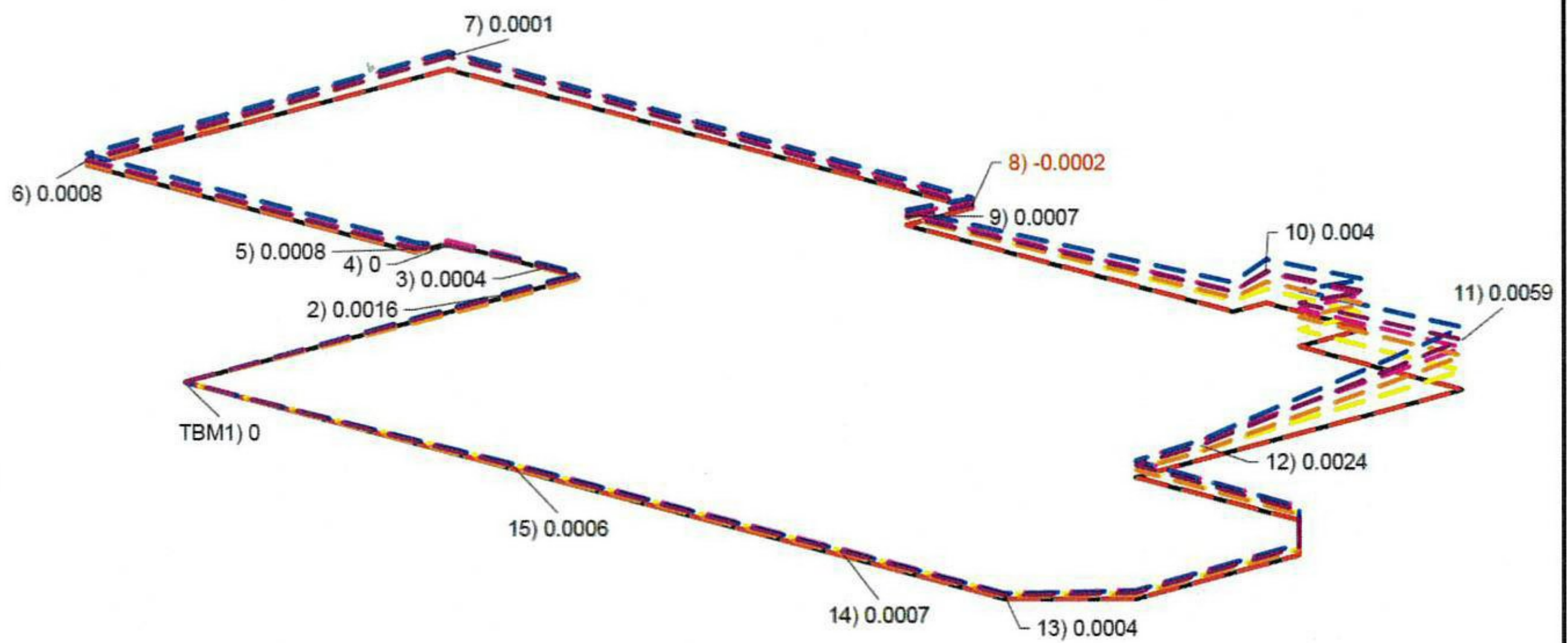
GHG Solutions

Barclays House, 20 - 24 Upper Market Street, Eastleigh, SO50 9FD

☎: [Redacted] 🌐: www.ghgsolutions.co.uk

Movement Graphs

Occupier	[Redacted]	Address	11 Ketcher Green, Binfield, Bracknell	Phone	[Redacted]	Ref.	L/2019/54264/S
Vertical Scale Factor	40.x	Some points on this graph are extrapolated from measurements taken			Viewing Angle:	15°	



— Base Level	- - 17/10/22	- - 22/12/22	- - 24/05/23	- - 16/08/23
- - 24/10/23	- - 15/12/23	- -	- -	- -
- -	- -	- -	- -	- -



GHG Solutions

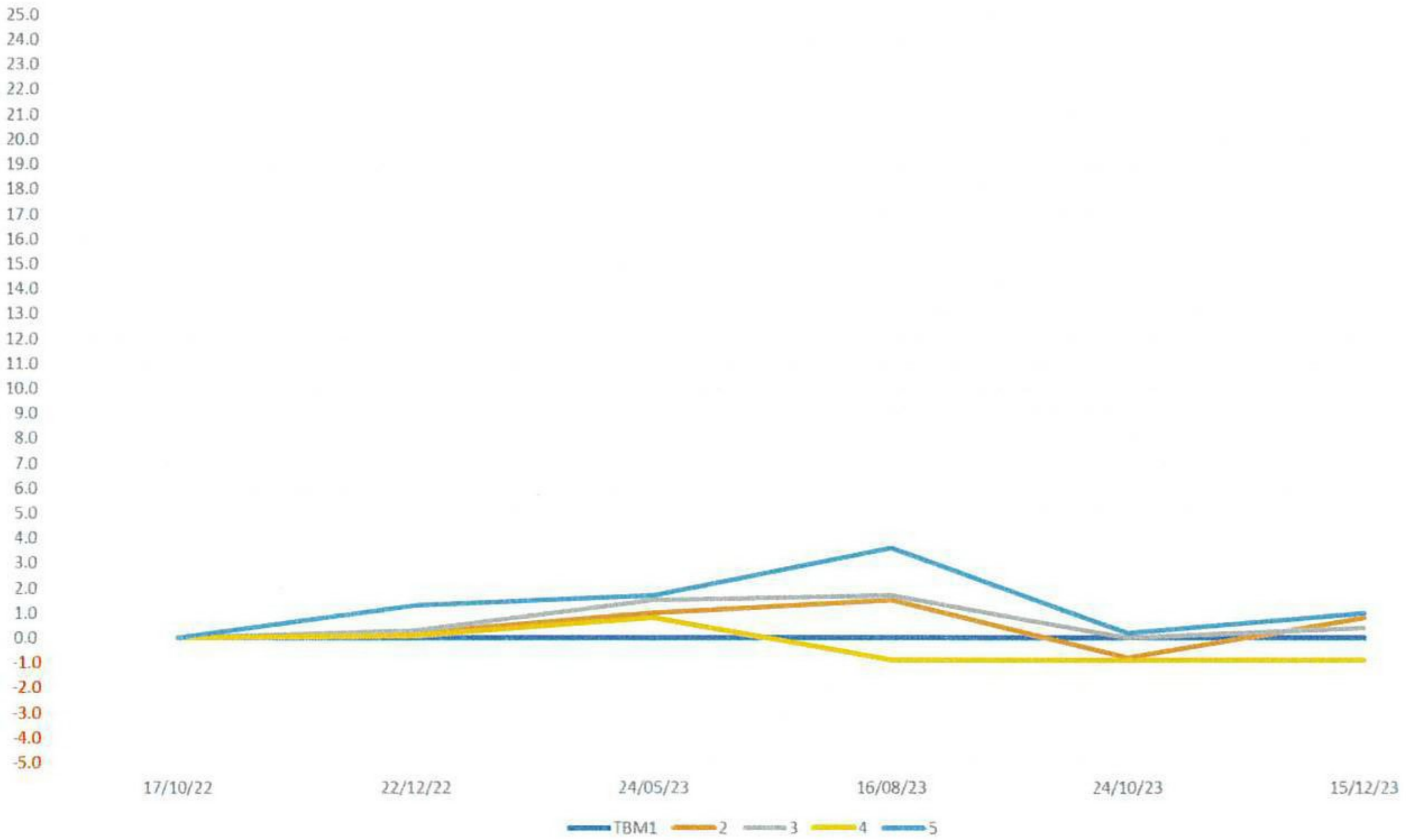
Barclays House, 20 - 24 Upper Market Street, Eastleigh, SO50 9FD

☎: [Redacted] 🌐: www.ghgsolutions.co.uk

Movement Graphs

Occupier	[Redacted]	Address	11 Ketcher Green, Binfield, Bracknell	Phone	[Redacted]	Ref.	L/2019/54264/S
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Relative Movements in mm





GHG Solutions

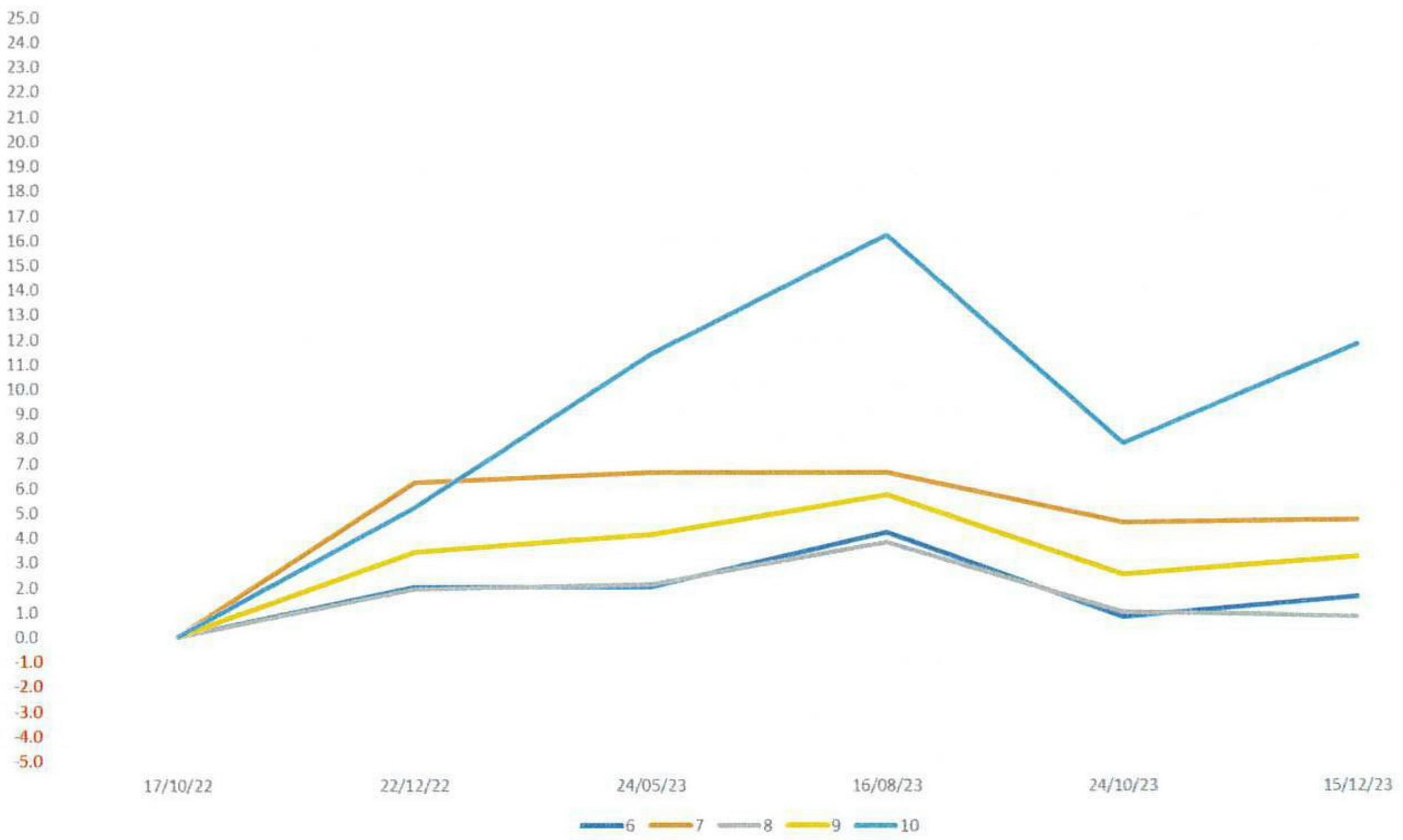
Barclays House, 20 - 24 Upper Market Street, Eastleigh, SO50 9FD

☎: [REDACTED] 🌐: www.ghgsolutions.co.uk

Movement Graphs

Occupier	[REDACTED]	Address	11 Ketcher Green, Binfield, Bracknell	Phone	[REDACTED]	Ref.	L/2019/54264/S
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Relative Movements in mm





GHG Solutions

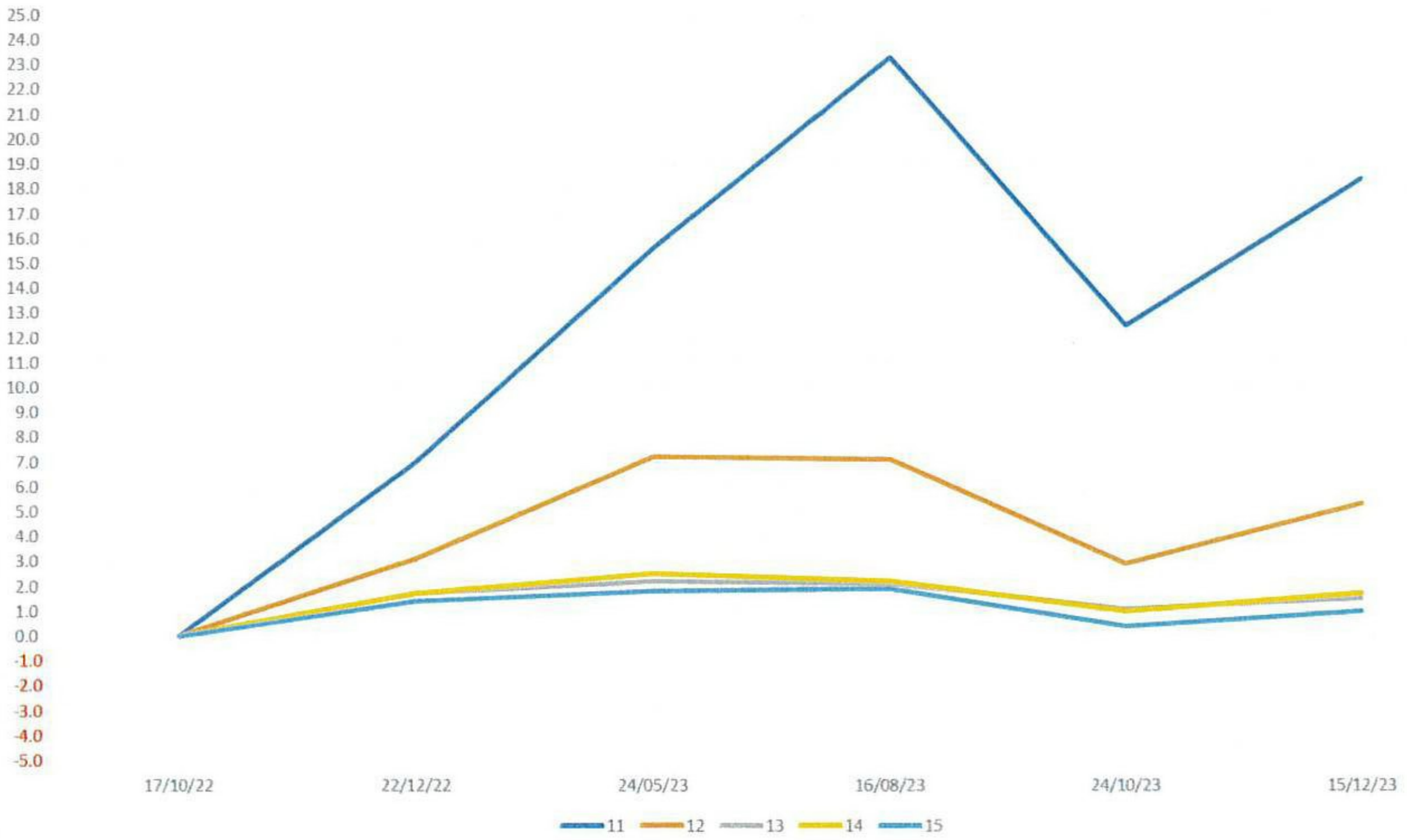
Barclays House, 20 - 24 Upper Market Street, Eastleigh, SO50 9FD

Phone: [REDACTED] Email: www.ghgsolutions.co.uk

Movement Graphs

Occupier	[REDACTED]	Address	11 Ketcher Green, Binfield, Bracknell	Phone	[REDACTED]	Ref.	L/2019/54264/S
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Relative Movements in mm





● Ivy House, 49 Liphook Road, Whitehill, Bordon, Hants, GU35 9DA



● www.martindobson.org.uk

Ceri Rance
Binfield Parish Council,
Binfield Parish Council Office,
Benetfeld Road,
Binfield, Berkshire, RG42 4EW

Our reference: S87

6th July 2023

Dear Ms Rance

Alleged subsidence at 11 Ketcher Green, Binfield, Bracknell, RG42 5TA

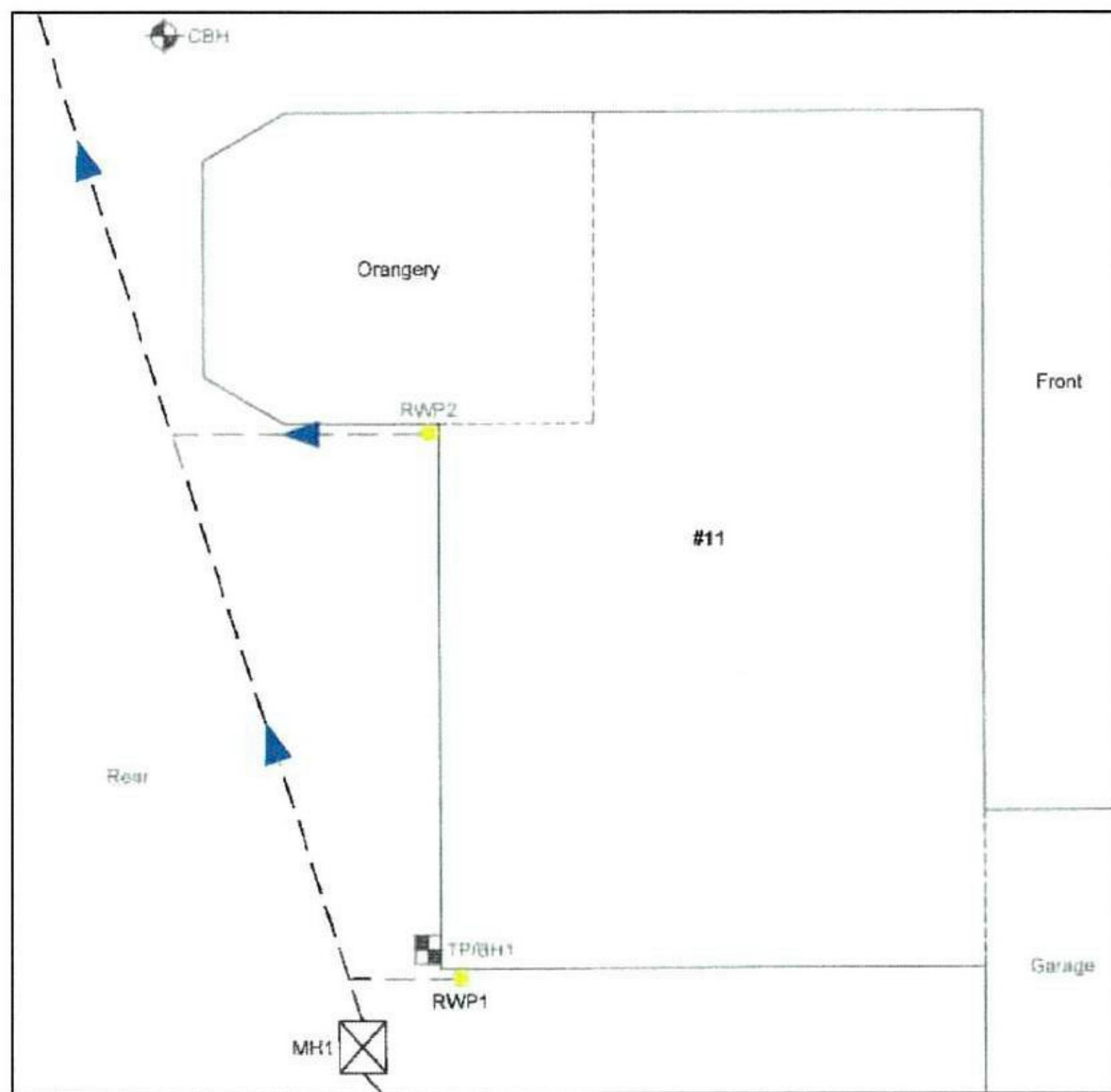
Instructions

1. I refer to your emailed instructions dated 2nd April asking me to review the technical evidence relating to an allegation of subsidence at 11 Ketcher Green, and a request made by DAC Beachcroft to Binfield Parish Council (BPC) in a letter dated 22nd November 2022 to remove a number of trees, namely, T2 ash, T4 Norway maple and T6 ash, on land owned by the council. I considered a previous request for removal of these trees in 2020, and as a result of my advice, T2 was felled on 10th February 2021.
2. I visited the site in relation to the current notification of damage on 1st May 2023.
3. The documents that have been made available for review are as follows:
 - a) Fastrack Geotechnical Survey Report dated October 2018;
 - b) GHG Analysis of Site Investigation Data report dated 28th January 2019;
 - c) Property Risk Inspection Arboricultural Assessment Report dated 28th January 2020;
 - d) Photographs taken by GHG during a site visit on 20th March 2020;
 - e) Letter from GHG to Sedgwick International Ltd (Sedgwick) dated 25th March 2020;
 - f) Crack monitoring carried out between 11th October 2018 and 5th January 2021;
 - g) Level monitoring carried out between 13th September 2019 and 5th January 2021;
 - h) Letters from DAC Beachcroft to BPC dated 22nd November 2022 and 8th December 2022;
 - i) Letter from DAC Beachcroft to BPC dated 23rd May 2023.

Review of technical evidence and correspondence

4. I understand that damage in the form of cracking appeared in the two storey detached property at 11 Ketcher Green during the summer of 2018. A claim was made for subsidence damage to insurers Admiral by Mrs Parker and GHG were asked to investigate. GHG instructed site investigations to be carried out and these were undertaken by Fastrack in October 2018. A trial pit extended by borehole (TPBH1) was opened at the rear left corner of the house and a control borehole was augered in the garden, to the right-hand side of the orangery (Figure 1). Foundations were determined to be 1200mm deep, which is slightly deeper than the usual minimum of 1000mm in clay soils. The borehole was taken to a depth of 2.1m and below the foundations soil was described as being clayey SAND and GRAVEL. The stiffness of the soil (an indication of how dry it was) increased with depth, as revealed by the Mackintosh probe (MP) which required an increasing number of blows to travel 75mm (an average of 20.5 blows at 1.2m and 39 blows at 2.1m). The stiffness of soil in the control borehole (CBH) was not significantly different to TPBH1 (an average of 38.25 blows to travel 75mm).

Figure 1. Site plan prepared by Fastrack to show location of trial pits and drainage.

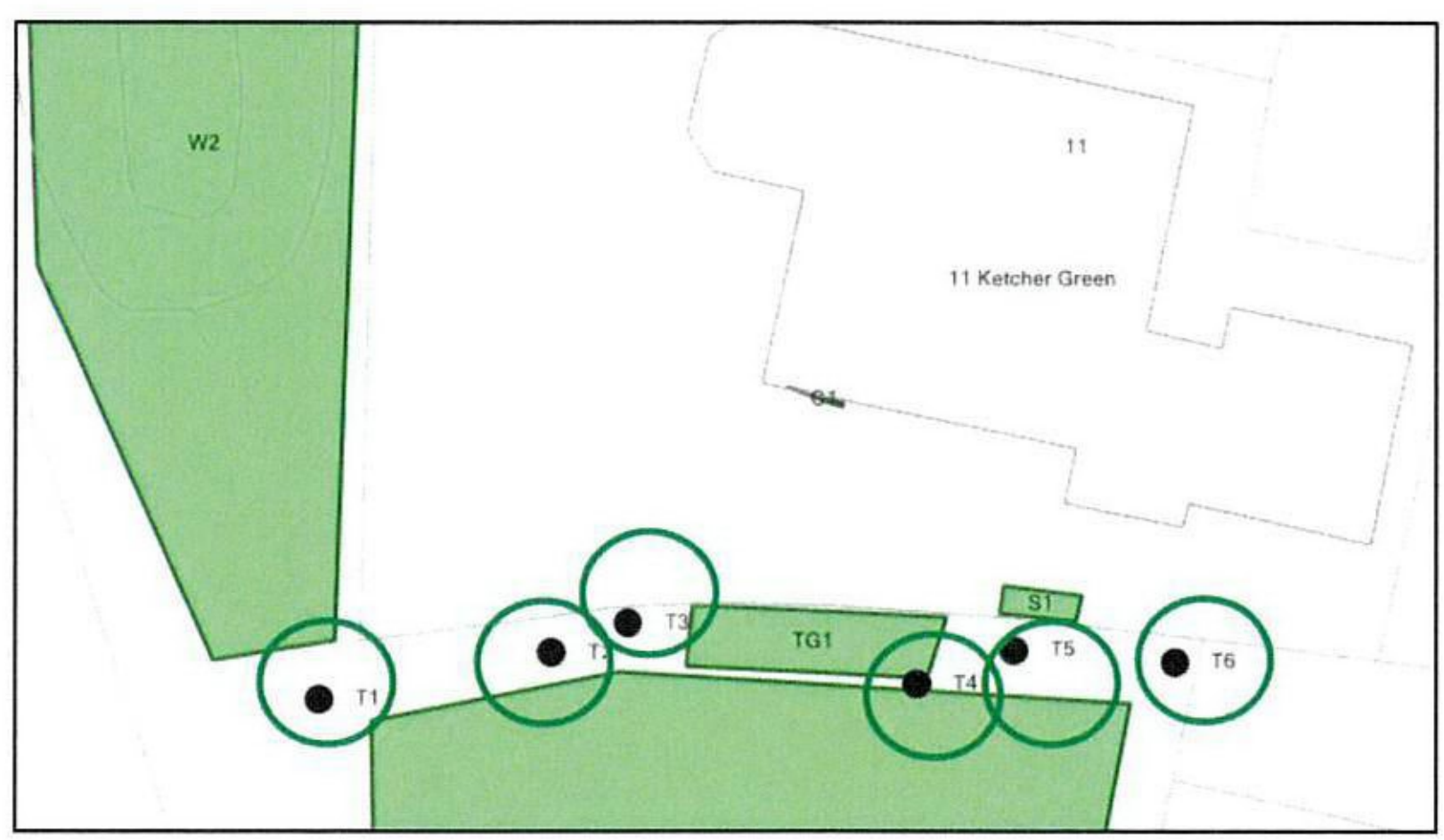


- 5. Laboratory soil tests confirmed that the soil was CLAY with a low shrinkage potential (plasticity index in the range 9 – 24% in both boreholes) which means that it has a low potential for shrinking and swelling with changes in moisture content. Soil suction tests carried out on samples from both boreholes revealed much higher suction values in TPBH1 compared to the control (over 500 kPa in TPBH1 compared to less than 74 kPa in CBH) which means that the soil in TPBH1 was severely desiccated (the level of drying typically associated with subsidence).
- 6. Two roots just below foundations in TPBH1 were identified as being Fraxinus (ash), as were four roots at a depth of 1.5m. A root at 2m was too juvenile for positive identification but was

considered to be from a broadleaved tree. This implies that the severe desiccation was likely to have been caused by one or more ash trees.

- 7. GHG issued an Analysis of Site Investigation Data report on 28th January 2019 which reviewed the site investigation data and concluded that the damage was subsidence caused by oak and ash trees on neighbouring land. On 31st January 2019 a claim was notified to Binfield Parish Council. I understand that a Conservation Area section 211 notice was sent to Bracknell Forest Council (BFC) for the felling of trees T58 – T61 (numbered on a Binfield Parish Council tree survey report) but that the information was regarded as being insufficient – also, that the trees are covered by a Tree Preservation Order which requires an *application* rather than a *notification*.
- 8. Property Risk Inspection issued their Arboricultural Assessment Report on 28th January 2020 which recommended the removal of T2 ash, T4 Norway maple and T6 ash, as shown in PRI’s site plan at Figure 2. No detailed explanation was provided as to why T2, T4 and T6 were selected for removal.

Figure 2. Site plan prepared by PRI showing trees to the south and west of 11 Ketcher Green.



- 9. Monitoring of an external crack at the lower corner of a first floor window commenced on 11th October 2018 and continued until 5th January 2021. The graph of monitoring results is shown at Figure 3 and confirms that the crack closed very slightly in winter 2019/20 and opened between September 2020 and January 2021 by just over 3mm. A photograph of the crack is shown in (Figure 4).

Figure 3. Graph of monitoring of a crack below the 1st floor window of the property.

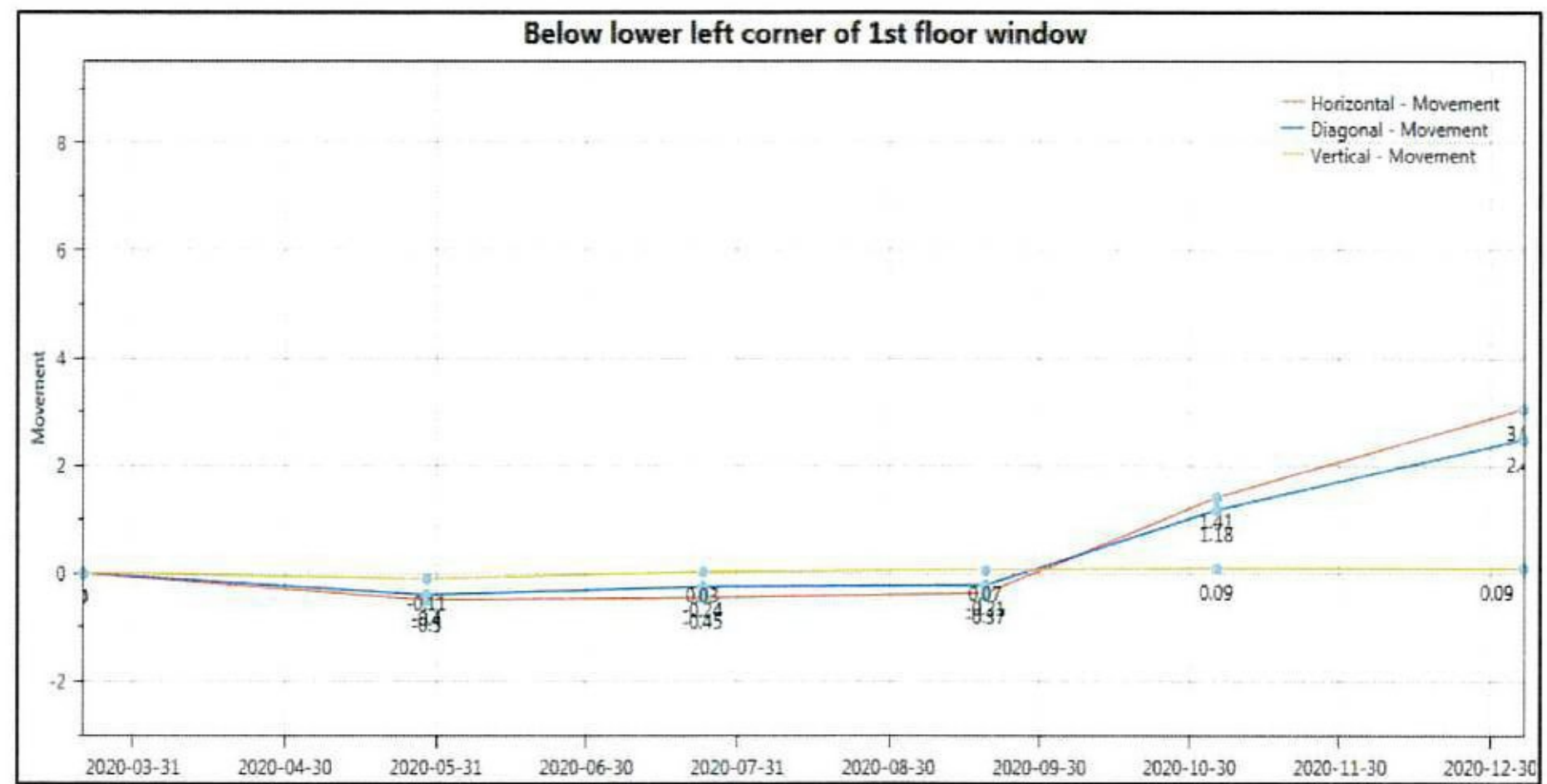


Figure 4. Photograph of vertical crack below first floor window.



- 10. Level monitoring, which monitors the level of a building through time (usually on a single brick course), commenced on 13th September 2019 and the latest results available are for 5th January 2021 (Figure 5). The results demonstrate a seasonal pattern of foundation movement, with the building moving downwards in summer and upwards in winter. The maximum amplitude of movement is about 17mm at marker 11, at the rear left corner (Figure 6). This pattern of movement confirms that the building has been suffering from clay shrinkage subsidence damage, which has continued after the removal of T2, thus implicating T3 hawthorn, T4 Norway maple and T6 ash, which, in my opinion, should all be removed.

Figure 5. Level monitoring results for the period 13th September 2019 to 5th January 2021. The locations of the monitoring markers are shown in Figure 6.

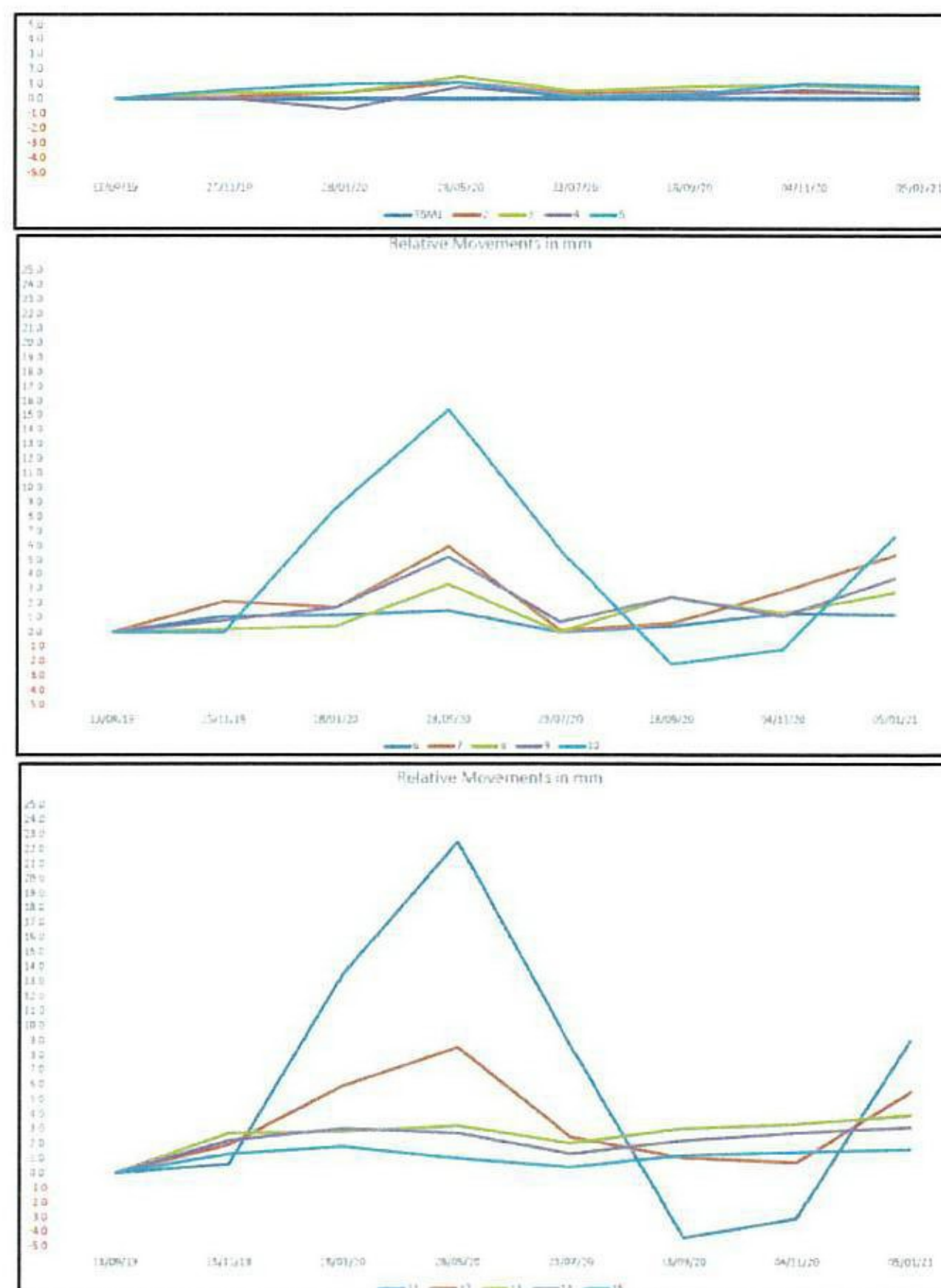
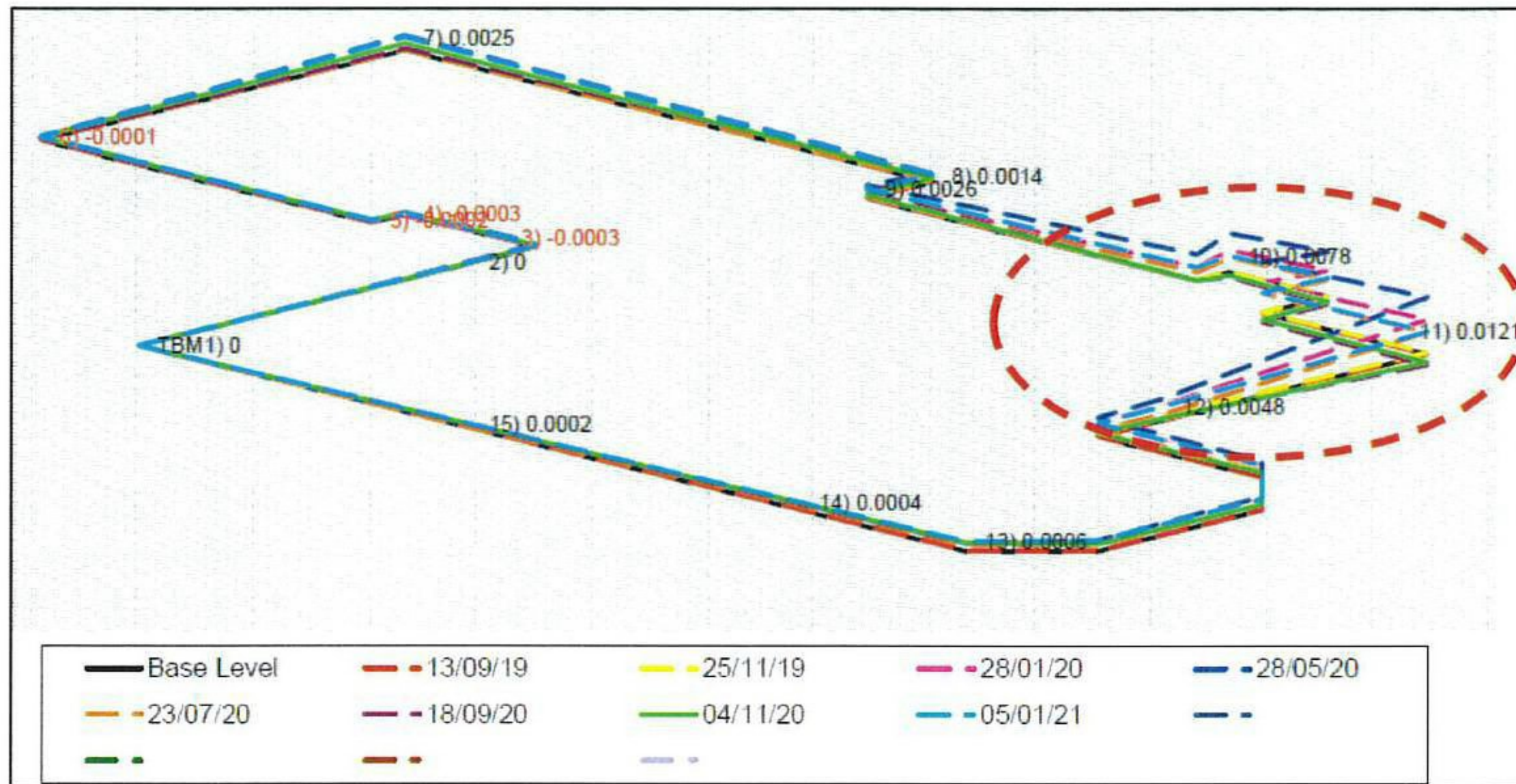
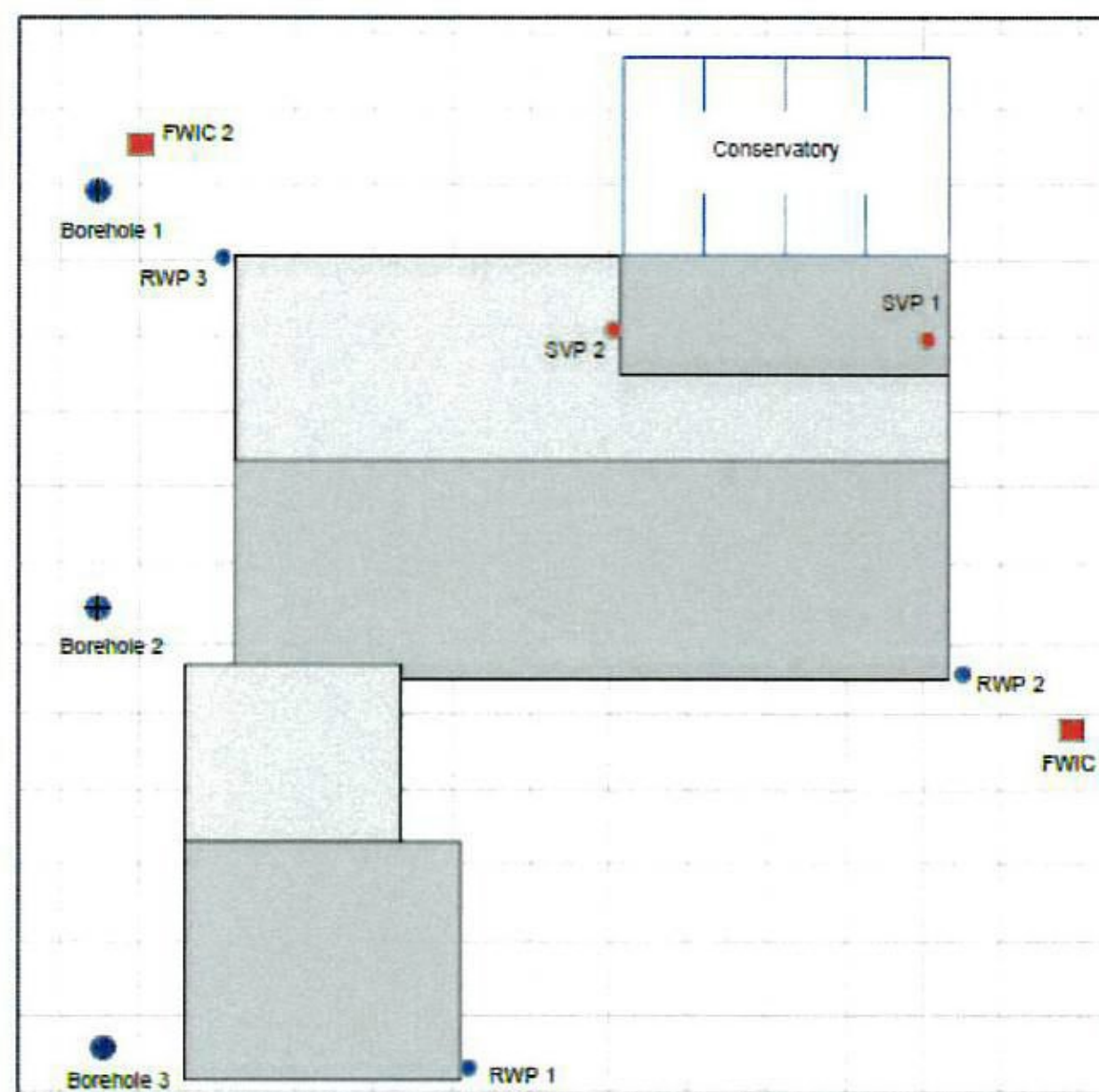


Figure 6. Isometric sketch showing amplitude of subsidence movements at each monitoring marker. The movements are focussed around marker 11 at the rear left hand corner of the property (dashed red line).



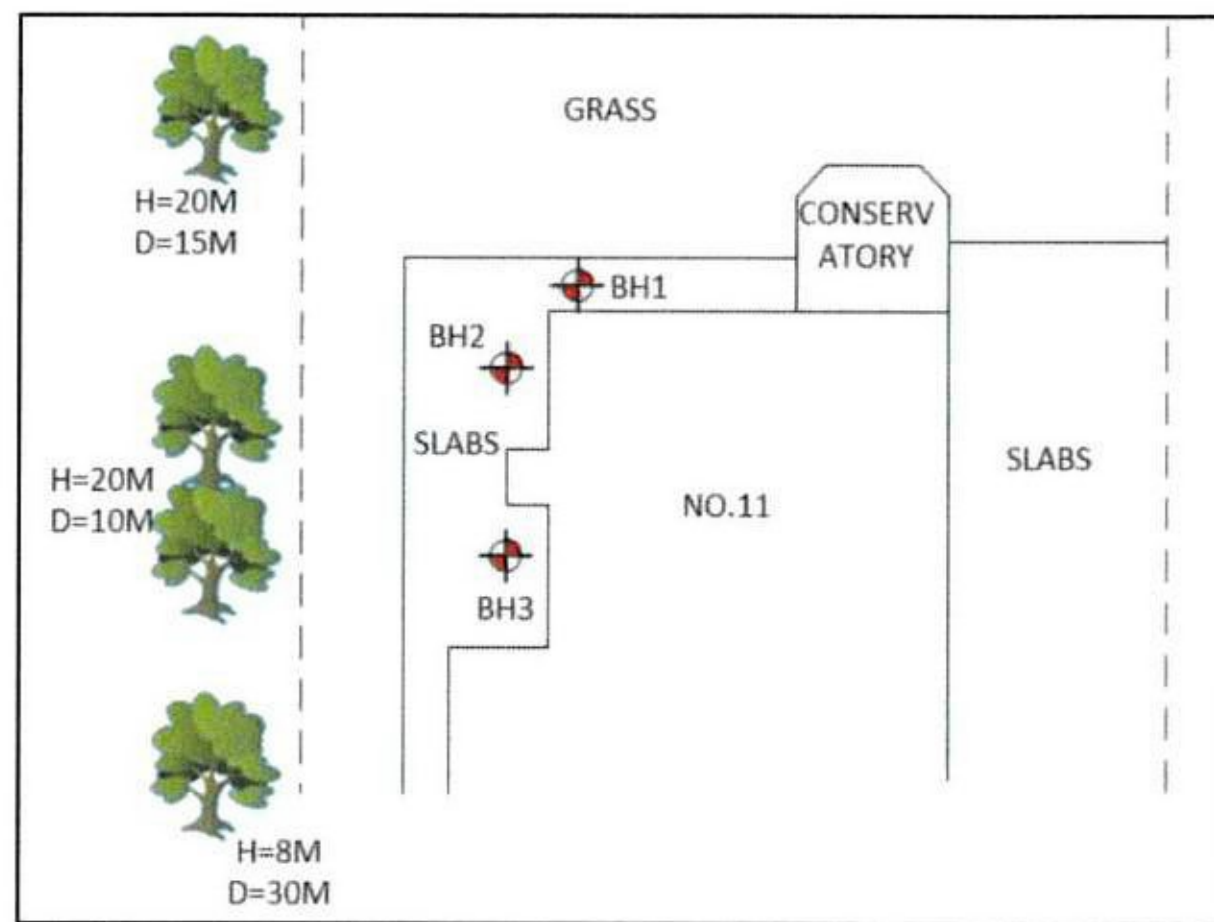
- On 16th December 2022 Bradgate Surveying issued a site investigation report which provided results from 3 boreholes adjacent to the left hand side of the property (Figure 7). The boreholes extended to about 1.5m and revealed clay of low to high volume change potential, with a plasticity index of 15 – 40% (generally increasing with depth). Roots were observed to a depth of 1.5m but were not identified.

Figure 7. Site plan prepared by Bradgate Surveying.



- On 2nd April 2023 ProSite carried out a third site investigation which involved opening three boreholes at the rear and left hand side of the property, BH1 – BH3 (Figure 8). In all boreholes the soil was stiff to very stiff silty/sandy CLAY with a plasticity index in the range 19 – 42%, indicating a low to high volume change potential (but generally medium to high). The soil was desiccated in all three boreholes to a depth of around 3m. Roots of maple and ash were found in the boreholes to a depth of 3.3m.

Figure 8. Site plan prepared by ProSite.



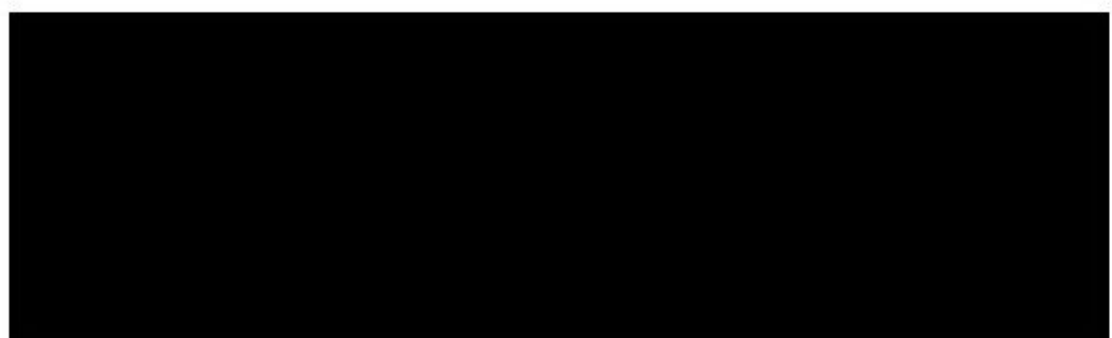
Expert opinion

13. The evidence reviewed above confirms that 11 Ketcher Green has suffered from tree-related clay-shrinkage subsidence damage which first occurred in the hot dry summer of 2018, and is continuing. The soil below the 1.2m deep foundations is clay with a low to high volume change potential, which is very severely desiccated. Crack monitoring confirmed crack opening during summer 2021, caused by foundation subsidence of around 17mm. This was despite the removal of ash T2 in February 2021, and confirms that the ongoing damage was caused by the remaining trees. The request from DAC Beachcroft is to remove T4 Norway maple and T6 ash. In addition I believe that T3 hawthorn, which is a high water-demand species, should also be removed.

14. I believe that the trees are protected by a Tree Preservation Order, and if so, an application must be submitted to Bracknell Forest Council for removal of T3, T4 and T6. If you submit an application, this report should be provided, together with all the technical evidence, in support of the application.

15. If you have any questions arising from this report please feel free to get in touch.

Yours sincerely



Dr Martin Dobson
 BSc (Hons) Biol, DPhil, FArborA, RCarborA, MEWI

