



GEA LIMITED
(GEOTECHNICAL &ENV ASSOC)

Haverstock hill
Short term movements

Job No.	Sheet No.	Rev.
J18009		
Drg. Ref.		
Made by	Date 20-Apr-2018	Checked

		displacement		displacement		displacement		displacement	
		along the		perpendicular		along the		perpendicular	
		Line		to Line		Line		to Line	
[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
0.0	96.95000	47.73000	31.50000	-0.53453	0.31977	0.61992	-0.060611	d	
1.8804	95.25000	48.53375	31.50000	-0.86753	0.53509	1.0130	-0.11294	d	
1.7609	93.55000	49.33750	31.50000	-1.1688	0.75146	1.3778	-0.17978	d	
5.6413	91.85000	50.14125	31.50000	-1.4207	0.96946	1.6987	-0.26920	d	
7.5217	90.15000	50.94500	31.50000	-1.5900	1.1901	1.9462	-0.39630	d	
9.4021	88.45000	51.74875	31.50000	-1.6079	1.4156	2.0587	-0.59247	d	
11.283	86.15000	52.55250	31.50000	-1.3113	1.6503	1.8909	-0.93147	d	
13.163	85.05000	53.35625	31.50000	-0.33457	2.0590	1.1825	-1.7184	d	
15.043	83.35000	54.16000	31.50000	1.6522	3.4197	-0.031959	-3.7978	d	

Structure: B | Sub-structure:

Dist.	Coordinates		Displacements		Horizontal		Horizontal	
	x	y	z	x	y	displacement	displacement	
						along the	perpendicular	
						Line	to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	83.25000	54.16000	27.49000	0.0	0.0	0.0	0.0	d
1.8923	84.10375	55.84875	27.49000	0.0	0.0	0.0	0.0	d
3.7846	84.95750	57.53750	27.49000	0.0	0.0	0.0	0.0	d
5.6769	85.81125	59.22625	27.49000	0.0	0.0	0.0	0.0	d
7.5692	86.66500	60.91500	27.49000	0.0	0.0	0.0	0.0	d
9.4615	87.51875	62.60375	27.49000	0.0	0.0	0.0	0.0	d
11.354	88.37250	64.29250	27.49000	0.0	0.0	0.0	0.0	d
13.246	89.22625	65.98125	27.49000	0.0	0.0	0.0	0.0	d
15.138	90.08000	67.67000	27.49000	0.0	0.0	0.0	0.0	d
17.031	90.93375	69.35875	27.49000	0.0	0.0	0.0	0.0	d
18.923	91.78750	71.04750	27.49000	0.0	0.0	0.0	0.0	d
20.815	92.64125	72.73625	27.49000	0.0	0.0	0.0	0.0	d
22.707	93.49500	74.42500	27.49000	0.0	0.0	0.0	0.0	d
24.600	94.34875	76.11375	27.49000	0.0	0.0	0.0	0.0	d
26.492	95.20250	77.80250	27.49000	0.0	0.0	0.0	0.0	d
28.384	96.05625	79.49125	27.49000	0.0	0.0	0.0	0.0	d
30.277	96.91000	81.18000	27.49000	0.0	0.0	0.0	0.0	d

Structure: C | Sub-structure:

Dist.	Coordinates		Displacements		Horizontal		Horizontal	
	x	y	z	x	y	displacement	displacement	
						along the	perpendicular	
						Line	to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	97.01000	81.18000	31.50000	-6.0030	3.0303	-6.7117	-0.41489	d
1.8941	98.64500	80.22375	31.50000	-5.3701	2.7108	-6.0041	-0.37115	d
3.7882	100.28000	79.26750	31.50000	-4.7372	2.3913	-5.2965	-0.32741	d
5.6823	101.91500	78.31125	31.50000	-4.1044	2.0719	-4.5889	-0.28367	d
7.5764	103.55000	77.35500	31.50000	-3.4715	1.7524	-3.8813	-0.23993	d
9.4705	105.18500	76.39875	31.50000	-2.8386	1.4329	-3.1737	-0.19619	d
11.365	106.82000	75.44250	31.50000	-2.2058	1.1135	-2.4661	-0.15245	d
13.259	108.45500	74.48625	31.50000	-1.5729	0.79398	-1.7586	-0.10871	d
15.153	110.09000	73.53000	31.50000	-0.94000	0.47451	-1.0510	-0.064967	d

Structure: D | Sub-structure:

Dist.	Coordinates		Displacements		Horizontal		Horizontal	
	x	y	z	x	y	displacement	displacement	
						along the	perpendicular	
						Line	to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	110.19000	73.53000	31.50000	-0.9102	0.45943	0.0052574	-1.0195	d
1.9243	109.31400	71.81667	31.50000	-0.91344	0.46110	0.0052766	-1.0232	d
3.8486	108.43800	70.10333	31.50000	-0.91676	0.46278	0.0052958	-1.0269	d
5.7729	107.56200	68.39000	31.50000	-0.92009	0.46446	0.0053150	-1.0307	d
7.6972	106.68600	66.67667	31.50000	-0.92341	0.46613	0.0053342	-1.0344	d
9.6214	105.81000	64.96333	31.50000	-0.92673	0.46781	0.0053534	-1.0381	d
11.546	104.93400	63.25000	31.50000	-0.93005	0.46949	0.0053726	-1.0418	d
13.470	104.05800	61.53667	31.50000	-0.93337	0.47116	0.0053918	-1.0455	d
15.394	103.18200	59.82333	31.50000	-0.93670	0.47284	0.0054109	-1.0493	d
17.319	102.30600	58.11000	31.50000	-0.94002	0.47452	0.0054301	-1.0530	d
19.243	101.43000	56.39667	31.50000	-0.94334	0.47619	0.0054493	-1.0567	d
21.167	100.55400	54.68333	31.50000	-0.94666	0.47787	0.0054685	-1.0604	d
23.091	99.67800	52.97000	31.50000	-0.94998	0.47955	0.0054877	-1.0641	d
25.016	98.80200	51.25667	31.50000	-0.95331	0.48123	0.0055069	-1.0679	d
26.940	97.92600	49.54333	31.50000	-0.95663	0.48290	0.0055261	-1.0716	d
28.864	97.05000	47.83000	31.50000	-0.95995	0.48458	0.0055453	-1.0753	d

Structure: E | Sub-structure:

Dist.	Coordinates		Displacements		Horizontal		Horizontal	
	x	y	z	x	y	displacement	displacement	
						along the	perpendicular	
						Line	to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	56.58000	119.43000	31.50000	0.0	0.0	0.0	0.0	d
1.8446	57.98000	118.22900	31.50000	0.0	0.0	0.0	0.0	d
3.6891	59.38000	117.02800	31.50000	0.0	0.0	0.0	0.0	d
5.5337	60.78000	115.82700	31.50000	0.0	0.0	0.0	0.0	d
7.3782	62.18000	114.62600	31.50000	0.0	0.0	0.0	0.0	d
9.2228	63.58000	113.42500	31.50000	0.0	0.0	0.0	0.0	d
11.067	64.98000	112.22400	31.50000	0.0	0.0	0.0	0.0	d
12.912	66.38000	111.02300	31.50000	0.0	0.0	0.0	0.0	d
14.756	67.78000	109.82200	31.50000	0.0	0.0	0.0	0.0	d
16.601	69.18000	108.62100	31.50000	0.0	0.0	0.0	0.0	d
18.446	70.58000	107.42000	31.50000	0.0	0.0	0.0	0.0	d

Structure: F | Sub-structure:

Dist.	Coordinates		Displacements		Horizontal		Horizontal	
	x	y	z	x	y	displacement	displacement	
						along the	perpendicular	
						Line	to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	70.68000	107.42000	31.50000	0.0	0.0	0.0	0.0	d
1.9211	69.43476	105.95714	31.50000	0.0	0.0	0.0	0.0	d
3.8422	68.18952	104.49429	31.50000	0.0	0.0	0.0	0.0	d
5.7633	66.94429	103.03143	31.50000	0.0	0.0	0.0	0.0	d
7.6843	65.69905	101.56857	31.50000	0.0	0.0	0.0	0.0	d
9.6054	64.45381	100.10571	31.50000	0.0	0.0	0.0	0.0	d
11.527	63.20857	98.64286	31.50000	0.0	0.0	0.0	0.0	d



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		Coordinates		Displacements		Horizontal		Horizontal	
		x		y		displacement		displacement	
						along the		perpendicular	
						Line		to Line	
Dist.		[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
13.448	61.96333	97.18000	31.50000	0.0	0.0	0.0	0.0	0.0	d
15.369	60.71810	95.71714	31.50000	0.0	0.0	0.0	0.0	0.0	d
17.290	59.47286	94.25429	31.50000	0.0	0.0	0.0	0.0	0.0	d
19.211	58.22762	92.79143	31.50000	0.0	0.0	0.0	0.0	0.0	d
21.132	56.98238	91.32857	31.50000	0.0	0.0	0.0	0.0	0.0	d
23.053	55.73714	89.86571	31.50000	0.0	0.0	0.0	0.0	0.0	d
24.974	54.49190	88.40286	31.50000	0.0	0.0	0.0	0.0	0.0	d
26.895	53.24667	86.94000	31.50000	0.0	0.0	0.0	0.0	0.0	d
28.816	52.00143	85.47714	31.50000	0.0	0.0	0.0	0.0	0.0	d
30.737	50.75619	84.01429	31.50000	0.0	0.0	0.0	0.0	0.0	d
32.658	49.51095	82.55143	31.50000	0.0	0.0	0.0	0.0	0.0	d
34.580	48.26571	81.08857	31.50000	0.0	0.0	0.0	0.0	0.0	d
36.501	47.02048	79.62571	31.50000	0.0	0.0	0.0	0.0	0.0	d
38.422	45.77524	78.16286	31.50000	0.0	0.0	0.0	0.0	0.0	d
40.343	44.53000	76.70000	31.50000	0.0	0.0	0.0	0.0	0.0	d

Structure: G | Sub-structure:

Dist.	Coordinates		Displacements</
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Line							to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]
0.0	19.29000	30.0	10000	30.80000	0.0	0.0	0.0	0.0 d
1.9237	21.21043	30.12130	30.80000	0.0	0.0	0.0	0.0	0.0 d
3.8473	23.13087	30.23261	30.80000	0.0	0.0	0.0	0.0	0.0 d
5.7710	25.05130	30.34391	30.80000	0.0	0.0	0.0	0.0	0.0 d
7.6946	26.97174	30.45522	30.80000	0.0	0.0	0.0	0.0	0.0 d
9.6183	28.89217	30.56652	30.80000	0.0	0.0	0.0	0.0	0.0 d
11.542	30.81261	30.67783	30.80000	0.0	0.0	0.0	0.0	0.0 d
13.466	32.73804	30.78913	30.80000	0.0	0.0	0.0	0.0	0.0 d
15.389	34.65348	30.90043	30.80000	0.0	0.0	0.0	0.0	0.0 d
17.313	36.57391	31.01174	30.80000	0.0	0.0	0.0	0.0	0.0 d
19.237	38.49435	31.12304	30.80000	0.0	0.0	0.0	0.0	0.0 d
21.160	40.41478	31.23435	30.80000	0.0	0.0	0.0	0.0	0.0 d
23.084	42.33522	31.34565	30.80000	0.0	0.0	0.0	0.0	0.0 d
25.008	44.25565	31.45696	30.80000	0.0	0.0	0.0	0.0	0.0 d
26.931	46.17609	31.56826	30.80000	0.0	0.0	0.0	0.0	0.0 d
28.855	48.09652	31.67957	30.80000	0.0	0.0	0.0	0.0	0.0 d
30.779	50.01696	31.79087	30.80000	0.0	0.0	0.0	0.0	0.0 d
32.702	51.93739	31.90217	30.80000	0.0	0.0	0.0	0.0	0.0 d
34.626	53.85783	32.01348	30.80000	0.0	0.0	0.0	0.0	0.0 d
36.549	55.77826	32.12478	30.80000	0.0	0.0	0.0	0.0	0.0 d
38.473	57.69870	32.23609	30.80000	0.0	0.0	0.0	0.0	0.0 d
40.397	59.61913	32.34739	30.80000	0.0	0.0	0.0	0.0	0.0 d
42.320	61.53957	32.45870	30.80000	0.0	0.0	0.0	0.0	0.0 d
44.244	63.46000	32.57000	30.80000	0.0	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Structure: K | Sub-structure:

Dist.	Coordinates			Displacements		Horizontal displacement along the Line		Horizontal displacement perpendicular to Line	
	x	y	z	x	y				
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
0.0	39.31000	53.37000	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
1.9083	37.83053	54.57526	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
3.8163	36.35105	55.78053	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
5.7248	34.87158	56.98579	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
7.6331	33.39211	58.19105	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
9.5414	31.91263	59.39629	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
11.450	30.43316	60.60158	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
13.358	28.95368	61.80684	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
15.266	27.47421	63.01211	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
17.174	25.99474	64.21737	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
19.083	24.51526	65.42263	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
20.991	23.03579	66.62789	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
22.899	21.55632	67.83315	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
24.808	20.07684	69.03842	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
26.716	18.59737	70.24368	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
28.624	17.11789	71.44895	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
30.532	15.63842	72.65421	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
32.441	14.15895	73.85947	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
34.349	12.67947	75.06474	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d
36.257	11.20000	76.27000	31.50000	0.0	0.0	0.0	0.0	0.0	0.0 d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: A | Sub-structure:

Dist.	Coordinates			Displacements	
	x	y	z	z	z
[m]	[m]	[m]	[m]	[mm]	[mm]
Vertical Offset 1					
0.0	96.95000	47.73000	31.50000	0.10275	d
1.8804	95.25000	48.53375	31.50000	-0.03323	d
3.7603	93.45000	49.33750	31.50000	-0.06186	d
5.6413	91.85000	50.14125	31.50000	-0.19179	d
7.5217	90.15000	50.94500	31.50000	-0.37031	d
9.4021	88.45000	51.74875	31.50000	-0.61843	d
11.283	86.75000	52.55250	31.50000	-0.97070	d
13.163	85.05000	53.35625	31.50000	-1.4898	d
15.043	83.35000	54.16000	31.50000	-2.3884	d

d - Displacements include imported displacements.

Structure: B | Sub-structure:

Dist.	Coordinates			Displacements	
	x	y	z	z	z
[m]	[m]	[m]	[m]	[mm]	[mm]
Vertical Offset 1					
0.0	83.25000	54.16000	27.49000	-2.4639	d
1.8923	84.10375	55.84875	27.49000	-3.8505	d
3.7846	84.95750	57.53750	27.49000	-6.5657	d
5.6769	85.81125	59.22625	27.49000	-7.7781	d
7.5692	86.66500	60.91500	27.49000	-8.4073	d
9.4615	87.51875	62.60375	27.49000	-8.6949	d
11.354	88.37250	64.29250	27.49000	-8.7163	d
13.246	89.22625	65.98125	27.49000	-8.4303	d
15.139	90.08000	67.67000	27.49000	-7.8098	d
17.031	90.93375	69.35875	27.49000	-7.2133	d
18.923	91.78750	71.04750	27.49000	-6.5982	d
20.815	92.64125	72.73625	27.49000	-6.7069	d
22.707	93.49500	74.42500	27.49000	-6.4141	d
24.600	94.34875	76.11375	27.49000	-6.1310	d
26.492	95.20250	77.80250	27.49000	-5.7606	d
28.384	96.05625	79.49125	27.49000	-5.0656	d
30.277	96.91000	81.18000	27.49000	-3.7164	d

d - Displacements include imported displacements.

Structure: C | Sub-structure:

Dist.	Coordinates			Displacements	
	x	y	z	z	z
[m]	[m]	[m]	[m]	[mm]	[mm]
Vertical Offset 1					
0.0	97.01000	81.18000	31.50000	-3.3759	d
1.8941	98.64500	80.22375	31.50000	-1.6721	d
3.7882	100.28000	79.26750	31.50000	-1.0235	d
5.6823	101.91500	78.31125	31.50000	-0.6368	d
7.5764	103.55000	77.35500	31.50000	-0.3737	d
9.4705	105.18500	76.39875	31.50000	-0.19171	d
11.365	106.82000	75.44250	31.50000	-0.06084	d
13.259	108.45500	74.48625	31.50000	0.034328	d
15.153	110.09000	73.53000	31.50000	0.10365	d

d - Displacements include imported displacements.

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Dist.	Coordinates			Displacements	
	x	y	z	z	z
[m]	[m]	[m]	[m]	[mm]	[mm]
Vertical Offset 1					
0.0	110.19000	73.53000	31.50000	0.10701	d
1.9243	109.31400	71.81667	31.50000	0.08395	d
3.8486	108.43800	70.10333	31.50000	0.061690	d
5.7729	107.56200	68.39000	31.50000	0.041259	d
7.6972	106.68600	66.67667	31.50000	0.023346	d
9.6214	105.81000	64.96333	31.50000	0.0085844	d
11.546	104.93400	63.25000	31.50000	-0.0024695	d
13.470	104.05800	61.53667	31.50000	-0.0093044	d
15.394	103.18200	59.82333	31.50000	-0.011457	d
17.319	102.30600	58.11000	31.50000	-0.0085612	d
19.243	101.43000	56.39667	31.50000	-437.342e-6	d
21.167	100.55400	54.68333	31.50000	0.012809	d
23.091	99.67800	52.97000	31.50000	0.030708	d
25.016	98.80200	51.25667	31.50000	0.052411	d
26.940	97.92600	49.54333	31.50000	0.076741	d
28.864	97.05000	47.83000	31.50000	0.10233	d

d - Displacements include imported displacements.

Structure: E | Sub-structure:

Dist.	Coordinates			Displacements	
	x	y	z	z	z
[m]	[m]	[m]	[m]	[mm]	[mm]
Vertical Offset 1					
0.0	56.58000	119.43000	31.50000	0.19609	d
1.8446	57.98000	118.22900	31.50000	0.20394	d
3.6891	59.38000	117.02800	31.50000	0.21157	d
5.5337	60.78000	115.82700	31.50000	0.21879	d
7.3782	62.18000	114.62600	31.50000	0.22539	d
9.2228	63.58000	113.42500	31.50000	0.23109	d
11.067	64.98000	112.22400	31.50000	0.23554	d
12.912	66.38000	111.02300	31.50000	0.23881	d
14.756	67.78000	109.82200	31.50000	0.23886	d
16.601	69.18000	108.62100	31.50000	0.23653	d
18.446	70.58000	107.42000	31.50000	0.23050	d

d - Displacements include imported displacements.

Structure: F | Sub-structure:

Dist.	Coordinates			Displacements	
	x	y	z	z	z
[m]	[m]	[m]	[m]	[mm]	[mm]
Vertical Offset 1					
0.0	70.68000	107.42000	31.50000	0.23028	d
1.9211	69.43476	105.95714	31.50000	0.22624	d
3.8422	68.18952	104.49429	31.50000	0.22144	d
5.7633	66.94429	103.03143	31.50000	0.21615	d
7.6843	65.69905	101.56857	31.50000	0.21068	d
9.6054	64.45381	100.10571	31.50000	0.20540	d
11.527	63.20857	98.64286	31.50000	0.20065	d
13.448	61.96333	97.18000	31.50000	0.19616	d
15.369	60.71810	95.71714	31.50000	0.19168	d
17.290	59.47286	94.25429	31.50000	0.19263	d
19.211	58.22762	92.79143	31.50000	0.19273	d
21.132	56.98238	91.32857	31.50000	0.19268	d
23.053	55.73714	89.86571	31.50000	0.19355	d
24.974	54.49190	88.40286	31.50000	0.20158	d
26.895	53.24667	86.94000	31.50000	0.20736	d
28.816	52.00143	85.47714	31.50000	0.21256	d
30.737	50.75619	84.01429	31.50000	0.21861	d
32.658	49.51095	82.55143	31.50000	0.22443	d
34.579	48.26571	81.08857	31.50000	0.23007	d
36.501	47.02048	79.62571	31.50000	0.23487	d
38.422	45.77524	78.16286	31.50000	0.23872	d
40.343	44.52999	76.70000	31.50000	0.24268	d

d = Displacements include imported displacements.