



GEOTECHNICAL AND ENVIRONMENTAL ASSOCIATES LTD J22390

9-12 New College Parade, London NW3 5EX
 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Grid: Name	x	y	z	δx	δy	δz
				[m]	[m]	[m]	[mm]	[mm]	[mm]
1.75000	33.00000	0.00000		0.00000			0.0	0.0	0.0
3.50000	33.00000	0.00000		0.00000			0.0	0.0	0.0
5.25000	33.00000	0.00000		0.00000			0.0	0.0	0.0
7.00000	33.00000	0.00000		0.00000			0.0	0.0	0.0
8.75000	33.00000	0.00000		0.00000			0.0	0.0	0.0
10.50000	33.00000	0.00000		0.00000			0.0	0.0	0.0
12.25000	33.00000	0.00000		0.00000			0.0	0.0	0.0
14.00000	33.00000	0.00000		0.00000			0.0	0.0	0.0
15.75000	33.00000	0.00000		0.00000			0.27134	-0.026129	0.27259
17.50000	33.00000	0.00000		0.00000			1.3637	-0.13132	1.3700
19.25000	33.00000	0.00000		0.00000			2.4561	-0.23651	2.4674
21.00000	33.00000	0.00000		0.00000			3.5485	-0.34170	3.5649
22.75000	33.00000	0.00000		0.00000			4.6408	-0.44689	4.6623
24.50000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
26.25000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
28.00000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
29.75000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
31.50000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
33.25000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
35.00000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
36.75000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
38.50000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
40.25000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
42.00000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
43.75000	33.00000	0.00000		0.00000			Point lies	within an	excavation.
45.50000	33.00000	0.00000		0.00000			-5.8313	0.0	5.8313
47.25000	33.00000	0.00000		0.00000			-5.5031	0.0	5.5031
49.00000	33.00000	0.00000		0.00000			-5.1750	0.0	5.1750
50.75000	33.00000	0.00000		0.00000			-4.8469	0.0	4.8469
52.50000	33.00000	0.00000		0.00000			-4.5188	0.0	4.5188
54.25000	33.00000	0.00000		0.00000			-4.1906	0.0	4.1906
56.00000	33.00000	0.00000		0.00000			-3.8625	0.0	3.8625
57.75000	33.00000	0.00000		0.00000			-3.5344	0.0	3.5344
59.50000	33.00000	0.00000		0.00000			-3.2063	0.0	3.2063
61.25000	33.00000	0.00000		0.00000			-2.8781	0.0	2.8781
63.00000	33.00000	0.00000		0.00000			-2.5500	0.0	2.5500
64.75000	33.00000	0.00000		0.00000			-2.2219	0.0	2.2219
66.50000	33.00000	0.00000		0.00000			-1.8938	0.0	1.8938
68.25000	33.00000	0.00000		0.00000			-1.5656	0.0	1.5656
70.00000	33.00000	0.00000		0.00000			-1.2375	0.0	1.2375
0.00000	34.50000	0.00000		0.00000			0.0	0.0	0.0
1.75000	34.50000	0.00000		0.00000			0.0	0.0	0.0
3.50000	34.50000	0.00000		0.00000			0.0	0.0	0.0
5.25000	34.50000	0.00000		0.00000			0.0	0.0	0.0
7.00000	34.50000	0.00000		0.00000			0.0	0.0	0.0
8.75000	34.50000	0.00000		0.00000			0.0	0.0	0.0
10.50000	34.50000	0.00000		0.00000			0.0	0.0	0.0
12.25000	34.50000	0.00000		0.00000			0.0	0.0	0.0
14.00000	34.50000	0.00000		0.00000			0.60815	-0.17028	0.50803
15.75000	34.50000	0.00000		0.00000			2.3075	-0.61997	1.9297
17.50000	34.50000	0.00000		0.00000			5.7312	-1.4706	4.6949
19.25000	34.50000	0.00000		0.00000			11.137	-3.0433	8.2965
21.00000	34.50000	0.00000		0.00000			14.205	-3.9774	9.2919
22.75000	34.50000	0.00000		0.00000			15.483	-4.3352	8.4862
24.50000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
26.25000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
28.00000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
29.75000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
31.50000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
33.25000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
35.00000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
36.75000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
38.50000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
40.25000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
42.00000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
43.75000	34.50000	0.00000		0.00000			Point lies	within an	excavation.
45.50000	34.50000	0.00000		0.00000			-16.323	0.0	8.2774
47.25000	34.50000	0.00000		0.00000			-14.931	0.0	9.2149
49.00000	34.50000	0.00000		0.00000			-13.624	0.0	9.5508
50.75000	34.50000	0.00000		0.00000			-12.394	0.0	9.4105
52.50000	34.50000	0.00000		0.00000			-11.229	0.0	8.9072



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Job No.	Sheet No.	Rev.
D J22390		
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Grid: Name	x	y	z	δx	δy	δz
				[m]	[m]	[m]	[mm]	[mm]	[mm]
				54.25000	34.50000	0.00000	-10.121	0.0	8.1420
				56.00000	34.50000	0.00000	-9.0609	0.0	7.2038
				57.75000	34.50000	0.00000	-8.0384	0.0	6.1696
				59.50000	34.50000	0.00000	-7.0442	0.0	5.1043
				61.25000	34.50000	0.00000	-6.0688	0.0	4.0607
				63.00000	34.50000	0.00000	-5.1029	0.0	3.0793
				64.75000	34.50000	0.00000	-4.4438	0.0	2.1890
				66.50000	34.50000	0.00000	-3.7875	0.0	1.4062
				68.25000	34.50000	0.00000	-3.1313	0.0	0.73545
				70.00000	34.50000	0.00000	-2.4750	0.0	0.36906
				0.00000	36.00000	0.00000	0.18137	-0.050785	0.041289
				1.75000	36.00000	0.00000	0.39391	-0.11029	0.14604
				3.50000	36.00000	0.00000	0.70301	-0.19684	0.34956
				5.25000	36.00000	0.00000	1.1361	-0.31811	0.69630
				7.00000	36.00000	0.00000	1.8144	-0.50803	1.2447
				8.75000	36.00000	0.00000	3.1011	-0.77906	2.1350
				10.50000	36.00000	0.00000	5.1235	-1.1616	3.4201
				12.25000	36.00000	0.00000	7.7326	-1.7084	5.2240
				14.00000	36.00000	0.00000	11.249	-2.5093	7.8069
				15.75000	36.00000	0.00000	13.481	-2.9505	9.2976
				17.50000	36.00000	0.00000	15.202	-3.2486	10.500
				19.25000	36.00000	0.00000	16.980	-3.5625	11.505
				21.00000	36.00000	0.00000	18.822	-3.8947	12.215
				22.75000	36.00000	0.00000	20.961	-4.2473	12.508
				24.50000	36.00000	0.00000	6.7640	-16.737	12.682
				26.25000	36.00000	0.00000	7.7519	-16.737	13.746
				28.00000	36.00000	0.00000	8.7653	-16.737	14.795
				29.75000	36.00000	0.00000	9.8139	-16.737	15.768
				31.50000	36.00000	0.00000	10.907	-16.737	16.591
				33.25000	36.00000	0.00000	12.054	-16.737	17.179
				35.00000	36.00000	0.00000	13.265	-16.737	17.434
				36.75000	36.00000	0.00000	14.549	-16.737	17.247
				38.50000	36.00000	0.00000	15.916	-16.737	16.495
				40.25000	36.00000	0.00000	Point lies	within an	excavation.
				42.00000	36.00000	0.00000	Point lies	within an	excavation.
				43.75000	36.00000	0.00000	Point lies	within an	excavation.
				45.50000	36.00000	0.00000	-26.453	0.0	14.440
				47.25000	36.00000	0.00000	-24.178	0.0	15.646
				49.00000	36.00000	0.00000	-22.041	0.0	15.920
				50.75000	36.00000	0.00000	-20.024	0.0	15.466
				52.50000	36.00000	0.00000	-18.113	0.0	14.464
				54.25000	36.00000	0.00000	-16.291	0.0	13.077
				56.00000	36.00000	0.00000	-14.543	0.0	11.447
				57.75000	36.00000	0.00000	-12.853	0.0	9.6947
				59.50000	36.00000	0.00000	-11.205	0.0	7.9223
				61.25000	36.00000	0.00000	-9.5824	0.0	6.2108
				63.00000	36.00000	0.00000	-8.1439	0.0	4.6213
				64.75000	36.00000	0.00000	-7.0461	0.0	3.1946
				66.50000	36.00000	0.00000	-5.9501	0.0	1.9516
				68.25000	36.00000	0.00000	-4.8542	0.0	0.94275
				70.00000	36.00000	0.00000	-3.7583	0.0	0.53248
				0.00000	37.50000	0.00000	1.2018	-0.33651	0.25106
				1.75000	37.50000	0.00000	1.7288	-0.48406	0.61111
				3.50000	37.50000	0.00000	2.4033	-0.67292	1.1542
				5.25000	37.50000	0.00000	3.2657	-0.91439	1.9457
				7.00000	37.50000	0.00000	4.5433	-1.2721	3.0670
				8.75000	37.50000	0.00000	6.6114	-1.7620	4.6846
				10.50000	37.50000	0.00000	8.3549	-2.0664	5.9119
				12.25000	37.50000	0.00000	9.9480	-2.3287	6.9976
				14.00000	37.50000	0.00000	11.571	-2.5995	8.0621
				15.75000	37.50000	0.00000	13.233	-2.8810	9.1266
				17.50000	37.50000	0.00000	14.942	-3.1757	10.390
				19.25000	37.50000	0.00000	13.036	-2.6504	8.8130
				21.00000	37.50000	0.00000	13.056	-3.4955	9.3248
				22.75000	37.50000	0.00000	10.524	-5.4597	9.2045
				24.50000	37.50000	0.00000	6.7640	-15.516	13.696
				26.25000	37.50000	0.00000	7.7519	-15.516	14.760
				28.00000	37.50000	0.00000	8.7653	-15.516	15.810
				29.75000	37.50000	0.00000	9.8139	-15.516	16.782
				31.50000	37.50000	0.00000	10.907	-15.516	17.606
				33.25000	37.50000	0.00000	12.054	-15.516	18.194



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Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Grid: Name	x	y	z	δx	δy	δz
				[m]	[m]	[m]	[mm]	[mm]	[mm]
				35.00000	37.50000	0.00000	13.265	-15.516	18.449
				36.75000	37.50000	0.00000	14.549	-15.516	18.261
				38.50000	37.50000	0.00000	15.916	-15.516	17.509
				40.25000	37.50000	0.00000	Point lies within an excavation.		
				42.00000	37.50000	0.00000	Point lies within an excavation.		
				43.75000	37.50000	0.00000	Point lies within an excavation.		
				45.50000	37.50000	0.00000	-17.099	-7.6943	14.259
				47.25000	37.50000	0.00000	-19.360	-2.7297	14.549
				49.00000	37.50000	0.00000	-19.333	-1.5335	15.183
				50.75000	37.50000	0.00000	-18.263	-0.99604	14.922
				52.50000	37.50000	0.00000	-16.874	-0.69952	14.048
				54.25000	37.50000	0.00000	-15.378	-0.51411	12.755
				56.00000	37.50000	0.00000	-13.851	-0.38828	11.198
				57.75000	37.50000	0.00000	-12.319	-0.29776	9.5039
				59.50000	37.50000	0.00000	-10.790	-0.22971	7.7780
				61.25000	37.50000	0.00000	-9.2600	-0.17669	6.1038
				63.00000	37.50000	0.00000	-7.9006	-0.13435	4.5440
				64.75000	37.50000	0.00000	-6.8525	-0.10671	3.1409
				66.50000	37.50000	0.00000	-5.7966	-0.083541	1.9162
				68.25000	37.50000	0.00000	-4.7348	-0.063843	0.92135
				70.00000	37.50000	0.00000	-3.6682	-0.046891	0.52485
				0.00000	39.00000	0.00000	2.1222	-0.59421	0.38391
				1.75000	39.00000	0.00000	2.9382	-0.82270	0.96394
				3.50000	39.00000	0.00000	3.9439	-1.1043	1.7962
				5.25000	39.00000	0.00000	4.5989	-1.2877	2.6269
				7.00000	39.00000	0.00000	5.3496	-1.4979	3.5297
				8.75000	39.00000	0.00000	6.4617	-1.7495	4.5484
				10.50000	39.00000	0.00000	7.8120	-2.0044	5.6190
				12.25000	39.00000	0.00000	9.1824	-2.2650	6.6879
				14.00000	39.00000	0.00000	8.0018	-1.8898	5.6551
				15.75000	39.00000	0.00000	8.7589	-2.2571	6.3274
				17.50000	39.00000	0.00000	9.2573	-2.7421	7.0619
				19.25000	39.00000	0.00000	9.2620	-3.4338	7.5790
				21.00000	39.00000	0.00000	8.2741	-4.5116	7.7773
				22.75000	39.00000	0.00000	6.3178	-7.2503	8.6077
				24.50000	39.00000	0.00000	4.5319	-14.361	12.642
				26.25000	39.00000	0.00000	5.1937	-14.361	13.355
				28.00000	39.00000	0.00000	5.8728	-14.361	14.058
				29.75000	39.00000	0.00000	6.5753	-14.361	14.710
				31.50000	39.00000	0.00000	7.3078	-14.361	15.261
				33.25000	39.00000	0.00000	8.0765	-14.361	15.655
				35.00000	39.00000	0.00000	8.8878	-14.361	15.826
				36.75000	39.00000	0.00000	9.7481	-14.361	15.700
				38.50000	39.00000	0.00000	10.664	-14.361	15.197
				40.25000	39.00000	0.00000	0.0	-16.737	7.8802
				42.00000	39.00000	0.00000	0.0	-16.737	7.8802
				43.75000	39.00000	0.00000	0.0	-16.737	7.8802
				45.50000	39.00000	0.00000	-11.149	-8.3356	11.943
				47.25000	39.00000	0.00000	-12.325	-4.4992	11.407
				49.00000	39.00000	0.00000	-12.859	-2.6449	11.433
				50.75000	39.00000	0.00000	-12.764	-1.8210	11.365
				52.50000	39.00000	0.00000	-12.160	-1.3151	10.792
				54.25000	39.00000	0.00000	-11.309	-0.98128	9.8642
				56.00000	39.00000	0.00000	-10.332	-0.74777	8.7052
				57.75000	39.00000	0.00000	-9.2864	-0.57660	7.4199
				59.50000	39.00000	0.00000	-8.1995	-0.44627	6.0947
				61.25000	39.00000	0.00000	-7.0826	-0.34383	4.7983
				63.00000	39.00000	0.00000	-6.0782	-0.26320	3.5831
				64.75000	39.00000	0.00000	-5.2951	-0.20915	2.4844
				66.50000	39.00000	0.00000	-4.4967	-0.16370	1.5215
				68.25000	39.00000	0.00000	-3.6863	-0.12495	0.73063
				70.00000	39.00000	0.00000	-2.8664	-0.091531	0.41790
				0.00000	40.50000	0.00000	2.6273	-0.73564	0.44121
				1.75000	40.50000	0.00000	3.2358	-0.90603	0.95703
				3.50000	40.50000	0.00000	3.8444	-1.0764	1.6384
				5.25000	40.50000	0.00000	4.4529	-1.2468	2.4235
				7.00000	40.50000	0.00000	5.1348	-1.4377	3.3054
				8.75000	40.50000	0.00000	4.5268	-1.2567	3.1301
				10.50000	40.50000	0.00000	5.4313	-1.5224	3.8677
				12.25000	40.50000	0.00000	6.2472	-1.8289	4.5731
				14.00000	40.50000	0.00000	6.9346	-2.1935	5.2301



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Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Grid: Name	x	y	z	δx	δy	δz
				[m]	[m]	[m]	[mm]	[mm]	[mm]
				15.75000	40.50000	0.00000	7.4253	-2.6432	5.8329
				17.50000	40.50000	0.00000	7.6022	-3.2203	6.5096
				19.25000	40.50000	0.00000	7.2698	-3.9904	6.9994
				21.00000	40.50000	0.00000	6.2983	-5.2513	7.4986
				22.75000	40.50000	0.00000	5.1321	-7.7771	8.8138
				24.50000	40.50000	0.00000	4.1456	-13.479	12.639
				26.25000	40.50000	0.00000	4.6970	-13.542	13.308
				28.00000	40.50000	0.00000	5.2304	-13.625	13.957
				29.75000	40.50000	0.00000	5.7330	-13.739	14.540
				31.50000	40.50000	0.00000	6.1759	-13.904	15.005
				33.25000	40.50000	0.00000	6.4933	-14.160	15.282
				35.00000	40.50000	0.00000	6.5194	-14.606	15.283
				36.75000	40.50000	0.00000	5.7471	-15.532	14.865
				38.50000	40.50000	0.00000	2.8596	-18.698	14.459
				40.25000	40.50000	0.00000	0.0	-15.516	8.8945
				42.00000	40.50000	0.00000	0.0	-15.516	8.8945
				43.75000	40.50000	0.00000	0.0	-15.516	8.8945
				45.50000	40.50000	0.00000	-4.2241	-11.848	10.756
				47.25000	40.50000	0.00000	-8.0149	-7.3580	10.908
				49.00000	40.50000	0.00000	-9.3838	-4.6196	10.559
				50.75000	40.50000	0.00000	-9.9986	-3.2090	10.398
				52.50000	40.50000	0.00000	-10.034	-2.3792	9.9699
				54.25000	40.50000	0.00000	-9.6535	-1.8043	9.1772
				56.00000	40.50000	0.00000	-9.0287	-1.3888	8.1407
				57.75000	40.50000	0.00000	-8.2528	-1.0772	6.9638
				59.50000	40.50000	0.00000	-7.3772	-0.83606	5.7329
				61.25000	40.50000	0.00000	-6.4293	-0.64411	4.5173
				63.00000	40.50000	0.00000	-5.5897	-0.49943	3.3701
				64.75000	40.50000	0.00000	-4.8967	-0.39634	2.3277
				66.50000	40.50000	0.00000	-4.1750	-0.30918	1.4103
				68.25000	40.50000	0.00000	-3.4305	-0.23457	0.66066
				70.00000	40.50000	0.00000	-2.6679	-0.16999	0.39534
				0.00000	42.00000	0.00000	2.4812	-0.69474	0.39640
				1.75000	42.00000	0.00000	3.0898	-0.86514	0.80883
				3.50000	42.00000	0.00000	2.6606	-0.76533	1.0616
				5.25000	42.00000	0.00000	3.0236	-0.92073	1.5967
				7.00000	42.00000	0.00000	3.3476	-1.0899	2.1850
				8.75000	42.00000	0.00000	3.9675	-1.3493	2.8432
				10.50000	42.00000	0.00000	4.7460	-1.6536	3.5240
				12.25000	42.00000	0.00000	5.4137	-2.0029	4.1688
				14.00000	42.00000	0.00000	5.9292	-2.4137	4.7655
				15.75000	42.00000	0.00000	6.2281	-2.9088	5.2961
				17.50000	42.00000	0.00000	6.2153	-3.5188	5.9311
				19.25000	42.00000	0.00000	5.7618	-4.2795	6.4160
				21.00000	42.00000	0.00000	5.1882	-5.8138	7.4601
				22.75000	42.00000	0.00000	4.3328	-7.7829	8.6578
				24.50000	42.00000	0.00000	3.7243	-12.638	12.259
				26.25000	42.00000	0.00000	4.1655	-12.759	12.879
				28.00000	42.00000	0.00000	4.5563	-12.917	13.470
				29.75000	42.00000	0.00000	4.8688	-13.130	13.989
				31.50000	42.00000	0.00000	5.0501	-13.430	14.379
				33.25000	42.00000	0.00000	4.9959	-13.876	14.576
				35.00000	42.00000	0.00000	4.4901	-14.587	14.498
				36.75000	42.00000	0.00000	3.2057	-15.932	14.225
				38.50000	42.00000	0.00000	1.4584	-19.314	15.036
				40.25000	42.00000	0.00000	0.0	-14.361	9.4249
				42.00000	42.00000	0.00000	0.0	-14.361	9.4249
				43.75000	42.00000	0.00000	0.0	-14.361	9.4249
				45.50000	42.00000	0.00000	-2.4036	-13.587	11.504
				47.25000	42.00000	0.00000	-4.9794	-8.8736	10.345
				49.00000	42.00000	0.00000	-6.8379	-6.1819	10.086
				50.75000	42.00000	0.00000	-7.6498	-4.3039	9.5150
				52.50000	42.00000	0.00000	-8.0782	-3.2358	9.0982
				54.25000	42.00000	0.00000	-8.0671	-2.4954	8.4139
				56.00000	42.00000	0.00000	-7.7414	-1.9418	7.4897
				57.75000	42.00000	0.00000	-7.2066	-1.5166	6.4212
				59.50000	42.00000	0.00000	-6.5264	-1.1815	5.2904
				61.25000	42.00000	0.00000	-5.7388	-0.91110	4.1647
				63.00000	42.00000	0.00000	-5.0760	-0.71606	3.0960
				64.75000	42.00000	0.00000	-4.4709	-0.56807	2.1203
				66.50000	42.00000	0.00000	-3.8246	-0.44224	1.2580



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9-12 New College Parade, London NW3 5EX
 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Grid: Name	x	y	z	δx	δy	δz
				[m]	[m]	[m]	[mm]	[mm]	[mm]
68.25000	42.00000	0.00000		68.25000	42.00000	0.00000	-3.1456	-0.33403	0.57061
70.00000	42.00000	0.00000		70.00000	42.00000	0.00000	-2.4403	-0.24003	0.36626
0.00000	43.50000	0.00000		0.00000	43.50000	0.00000	1.6490	-0.49442	0.25615
1.75000	43.50000	0.00000		1.75000	43.50000	0.00000	2.0306	-0.64032	0.46927
3.50000	43.50000	0.00000		3.50000	43.50000	0.00000	2.3831	-0.79605	0.90357
5.25000	43.50000	0.00000		5.25000	43.50000	0.00000	2.6997	-0.96384	1.3939
7.00000	43.50000	0.00000		7.00000	43.50000	0.00000	2.9716	-1.1466	1.9312
8.75000	43.50000	0.00000		8.75000	43.50000	0.00000	3.4080	-1.4017	2.5261
10.50000	43.50000	0.00000		10.50000	43.50000	0.00000	4.0786	-1.7342	3.1504
12.25000	43.50000	0.00000		12.25000	43.50000	0.00000	4.6261	-2.1118	3.7361
14.00000	43.50000	0.00000		14.00000	43.50000	0.00000	5.0129	-2.5481	4.2757
15.75000	43.50000	0.00000		15.75000	43.50000	0.00000	5.1862	-3.0597	4.7504
17.50000	43.50000	0.00000		17.50000	43.50000	0.00000	5.0782	-3.6649	5.3285
19.25000	43.50000	0.00000		19.25000	43.50000	0.00000	4.7969	-4.6178	6.1138
21.00000	43.50000	0.00000		21.00000	43.50000	0.00000	4.3540	-5.9962	7.1674
22.75000	43.50000	0.00000		22.75000	43.50000	0.00000	3.6970	-7.5674	8.2415
24.50000	43.50000	0.00000		24.50000	43.50000	0.00000	3.2884	-11.822	11.582
26.25000	43.50000	0.00000		26.25000	43.50000	0.00000	3.6276	-11.993	12.150
28.00000	43.50000	0.00000		28.00000	43.50000	0.00000	3.8913	-12.211	12.685
29.75000	43.50000	0.00000		29.75000	43.50000	0.00000	4.0440	-12.498	13.145
31.50000	43.50000	0.00000		31.50000	43.50000	0.00000	4.0254	-12.887	13.479
33.25000	43.50000	0.00000		33.25000	43.50000	0.00000	3.7325	-13.434	13.631
35.00000	43.50000	0.00000		35.00000	43.50000	0.00000	2.9945	-14.224	13.542
36.75000	43.50000	0.00000		36.75000	43.50000	0.00000	2.2213	-16.021	14.138
38.50000	43.50000	0.00000		38.50000	43.50000	0.00000	0.91790	-18.522	14.854
40.25000	43.50000	0.00000		40.25000	43.50000	0.00000	0.0	-13.265	9.5542
42.00000	43.50000	0.00000		42.00000	43.50000	0.00000	0.0	-13.265	9.5542
43.75000	43.50000	0.00000		43.75000	43.50000	0.00000	0.0	-13.265	9.5542
45.50000	43.50000	0.00000		45.50000	43.50000	0.00000	-1.5786	-13.636	11.564
47.25000	43.50000	0.00000		47.25000	43.50000	0.00000	-3.5167	-9.8678	10.379
49.00000	43.50000	0.00000		49.00000	43.50000	0.00000	-4.9156	-7.0581	9.4795
50.75000	43.50000	0.00000		50.75000	43.50000	0.00000	-5.9341	-5.2295	8.9518
52.50000	43.50000	0.00000		52.50000	43.50000	0.00000	-6.3771	-3.8575	8.2051
54.25000	43.50000	0.00000		54.25000	43.50000	0.00000	-6.6207	-3.0270	7.6045
56.00000	43.50000	0.00000		56.00000	43.50000	0.00000	-6.5257	-2.3833	6.7803
57.75000	43.50000	0.00000		57.75000	43.50000	0.00000	-6.1907	-1.8755	5.8164
59.50000	43.50000	0.00000		59.50000	43.50000	0.00000	-5.6805	-1.4671	4.7878
61.25000	43.50000	0.00000		61.25000	43.50000	0.00000	-5.0371	-1.1324	3.7572
63.00000	43.50000	0.00000		63.00000	43.50000	0.00000	-4.5528	-0.90539	2.7738
64.75000	43.50000	0.00000		64.75000	43.50000	0.00000	-4.0301	-0.71803	1.8723
66.50000	43.50000	0.00000		66.50000	43.50000	0.00000	-3.4559	-0.55766	1.0721
68.25000	43.50000	0.00000		68.25000	43.50000	0.00000	-2.8403	-0.41898	0.51267
70.00000	43.50000	0.00000		70.00000	43.50000	0.00000	-2.1910	-0.29797	0.33281
0.00000	45.00000	0.00000		0.00000	45.00000	0.00000	1.4439	-0.49110	0.22195
1.75000	45.00000	0.00000		1.75000	45.00000	0.00000	1.7915	-0.64513	0.33800
3.50000	45.00000	0.00000		3.50000	45.00000	0.00000	2.1065	-0.80959	0.73302
5.25000	45.00000	0.00000		5.25000	45.00000	0.00000	2.3820	-0.98664	1.1769
7.00000	45.00000	0.00000		7.00000	45.00000	0.00000	2.6090	-1.1790	1.6619
8.75000	45.00000	0.00000		8.75000	45.00000	0.00000	2.8626	-1.4110	2.1894
10.50000	45.00000	0.00000		10.50000	45.00000	0.00000	3.4444	-1.7623	2.7592
12.25000	45.00000	0.00000		12.25000	45.00000	0.00000	3.8988	-2.1557	3.2881
14.00000	45.00000	0.00000		14.00000	45.00000	0.00000	4.1947	-2.6013	3.7732
15.75000	45.00000	0.00000		15.75000	45.00000	0.00000	4.2925	-3.1099	4.2028
17.50000	45.00000	0.00000		17.50000	45.00000	0.00000	4.1921	-3.7481	4.7787
19.25000	45.00000	0.00000		19.25000	45.00000	0.00000	4.0483	-4.7731	5.7193
21.00000	45.00000	0.00000		21.00000	45.00000	0.00000	3.6865	-5.9556	6.6830
22.75000	45.00000	0.00000		22.75000	45.00000	0.00000	3.1503	-7.2354	7.6355
24.50000	45.00000	0.00000		24.50000	45.00000	0.00000	2.8557	-11.018	10.682
26.25000	45.00000	0.00000		26.25000	45.00000	0.00000	3.1066	-11.226	11.198
28.00000	45.00000	0.00000		28.00000	45.00000	0.00000	3.2661	-11.487	11.679
29.75000	45.00000	0.00000		29.75000	45.00000	0.00000	3.2984	-11.821	12.088
31.50000	45.00000	0.00000		31.50000	45.00000	0.00000	3.1485	-12.255	12.380
33.25000	45.00000	0.00000		33.25000	45.00000	0.00000	2.7361	-12.830	12.512
35.00000	45.00000	0.00000		35.00000	45.00000	0.00000	2.3001	-13.936	12.991
36.75000	45.00000	0.00000		36.75000	45.00000	0.00000	1.6170	-15.479	13.575
38.50000	45.00000	0.00000		38.50000	45.00000	0.00000	0.63962	-17.354	14.187
40.25000	45.00000	0.00000		40.25000	45.00000	0.00000	0.0	-12.223	9.3584
42.00000	45.00000	0.00000		42.00000	45.00000	0.00000	0.0	-12.223	9.3584
43.75000	45.00000	0.00000		43.75000	45.00000	0.00000	0.0	-12.223	9.3584
45.50000	45.00000	0.00000		45.50000	45.00000	0.00000	-1.1248	-13.096	11.180
47.25000	45.00000	0.00000		47.25000	45.00000	0.00000	-2.6323	-10.168	10.156



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 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Grid: Name	x	y	z	δx	δy	δz
				[m]	[m]	[m]	[mm]	[mm]	[mm]
				49.00000	45.00000	0.00000	-3.7374	-7.6454	9.1074
				50.75000	45.00000	0.00000	-4.5608	-5.7583	8.2683
				52.50000	45.00000	0.00000	-5.1245	-4.4210	7.5749
				54.25000	45.00000	0.00000	-5.3504	-3.3929	6.7728
				56.00000	45.00000	0.00000	-5.4172	-2.7029	6.0371
				57.75000	45.00000	0.00000	-5.2362	-2.1430	5.1725
				59.50000	45.00000	0.00000	-4.8657	-1.6827	4.2450
				61.25000	45.00000	0.00000	-4.4068	-1.3192	3.3117
				63.00000	45.00000	0.00000	-4.0335	-1.0614	2.4176
				64.75000	45.00000	0.00000	-3.5859	-0.84107	1.5949
				66.50000	45.00000	0.00000	-3.0785	-0.65102	0.86124
				68.25000	45.00000	0.00000	-2.5226	-0.48563	0.45077
				70.00000	45.00000	0.00000	-1.9268	-0.34055	0.29727
				0.00000	46.50000	0.00000	1.2374	-0.47422	0.18934
				1.75000	46.50000	0.00000	1.5541	-0.63439	0.28318
				3.50000	46.50000	0.00000	1.8358	-0.80512	0.55597
				5.25000	46.50000	0.00000	2.0757	-0.98838	0.95340
				7.00000	46.50000	0.00000	2.2654	-1.1866	1.3862
				8.75000	46.50000	0.00000	2.3942	-1.4026	1.8411
				10.50000	46.50000	0.00000	2.8520	-1.7382	2.3616
				12.25000	46.50000	0.00000	3.2373	-2.1375	2.8366
				14.00000	46.50000	0.00000	3.4724	-2.5811	3.2700
				15.75000	46.50000	0.00000	3.5297	-3.0749	3.6556
				17.50000	46.50000	0.00000	3.5453	-3.8365	4.3360
				19.25000	46.50000	0.00000	3.4212	-4.7561	5.1958
				21.00000	46.50000	0.00000	3.1290	-5.7742	6.0610
				22.75000	46.50000	0.00000	2.6907	-6.8377	6.8974
				24.50000	46.50000	0.00000	2.4399	-10.213	9.6271
				26.25000	46.50000	0.00000	2.6191	-10.448	10.091
				28.00000	46.50000	0.00000	2.6996	-10.735	10.522
				29.75000	46.50000	0.00000	2.6500	-11.091	10.886
				31.50000	46.50000	0.00000	2.4269	-11.537	11.147
				33.25000	46.50000	0.00000	2.1685	-12.287	11.580
				35.00000	46.50000	0.00000	1.7950	-13.335	12.121
				36.75000	46.50000	0.00000	1.2210	-14.621	12.662
				38.50000	46.50000	0.00000	0.47197	-16.061	13.181
				40.25000	46.50000	0.00000	0.0	-11.229	8.9072
				42.00000	46.50000	0.00000	0.0	-11.229	8.9072
				43.75000	46.50000	0.00000	0.0	-11.229	8.9072
				45.50000	46.50000	0.00000	-0.84117	-12.312	10.485
				47.25000	46.50000	0.00000	-2.0245	-10.008	9.6130
				49.00000	46.50000	0.00000	-2.9554	-7.8915	8.6603
				50.75000	46.50000	0.00000	-3.5948	-6.0852	7.6689
				52.50000	46.50000	0.00000	-4.0810	-4.7291	6.8556
				54.25000	46.50000	0.00000	-4.3647	-3.7022	6.0863
				56.00000	46.50000	0.00000	-4.4331	-2.9004	5.2816
				57.75000	46.50000	0.00000	-4.3626	-2.3149	4.5103
				59.50000	46.50000	0.00000	-4.1005	-1.8225	3.6813
				61.25000	46.50000	0.00000	-3.8305	-1.4652	2.8447
				63.00000	46.50000	0.00000	-3.5291	-1.1798	2.0410
				64.75000	46.50000	0.00000	-3.1476	-0.93330	1.2988
				66.50000	46.50000	0.00000	-2.7008	-0.71885	0.63356
				68.25000	46.50000	0.00000	-2.1999	-0.53089	0.38881
				70.00000	46.50000	0.00000	-1.6541	-0.36504	0.26166
				0.00000	48.00000	0.00000	1.0327	-0.44327	0.15971
				1.75000	48.00000	0.00000	1.3219	-0.60765	0.23304
				3.50000	48.00000	0.00000	1.5747	-0.78232	0.37775
				5.25000	48.00000	0.00000	1.7847	-0.96899	0.73011
				7.00000	48.00000	0.00000	1.9441	-1.1696	1.1121
				8.75000	48.00000	0.00000	2.0438	-1.3864	1.5131
				10.50000	48.00000	0.00000	2.3087	-1.6662	1.9669
				12.25000	48.00000	0.00000	2.6412	-2.0618	2.3922
				14.00000	48.00000	0.00000	2.8382	-2.4958	2.7766
				15.75000	48.00000	0.00000	2.9461	-3.0582	3.2214
				17.50000	48.00000	0.00000	2.9845	-3.7942	3.8125
				19.25000	48.00000	0.00000	2.8848	-4.6148	4.5839
				21.00000	48.00000	0.00000	2.6503	-5.4964	5.3488
				22.75000	48.00000	0.00000	2.2989	-6.3971	6.0759
				24.50000	48.00000	0.00000	2.0507	-9.3985	8.4758
				26.25000	48.00000	0.00000	2.1749	-9.6497	8.8898
				28.00000	48.00000	0.00000	2.1999	-9.9493	9.2735



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 Ground Movement Analysis from Basement Construction
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Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Grid: Name	x	y	z	δx	δy	δz
				[m]	[m]	[m]	[mm]	[mm]	[mm]
				29.75000	48.00000	0.00000	2.1008	-10.309	9.5980
				31.50000	48.00000	0.00000	1.9541	-10.850	10.002
				33.25000	48.00000	0.00000	1.7556	-11.611	10.513
				35.00000	48.00000	0.00000	1.4203	-12.534	11.020
				36.75000	48.00000	0.00000	0.94602	-13.598	11.504
				38.50000	48.00000	0.00000	0.36076	-14.729	11.942
				40.25000	48.00000	0.00000	0.0	-10.276	8.2638
				42.00000	48.00000	0.00000	0.0	-10.276	8.2638
				43.75000	48.00000	0.00000	0.0	-10.276	8.2638
				45.50000	48.00000	0.00000	-0.64839	-11.417	9.5750
				47.25000	48.00000	0.00000	-1.5875	-9.5779	8.8403
				49.00000	48.00000	0.00000	-2.3599	-7.8135	7.9968
				50.75000	48.00000	0.00000	-2.9236	-6.2320	7.0901
				52.50000	48.00000	0.00000	-3.2755	-4.8774	6.1554
				54.25000	48.00000	0.00000	-3.5397	-3.8565	5.3796
				56.00000	48.00000	0.00000	-3.6338	-3.0394	4.6084
				57.75000	48.00000	0.00000	-3.5791	-2.3924	3.8485
				59.50000	48.00000	0.00000	-3.4388	-1.9161	3.1137
				61.25000	48.00000	0.00000	-3.2900	-1.5626	2.3715
				63.00000	48.00000	0.00000	-3.0479	-1.2580	1.6568
				64.75000	48.00000	0.00000	-2.7232	-0.99211	0.99439
				66.50000	48.00000	0.00000	-2.3296	-0.75861	0.49388
				68.25000	48.00000	0.00000	-1.8784	-0.55239	0.33014
				70.00000	48.00000	0.00000	-1.3785	-0.36923	0.22737
				0.00000	49.50000	0.00000	0.83245	-0.39805	0.13363
				1.75000	49.50000	0.00000	1.0976	-0.56482	0.18943
				3.50000	49.50000	0.00000	1.3259	-0.74131	0.27477
				5.25000	49.50000	0.00000	1.5113	-0.92890	0.51270
				7.00000	49.50000	0.00000	1.6472	-1.1291	0.84671
				8.75000	49.50000	0.00000	1.7255	-1.3434	1.1964
				10.50000	49.50000	0.00000	1.8753	-1.6049	1.5830
				12.25000	49.50000	0.00000	2.1071	-1.9331	1.9636
				14.00000	49.50000	0.00000	2.2961	-2.3710	2.3212
				15.75000	49.50000	0.00000	2.4515	-2.9755	2.7911
				17.50000	49.50000	0.00000	2.4933	-3.6488	3.2822
				19.25000	49.50000	0.00000	2.4187	-4.3801	3.9201
				21.00000	49.50000	0.00000	2.2325	-5.1478	4.5871
				22.75000	49.50000	0.00000	1.9487	-5.9191	5.2130
				24.50000	49.50000	0.00000	1.7115	-8.5782	7.2809
				26.25000	49.50000	0.00000	1.7783	-8.8265	7.6473
				28.00000	49.50000	0.00000	1.7678	-9.1274	7.9870
				29.75000	49.50000	0.00000	1.7010	-9.5359	8.3594
				31.50000	49.50000	0.00000	1.6124	-10.113	8.8330
				33.25000	49.50000	0.00000	1.4262	-10.805	9.3072
				35.00000	49.50000	0.00000	1.1355	-11.605	9.7665
				36.75000	49.50000	0.00000	0.74587	-12.485	10.192
				38.50000	49.50000	0.00000	0.28202	-13.387	10.557
				40.25000	49.50000	0.00000	0.0	-9.3596	7.4848
				42.00000	49.50000	0.00000	0.0	-9.3596	7.4848
				43.75000	49.50000	0.00000	0.0	-9.3596	7.4848
				45.50000	49.50000	0.00000	-0.50947	-10.467	8.5256
				47.25000	49.50000	0.00000	-1.2607	-8.9837	7.9132
				49.00000	49.50000	0.00000	-1.8968	-7.5132	7.1811
				50.75000	49.50000	0.00000	-2.3803	-6.1445	6.3726
				52.50000	49.50000	0.00000	-2.6991	-4.9265	5.5248
				54.25000	49.50000	0.00000	-2.8583	-3.8758	4.6692
				56.00000	49.50000	0.00000	-2.9623	-3.0788	3.9548
				57.75000	49.50000	0.00000	-2.9403	-2.4356	3.2374
				59.50000	49.50000	0.00000	-2.8876	-1.9702	2.5575
				61.25000	49.50000	0.00000	-2.7906	-1.6111	1.9053
				63.00000	49.50000	0.00000	-2.5959	-1.2951	1.2762
				64.75000	49.50000	0.00000	-2.3184	-1.0161	0.69049
				66.50000	49.50000	0.00000	-1.9707	-0.76869	0.40516
				68.25000	49.50000	0.00000	-1.5633	-0.54845	0.27715
				70.00000	49.50000	0.00000	-1.1048	-0.35150	0.19476
				0.00000	51.00000	0.00000	0.63882	-0.33860	0.11062
				1.75000	51.00000	0.00000	0.88337	-0.50612	0.15314
				3.50000	51.00000	0.00000	1.0912	-0.68255	0.21590
				5.25000	51.00000	0.00000	1.2570	-0.86894	0.30695
				7.00000	51.00000	0.00000	1.3750	-1.0663	0.59530
				8.75000	51.00000	0.00000	1.4387	-1.2757	0.89757



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9-12 New College Parade, London NW3 5EX
 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Grid: Name	x	y	z	δx	δy	δz
				[m]	[m]	[m]	[mm]	[mm]	[mm]
10.50000	51.00000	0.00000		10.50000	51.00000	0.00000	1.4787	-1.5078	1.2152
12.25000	51.00000	0.00000		12.25000	51.00000	0.00000	1.6834	-1.8232	1.5577
14.00000	51.00000	0.00000		14.00000	51.00000	0.00000	1.8605	-2.2451	1.9371
15.75000	51.00000	0.00000		15.75000	51.00000	0.00000	2.0094	-2.8071	2.3437
17.50000	51.00000	0.00000		17.50000	51.00000	0.00000	2.0593	-3.4199	2.7620
19.25000	51.00000	0.00000		19.25000	51.00000	0.00000	2.0094	-4.0715	3.2362
21.00000	51.00000	0.00000		21.00000	51.00000	0.00000	1.8645	-4.7430	3.8107
22.75000	51.00000	0.00000		22.75000	51.00000	0.00000	1.6357	-5.4084	4.3439
24.50000	51.00000	0.00000		24.50000	51.00000	0.00000	1.4366	-7.7620	6.0872
26.25000	51.00000	0.00000		26.25000	51.00000	0.00000	1.4295	-7.9753	6.4086
28.00000	51.00000	0.00000		28.00000	51.00000	0.00000	1.4262	-8.2966	6.7428
29.75000	51.00000	0.00000		29.75000	51.00000	0.00000	1.4131	-8.7493	7.1655
31.50000	51.00000	0.00000		31.50000	51.00000	0.00000	1.3266	-9.2842	7.5978
33.25000	51.00000	0.00000		33.25000	51.00000	0.00000	1.1604	-9.9013	8.0258
35.00000	51.00000	0.00000		35.00000	51.00000	0.00000	0.91365	-10.589	8.4328
36.75000	51.00000	0.00000		36.75000	51.00000	0.00000	0.59459	-11.321	8.7991
38.50000	51.00000	0.00000		38.50000	51.00000	0.00000	0.22358	-12.049	9.1021
40.25000	51.00000	0.00000		40.25000	51.00000	0.00000	0.0	-8.4726	6.6202
42.00000	51.00000	0.00000		42.00000	51.00000	0.00000	0.0	-8.4726	6.6202
43.75000	51.00000	0.00000		43.75000	51.00000	0.00000	0.0	-8.4726	6.6202
45.50000	51.00000	0.00000		45.50000	51.00000	0.00000	-0.40491	-9.4887	7.4009
47.25000	51.00000	0.00000		47.25000	51.00000	0.00000	-1.0083	-8.2836	6.8961
49.00000	51.00000	0.00000		49.00000	51.00000	0.00000	-1.5290	-7.0569	6.2716
50.75000	51.00000	0.00000		50.75000	51.00000	0.00000	-1.9354	-5.8799	5.5659
52.50000	51.00000	0.00000		52.50000	51.00000	0.00000	-2.2124	-4.7987	4.8144
54.25000	51.00000	0.00000		54.25000	51.00000	0.00000	-2.3581	-3.8366	4.0488
56.00000	51.00000	0.00000		56.00000	51.00000	0.00000	-2.3994	-3.0342	3.2959
57.75000	51.00000	0.00000		57.75000	51.00000	0.00000	-2.4351	-2.4536	2.6649
59.50000	51.00000	0.00000		59.50000	51.00000	0.00000	-2.4143	-1.9866	2.0373
61.25000	51.00000	0.00000		61.25000	51.00000	0.00000	-2.3348	-1.6120	1.4573
63.00000	51.00000	0.00000		63.00000	51.00000	0.00000	-2.1766	-1.2912	0.90838
64.75000	51.00000	0.00000		64.75000	51.00000	0.00000	-1.9375	-1.0047	0.47896
66.50000	51.00000	0.00000		66.50000	51.00000	0.00000	-1.6284	-0.74828	0.32816
68.25000	51.00000	0.00000		68.25000	51.00000	0.00000	-1.2589	-0.51807	0.23082
70.00000	51.00000	0.00000		70.00000	51.00000	0.00000	-0.83711	-0.31074	0.16282
0.00000	52.50000	0.00000		0.00000	52.50000	0.00000	0.45333	-0.26516	0.088862
1.75000	52.50000	0.00000		1.75000	52.50000	0.00000	0.68048	-0.43197	0.12357
3.50000	52.50000	0.00000		3.50000	52.50000	0.00000	0.87161	-0.60674	0.16871
5.25000	52.50000	0.00000		5.25000	52.50000	0.00000	1.0222	-0.79018	0.23406
7.00000	52.50000	0.00000		7.00000	52.50000	0.00000	1.1273	-0.98291	0.36161
8.75000	52.50000	0.00000		8.75000	52.50000	0.00000	1.1819	-1.1854	0.62103
10.50000	52.50000	0.00000		10.50000	52.50000	0.00000	1.1809	-1.3978	0.88159
12.25000	52.50000	0.00000		12.25000	52.50000	0.00000	1.3355	-1.7202	1.2042
14.00000	52.50000	0.00000		14.00000	52.50000	0.00000	1.5170	-2.1415	1.5516
15.75000	52.50000	0.00000		15.75000	52.50000	0.00000	1.6278	-2.6013	1.8980
17.50000	52.50000	0.00000		17.50000	52.50000	0.00000	1.6733	-3.1214	2.2473
19.25000	52.50000	0.00000		19.25000	52.50000	0.00000	1.6471	-3.7020	2.5952
21.00000	52.50000	0.00000		21.00000	52.50000	0.00000	1.5386	-4.2909	3.0479
22.75000	52.50000	0.00000		22.75000	52.50000	0.00000	1.3566	-4.8672	3.4976
24.50000	52.50000	0.00000		24.50000	52.50000	0.00000	1.1910	-6.9294	4.9315
26.25000	52.50000	0.00000		26.25000	52.50000	0.00000	1.1750	-7.1434	5.2214
28.00000	52.50000	0.00000		28.00000	52.50000	0.00000	1.1790	-7.4669	5.5831
29.75000	52.50000	0.00000		29.75000	52.50000	0.00000	1.1639	-7.8919	5.9624
31.50000	52.50000	0.00000		31.50000	52.50000	0.00000	1.0861	-8.3792	6.3478
33.25000	52.50000	0.00000		33.25000	52.50000	0.00000	0.94305	-8.9243	6.7253
35.00000	52.50000	0.00000		35.00000	52.50000	0.00000	0.73698	-9.5136	7.0787
36.75000	52.50000	0.00000		36.75000	52.50000	0.00000	0.47667	-10.122	7.3894
38.50000	52.50000	0.00000		38.50000	52.50000	0.00000	0.17860	-10.715	7.6377
40.25000	52.50000	0.00000		40.25000	52.50000	0.00000	0.0	-7.6094	5.7135
42.00000	52.50000	0.00000		42.00000	52.50000	0.00000	0.0	-7.6094	5.7135
43.75000	52.50000	0.00000		43.75000	52.50000	0.00000	0.0	-7.6094	5.7135
45.50000	52.50000	0.00000		45.50000	52.50000	0.00000	-0.32351	-8.4938	6.2535
47.25000	52.50000	0.00000		47.25000	52.50000	0.00000	-0.80796	-7.5112	5.8428
49.00000	52.50000	0.00000		49.00000	52.50000	0.00000	-1.2309	-6.4873	5.3187
50.75000	52.50000	0.00000		50.75000	52.50000	0.00000	-1.5662	-5.4791	4.7144
52.50000	52.50000	0.00000		52.50000	52.50000	0.00000	-1.8012	-4.5361	4.0623
54.25000	52.50000	0.00000		54.25000	52.50000	0.00000	-1.9481	-3.7208	3.3918
56.00000	52.50000	0.00000		56.00000	52.50000	0.00000	-2.0003	-2.9979	2.7289
57.75000	52.50000	0.00000		57.75000	52.50000	0.00000	-2.0227	-2.4249	2.1044
59.50000	52.50000	0.00000		59.50000	52.50000	0.00000	-2.0171	-1.9724	1.5600
61.25000	52.50000	0.00000		61.25000	52.50000	0.00000	-1.9286	-1.5728	1.0384



GEOTECHNICAL AND ENVIRONMENTAL ASSOCIATES LTD J22390

9-12 New College Parade, London NW3 5EX
 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Grid: Name	x	y	z	δx	δy	δz
				[m]	[m]	[m]	[mm]	[mm]	[mm]
63.00000	52.50000	0.00000		63.00000	52.50000	0.00000	-1.7920	-1.2475	0.60277
64.75000	52.50000	0.00000		64.75000	52.50000	0.00000	-1.5830	-0.95849	0.37300
66.50000	52.50000	0.00000		66.50000	52.50000	0.00000	-1.3057	-0.69728	0.26407
68.25000	52.50000	0.00000		68.25000	52.50000	0.00000	-0.96839	-0.46083	0.19037
70.00000	52.50000	0.00000		70.00000	52.50000	0.00000	-0.57860	-0.24633	0.12877
0.00000	54.00000	0.00000		0.00000	54.00000	0.00000	0.27711	-0.17812	0.065019
1.75000	54.00000	0.00000		1.75000	54.00000	0.00000	0.48983	-0.34298	0.098581
3.50000	54.00000	0.00000		3.50000	54.00000	0.00000	0.66767	-0.51476	0.13221
5.25000	54.00000	0.00000		5.25000	54.00000	0.00000	0.80681	-0.69384	0.17745
7.00000	54.00000	0.00000		7.00000	54.00000	0.00000	0.90326	-0.88051	0.24000
8.75000	54.00000	0.00000		8.75000	54.00000	0.00000	0.95304	-1.0748	0.36941
10.50000	54.00000	0.00000		10.50000	54.00000	0.00000	0.95630	-1.2815	0.59361
12.25000	54.00000	0.00000		12.25000	54.00000	0.00000	1.0286	-1.5876	0.87144
14.00000	54.00000	0.00000		14.00000	54.00000	0.00000	1.2031	-1.9861	1.1762
15.75000	54.00000	0.00000		15.75000	54.00000	0.00000	1.3135	-2.4147	1.4689
17.50000	54.00000	0.00000		17.50000	54.00000	0.00000	1.3579	-2.8690	1.7558
19.25000	54.00000	0.00000		19.25000	54.00000	0.00000	1.3368	-3.3416	2.0359
21.00000	54.00000	0.00000		21.00000	54.00000	0.00000	1.2522	-3.8226	2.3210
22.75000	54.00000	0.00000		22.75000	54.00000	0.00000	1.1087	-4.2996	2.6967
24.50000	54.00000	0.00000		24.50000	54.00000	0.00000	0.97376	-6.0766	3.8428
26.25000	54.00000	0.00000		26.25000	54.00000	0.00000	1.0006	-6.3328	4.1389
28.00000	54.00000	0.00000		28.00000	54.00000	0.00000	0.99147	-6.6278	4.4576
29.75000	54.00000	0.00000		29.75000	54.00000	0.00000	0.94729	-6.9708	4.7905
31.50000	54.00000	0.00000		31.50000	54.00000	0.00000	0.88183	-7.4097	5.1268
33.25000	54.00000	0.00000		33.25000	54.00000	0.00000	0.76265	-7.8877	5.4530
35.00000	54.00000	0.00000		35.00000	54.00000	0.00000	0.59337	-8.3912	5.7540
36.75000	54.00000	0.00000		36.75000	54.00000	0.00000	0.38233	-8.8989	6.0134
38.50000	54.00000	0.00000		38.50000	54.00000	0.00000	0.14293	-9.3821	6.2143
40.25000	54.00000	0.00000		40.25000	54.00000	0.00000	0.0	-6.7640	4.8019
42.00000	54.00000	0.00000		42.00000	54.00000	0.00000	0.0	-6.7640	4.8019
43.75000	54.00000	0.00000		43.75000	54.00000	0.00000	0.0	-6.7640	4.8019
45.50000	54.00000	0.00000		45.50000	54.00000	0.00000	-0.25832	-7.4851	5.1267
47.25000	54.00000	0.00000		47.25000	54.00000	0.00000	-0.64600	-6.6983	4.7973
49.00000	54.00000	0.00000		49.00000	54.00000	0.00000	-0.98998	-5.8726	4.3647
50.75000	54.00000	0.00000		50.75000	54.00000	0.00000	-1.2709	-5.0491	3.8568
52.50000	54.00000	0.00000		52.50000	54.00000	0.00000	-1.4763	-4.2592	3.3020
54.25000	54.00000	0.00000		54.25000	54.00000	0.00000	-1.6050	-3.5333	2.7268
56.00000	54.00000	0.00000		56.00000	54.00000	0.00000	-1.6858	-2.9204	2.1549
57.75000	54.00000	0.00000		57.75000	54.00000	0.00000	-1.6984	-2.3710	1.6056
59.50000	54.00000	0.00000		59.50000	54.00000	0.00000	-1.6602	-1.8989	1.1036
61.25000	54.00000	0.00000		61.25000	54.00000	0.00000	-1.5858	-1.5110	0.68096
63.00000	54.00000	0.00000		63.00000	54.00000	0.00000	-1.4427	-1.1657	0.40293
64.75000	54.00000	0.00000		64.75000	54.00000	0.00000	-1.2565	-0.87833	0.29048
66.50000	54.00000	0.00000		66.50000	54.00000	0.00000	-1.0046	-0.61612	0.21191
68.25000	54.00000	0.00000		68.25000	54.00000	0.00000	-0.69420	-0.37678	0.15285
70.00000	54.00000	0.00000		70.00000	54.00000	0.00000	-0.33182	-0.15805	0.087726
0.00000	55.50000	0.00000		0.00000	55.50000	0.00000	0.11086	-0.078013	0.034049
1.75000	55.50000	0.00000		1.75000	55.50000	0.00000	0.31184	-0.23988	0.074251
3.50000	55.50000	0.00000		3.50000	55.50000	0.00000	0.47939	-0.40756	0.10357
5.25000	55.50000	0.00000		5.25000	55.50000	0.00000	0.61032	-0.58120	0.13536
7.00000	55.50000	0.00000		7.00000	55.50000	0.00000	0.70146	-0.76078	0.17732
8.75000	55.50000	0.00000		8.75000	55.50000	0.00000	0.74982	-0.94601	0.23231
10.50000	55.50000	0.00000		10.50000	55.50000	0.00000	0.77954	-1.1714	0.34266
12.25000	55.50000	0.00000		12.25000	55.50000	0.00000	0.78231	-1.4272	0.55495
14.00000	55.50000	0.00000		14.00000	55.50000	0.00000	0.91650	-1.7849	0.81843
15.75000	55.50000	0.00000		15.75000	55.50000	0.00000	1.0287	-2.1826	1.0662
17.50000	55.50000	0.00000		17.50000	55.50000	0.00000	1.0814	-2.5990	1.2997
19.25000	55.50000	0.00000		19.25000	55.50000	0.00000	1.0753	-3.0272	1.5210
21.00000	55.50000	0.00000		21.00000	55.50000	0.00000	1.0124	-3.4584	1.7266
22.75000	55.50000	0.00000		22.75000	55.50000	0.00000	0.89652	-3.8822	1.9574
24.50000	55.50000	0.00000		24.50000	55.50000	0.00000	0.81913	-5.4982	2.8642
26.25000	55.50000	0.00000		26.25000	55.50000	0.00000	0.84302	-5.7439	3.1208
28.00000	55.50000	0.00000		28.00000	55.50000	0.00000	0.83467	-6.0216	3.3960
29.75000	55.50000	0.00000		29.75000	55.50000	0.00000	0.79217	-6.3309	3.6822
31.50000	55.50000	0.00000		31.50000	55.50000	0.00000	0.71471	-6.6691	3.9695
33.25000	55.50000	0.00000		33.25000	55.50000	0.00000	0.61075	-7.0618	4.2459
35.00000	55.50000	0.00000		35.00000	55.50000	0.00000	0.47440	-7.4909	4.4977
36.75000	55.50000	0.00000		36.75000	55.50000	0.00000	0.30514	-7.9140	4.7107
38.50000	55.50000	0.00000		38.50000	55.50000	0.00000	0.11395	-8.3083	4.8707
40.25000	55.50000	0.00000		40.25000	55.50000	0.00000	0.0	-5.9305	3.9158
42.00000	55.50000	0.00000		42.00000	55.50000	0.00000	0.0	-5.9305	3.9158



GEOTECHNICAL AND ENVIRONMENTAL ASSOCIATES LTD J22390

9-12 New College Parade, London NW3 5EX
 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Name	Grid: Name	x	y	z	δx	δy	δz
					[m]	[m]	[m]	[mm]	[mm]	[mm]
					43.75000	55.50000	0.00000	0.0	-5.9305	3.9158
					45.50000	55.50000	0.00000	-0.20706	-6.6389	4.0540
					47.25000	55.50000	0.00000	-0.52043	-5.9893	3.7944
					49.00000	55.50000	0.00000	-0.79953	-5.2942	3.4434
					50.75000	55.50000	0.00000	-1.0282	-4.5868	3.0244
					52.50000	55.50000	0.00000	-1.2097	-3.9341	2.5615
					54.25000	55.50000	0.00000	-1.3375	-3.3290	2.0777
					56.00000	55.50000	0.00000	-1.4052	-2.7671	1.5938
					57.75000	55.50000	0.00000	-1.4132	-2.2547	1.1267
					59.50000	55.50000	0.00000	-1.3639	-1.7944	0.72120
					61.25000	55.50000	0.00000	-1.2746	-1.4000	0.43769
					63.00000	55.50000	0.00000	-1.1445	-1.0645	0.30918
					64.75000	55.50000	0.00000	-0.95850	-0.76571	0.22630
					66.50000	55.50000	0.00000	-0.72642	-0.50568	0.16811
					68.25000	55.50000	0.00000	-0.43791	-0.26637	0.11289
					70.00000	55.50000	0.00000	-0.11115	-0.054427	0.033344
					0.00000	57.00000	0.00000	0.0	0.0	0.0
					1.75000	57.00000	0.00000	0.14662	-0.12345	0.044724
					3.50000	57.00000	0.00000	0.30645	-0.28618	0.077979
					5.25000	57.00000	0.00000	0.43189	-0.45356	0.10394
					7.00000	57.00000	0.00000	0.52048	-0.62533	0.13231
					8.75000	57.00000	0.00000	0.57921	-0.81305	0.17068
					10.50000	57.00000	0.00000	0.61907	-1.0325	0.22486
					12.25000	57.00000	0.00000	0.62782	-1.2674	0.29166
					14.00000	57.00000	0.00000	0.65486	-1.5434	0.48084
					15.75000	57.00000	0.00000	0.77058	-1.9108	0.69492
					17.50000	57.00000	0.00000	0.83250	-2.2911	0.88574
					19.25000	57.00000	0.00000	0.84137	-2.6782	1.0588
					21.00000	57.00000	0.00000	0.79923	-3.0641	1.2141
					22.75000	57.00000	0.00000	0.72985	-3.4603	1.3538
					24.50000	57.00000	0.00000	0.67746	-4.8894	1.9678
					26.25000	57.00000	0.00000	0.70057	-5.1219	2.1864
					28.00000	57.00000	0.00000	0.69491	-5.3803	2.4195
					29.75000	57.00000	0.00000	0.65946	-5.6633	2.6608
					31.50000	57.00000	0.00000	0.59418	-5.9672	2.9014
					33.25000	57.00000	0.00000	0.50048	-6.2863	3.1310
					35.00000	57.00000	0.00000	0.38149	-6.6119	3.3377
					36.75000	57.00000	0.00000	0.24233	-6.9324	3.5095
					38.50000	57.00000	0.00000	0.089911	-7.2340	3.6348
					40.25000	57.00000	0.00000	0.0	-5.1029	3.0793
					42.00000	57.00000	0.00000	0.0	-5.1029	3.0793
					43.75000	57.00000	0.00000	0.0	-5.1029	3.0793
					45.50000	57.00000	0.00000	-0.16445	-5.7868	3.0602
					47.25000	57.00000	0.00000	-0.41730	-5.2759	2.8597
					49.00000	57.00000	0.00000	-0.64748	-4.7264	2.5803
					50.75000	57.00000	0.00000	-0.84350	-4.1614	2.2411
					52.50000	57.00000	0.00000	-0.99666	-3.6006	1.8620
					54.25000	57.00000	0.00000	-1.1012	-3.0592	1.4626
					56.00000	57.00000	0.00000	-1.1542	-2.5484	1.0604
					57.75000	57.00000	0.00000	-1.1549	-2.0752	0.73210
					59.50000	57.00000	0.00000	-1.1044	-1.6436	0.46400
					61.25000	57.00000	0.00000	-1.0050	-1.2552	0.32091
					63.00000	57.00000	0.00000	-0.87162	-0.92150	0.23759
					64.75000	57.00000	0.00000	-0.69566	-0.62923	0.17771
					66.50000	57.00000	0.00000	-0.47158	-0.36714	0.12630
					68.25000	57.00000	0.00000	-0.20051	-0.13036	0.062347
					70.00000	57.00000	0.00000	0.0	0.0	0.0
					0.00000	58.50000	0.00000	0.0	0.0	0.0
					1.75000	58.50000	0.00000	0.0	0.0	0.0
					3.50000	58.50000	0.00000	0.14834	-0.15162	0.048460
					5.25000	58.50000	0.00000	0.27054	-0.31215	0.077153
					7.00000	58.50000	0.00000	0.35925	-0.47629	0.099933
					8.75000	58.50000	0.00000	0.42984	-0.66562	0.12841
					10.50000	58.50000	0.00000	0.47310	-0.86820	0.16401
					12.25000	58.50000	0.00000	0.48859	-1.0822	0.20808
					14.00000	58.50000	0.00000	0.47658	-1.3049	0.25967
					15.75000	58.50000	0.00000	0.53690	-1.6038	0.35426
					17.50000	58.50000	0.00000	0.60867	-1.9501	0.51474
					19.25000	58.50000	0.00000	0.63249	-2.2989	0.65114
					21.00000	58.50000	0.00000	0.62041	-2.6534	0.76950
					22.75000	58.50000	0.00000	0.58143	-3.0115	0.87136



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9-12 New College Parade, London NW3 5EX
Ground Movement Analysis from Basement Construction
Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: Ref.	Stage: Name	Disp. Grid: Ref.	Disp. Name	Grid: Name	x	y	z	δx	δy	δz
					[m]	[m]	[m]	[mm]	[mm]	[mm]
					24.50000	58.50000	0.00000	0.54773	-4.2506	1.2259
					26.25000	58.50000	0.00000	0.57166	-4.4682	1.3461
					28.00000	58.50000	0.00000	0.56999	-4.7065	1.5404
					29.75000	58.50000	0.00000	0.54228	-4.9633	1.7401
					31.50000	58.50000	0.00000	0.48901	-5.2348	1.9378
					33.25000	58.50000	0.00000	0.41181	-5.5153	2.1248
					35.00000	58.50000	0.00000	0.31370	-5.7968	2.2913
					36.75000	58.50000	0.00000	0.19913	-6.0696	2.4272
					38.50000	58.50000	0.00000	0.073847	-6.3221	2.5232
					40.25000	58.50000	0.00000	0.0	-4.5375	2.3099
					42.00000	58.50000	0.00000	0.0	-4.5375	2.3099
					43.75000	58.50000	0.00000	0.0	-4.5375	2.3099
					45.50000	58.50000	0.00000	-0.13448	-5.0847	2.1610
					47.25000	58.50000	0.00000	-0.34016	-4.6593	2.0098
					49.00000	58.50000	0.00000	-0.52733	-4.1934	1.7919
					50.75000	58.50000	0.00000	-0.68634	-3.7065	1.5224
					52.50000	58.50000	0.00000	-0.80952	-3.2155	1.2176
					54.25000	58.50000	0.00000	-0.89145	-2.7342	0.93163
					56.00000	58.50000	0.00000	-0.92891	-2.2731	0.68314
					57.75000	58.50000	0.00000	-0.92055	-1.8399	0.44787
					59.50000	58.50000	0.00000	-0.86655	-1.4393	0.32737
					61.25000	58.50000	0.00000	-0.76823	-1.0738	0.24576
					63.00000	58.50000	0.00000	-0.62767	-0.74447	0.18380
					64.75000	58.50000	0.00000	-0.45532	-0.45883	0.13391
					66.50000	58.50000	0.00000	-0.24091	-0.20275	0.077441
					68.25000	58.50000	0.00000	-0.055673	-0.038988	0.021559
					70.00000	58.50000	0.00000	0.0	0.0	0.0
					0.00000	60.00000	0.00000	0.0	0.0	0.0
					1.75000	60.00000	0.00000	0.0	0.0	0.0
					3.50000	60.00000	0.00000	0.0043878	-0.0048933	0.0057746
					5.25000	60.00000	0.00000	0.12519	-0.15818	0.046631
					7.00000	60.00000	0.00000	0.22032	-0.32048	0.073996
					8.75000	60.00000	0.00000	0.29255	-0.49592	0.097457
					10.50000	60.00000	0.00000	0.34003	-0.68149	0.12194
					12.25000	60.00000	0.00000	0.36268	-0.87518	0.15028
					14.00000	60.00000	0.00000	0.36104	-1.0742	0.18308
					15.75000	60.00000	0.00000	0.33640	-1.2746	0.21921
					17.50000	60.00000	0.00000	0.40765	-1.5798	0.29727
					19.25000	60.00000	0.00000	0.44992	-1.8965	0.35851
					21.00000	60.00000	0.00000	0.46204	-2.2176	0.41229
					22.75000	60.00000	0.00000	0.44510	-2.5341	0.46255
					24.50000	60.00000	0.00000	0.42890	-3.5850	0.64123
					26.25000	60.00000	0.00000	0.45481	-3.7867	0.69233
					28.00000	60.00000	0.00000	0.45794	-4.0046	0.76136
					29.75000	60.00000	0.00000	0.43827	-4.2360	0.92411
					31.50000	60.00000	0.00000	0.39657	-4.4771	1.0838
					33.25000	60.00000	0.00000	0.33458	-4.7224	1.2333
					35.00000	60.00000	0.00000	0.25508	-4.9649	1.3648
					36.75000	60.00000	0.00000	0.16197	-5.1961	1.4700
					38.50000	60.00000	0.00000	0.060071	-5.4064	1.5417
					40.25000	60.00000	0.00000	0.0	-3.9750	1.6184
					42.00000	60.00000	0.00000	0.0	-3.9750	1.6184
					43.75000	60.00000	0.00000	0.0	-3.9750	1.6184
					45.50000	60.00000	0.00000	-0.10865	-4.3755	1.3637
					47.25000	60.00000	0.00000	-0.27332	-4.0243	1.2661
					49.00000	60.00000	0.00000	-0.42267	-3.6320	1.1281
					50.75000	60.00000	0.00000	-0.54848	-3.2148	0.95997
					52.50000	60.00000	0.00000	-0.64404	-2.7874	0.77287
					54.25000	60.00000	0.00000	-0.70435	-2.3621	0.57756
					56.00000	60.00000	0.00000	-0.72610	-1.9490	0.40418
					57.75000	60.00000	0.00000	-0.70757	-1.5556	0.31692
					59.50000	60.00000	0.00000	-0.64832	-1.1869	0.24554
					61.25000	60.00000	0.00000	-0.54897	-0.84645	0.18809
					63.00000	60.00000	0.00000	-0.41087	-0.53593	0.13788
					64.75000	60.00000	0.00000	-0.23592	-0.25596	0.082946
					66.50000	60.00000	0.00000	-0.082802	-0.073732	0.031369
					68.25000	60.00000	0.00000	0.0	0.0	0.0
					70.00000	60.00000	0.00000	0.0	0.0	0.0

Specific Building Damage Results - Horizontal Displacements



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9-12 New College Parade, London NW3 5EX
 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
DJ22390		
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage Ref.	Stage Name	Disp. Grid Ref.	Disp. Name	Grid Name	x [m]	y [m]	z [m]	δx [mm]	δy [mm]	δz [mm]		
0	Base Model	1		13-14 NCP			13-14A	0.0	11.00000	20.00000	-7.40000	0.0
0.0	0.0	0.0						1.8333	12.83333	20.00000	-7.40000	0.0
0.0	0.0	0.0						3.6667	14.66667	20.00000	-7.40000	0.20740
-0.010319	0.20740	-0.010319						5.5000	16.50000	20.00000	-7.40000	0.87838
-0.043704	0.87838	-0.043704						7.3333	18.33333	20.00000	-7.40000	1.5494
-0.077089	1.5494	-0.077089						9.1667	20.16667	20.00000	-7.40000	2.2204
-0.11047	2.2204	-0.11047						11.000	22.00000	20.00000	-7.40000	1.5582
1.4153	1.5582	1.4153						0.0	22.00000	20.00000	-7.40000	1.5582
1.4153	1.5551	-1.4187						0.94862	22.08889	20.94444	-7.40000	4.9528
-0.47694	-0.010743	-4.9757						1.8972	22.17778	21.88889	-7.40000	4.9515
-0.47681	-0.010740	-4.9744						2.8459	22.26667	22.83333	-7.40000	4.9502
-0.47669	-0.010737	-4.9731						3.7945	22.35556	23.77778	-7.40000	4.9489
-0.47657	-0.010735	-4.9718						4.7431	22.44444	24.72222	-7.40000	4.9477
-0.47644	-0.010732	-4.9705						5.6917	22.53333	25.66667	-7.40000	4.9464
-0.47632	-0.010729	-4.9692						6.6403	22.62222	26.61111	-7.40000	4.9451
-0.47619	-0.010726	-4.9680						7.5889	22.71111	27.55556	-7.40000	4.9438
-0.47607	-0.010723	-4.9667						8.5376	22.80000	28.50000	-7.40000	4.9425
-0.47595	-0.010721	-4.9654						0.0	22.80000	28.50000	-7.40000	4.9425
-0.47595	-4.9425	0.47595						1.4000	21.40000	28.50000	-7.40000	4.0686
-0.39179	-4.0686	0.39179						2.8000	20.00000	28.50000	-7.40000	3.1947
-0.30764	-3.1947	0.30764						0.0	20.00000	28.50000	-7.40000	3.1947
-0.30764	-0.30764	-3.1947						0.90000	20.00000	29.40000	-7.40000	3.1406
-0.30243	-0.30243	-3.1406						1.8000	20.00000	30.30000	-7.40000	3.0865
-0.29722	-0.29722	-3.0865						2.7000	20.00000	31.20000	-7.40000	3.0324
-0.29201	-0.29201	-3.0324						3.6000	20.00000	32.10000	-7.40000	2.9783
-0.28680	-0.28680	-2.9783						4.5000	20.00000	33.00000	-7.40000	2.9242
-0.28159	-0.28159	-2.9242						0.0	20.00000	33.00000	-7.40000	2.9242
-0.28159	-2.9242	0.28159						1.0000	19.00000	33.00000	-7.40000	2.3000
-0.22148	-2.3000	0.22148						2.0000	18.00000	33.00000	-7.40000	1.6758
-0.16137	-1.6758	0.16137						3.0000	17.00000	33.00000	-7.40000	1.0516
-0.10127	-1.0516	0.10127						4.0000	16.00000	33.00000	-7.40000	0.42739
-0.041156	-0.42739	0.041156						5.0000	15.00000	33.00000	-7.40000	0.0



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Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked
		Date

Stage: δH//Ref.	Stage: δH _{perp.}	Name Building: Ref.	Specific Building: Name	Sub-building Name	Dist.	x	y	z	δx	δy
0.0	0.0	0.0			6.0000	14.00000	33.00000	-7.40000	0.0	
0.0	0.0	0.0			7.0000	13.00000	33.00000	-7.40000	0.0	
0.0	0.0	0.0			8.0000	12.00000	33.00000	-7.40000	0.0	
0.0	0.0	0.0			9.0000	11.00000	33.00000	-7.40000	0.0	
0.0	0.0	0.0	6	13-14 NCP	13-14F	0.0	11.00000	33.00000	-7.40000	0.0
0.0	0.0	0.0			1.8571	11.00000	31.14286	-7.40000	0.0	
0.0	0.0	0.0			3.7143	11.00000	29.28571	-7.40000	0.0	
0.0	0.0	0.0			5.5714	11.00000	27.42857	-7.40000	0.0	
0.0	0.0	0.0			7.4286	11.00000	25.57143	-7.40000	0.0	
0.0	0.0	0.0			9.2857	11.00000	23.71429	-7.40000	0.0	
0.0	0.0	0.0			11.143	11.00000	21.85714	-7.40000	0.0	
0.0	0.0	0.0			13.000	11.00000	20.00000	-7.40000	0.0	
1.9849	-1.9849	1.9849	7	7-8 NCP	7-8A	0.0	45.00000	20.00000	-7.40000	-1.9849
0.0	-3.7394	0.0			1.8333	46.83333	20.00000	-7.40000	-3.7394	
0.0	-3.5091	0.0			3.6667	48.66667	20.00000	-7.40000	-3.5091	
0.0	-3.2788	0.0			5.5000	50.50000	20.00000	-7.40000	-3.2788	
0.0	-3.0485	0.0			7.3333	52.33333	20.00000	-7.40000	-3.0485	
0.0	-2.8182	0.0			9.1667	54.16667	20.00000	-7.40000	-2.8182	
0.0	-2.5879	0.0			11.000	56.00000	20.00000	-7.40000	-2.5879	
0.0	0.0	2.5879	8	7-8 NCP	7-8B	0.0	56.00000	20.00000	-7.40000	-2.5879
0.0	0.0	3.8625			1.8333	56.00000	21.83333	-7.40000	-3.8625	
0.0	0.0	3.8625			3.6667	56.00000	23.66667	-7.40000	-3.8625	
0.0	0.0	3.8625			5.5000	56.00000	25.50000	-7.40000	-3.8625	
0.0	0.0	3.8625			7.3333	56.00000	27.33333	-7.40000	-3.8625	
0.0	0.0	3.8625			9.1667	56.00000	29.16667	-7.40000	-3.8625	
0.0	0.0	3.8625			11.000	56.00000	31.00000	-7.40000	-3.8625	
0.0	3.8625	0.0	9	7-8 NCP	7-8C	0.0	56.00000	31.00000	-7.40000	-3.8625
0.0	4.0500	0.0			1.0000	55.00000	31.00000	-7.40000	-4.0500	
0.0	4.2375	0.0			2.0000	54.00000	31.00000	-7.40000	-4.2375	
0.0	0.0	4.2375	10	7-8 NCP	7-8D	0.0	54.00000	31.00000	-7.40000	-4.2375
0.0	0.0	4.2375			1.0000	54.00000	32.00000	-7.40000	-4.2375	
0.0	0.0	4.2375			2.0000	54.00000	33.00000	-7.40000	-4.2375	
0.0	4.2375	0.0	11	7-8 NCP	7-8E	0.0	54.00000	33.00000	-7.40000	-4.2375
0.0	4.4250	0.0			1.0000	53.00000	33.00000	-7.40000	-4.4250	
0.0	4.6125	0.0			2.0000	52.00000	33.00000	-7.40000	-4.6125	



GEOTECHNICAL AND ENVIRONMENTAL ASSOCIATES LTD J22390

9-12 New College Parade, London NW3 5EX
 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage: δH / Ref.	Stage: δH perp. Ref.	Name Building: Ref.	Specific Name	Specific Building: Name	Sub-building Name	Dist.	x	y	z	δx	δy
0.0	4.8000	0.0				3.0000	51.00000	33.00000	-7.40000	-4.8000	
0.0	4.9875	0.0				4.0000	50.00000	33.00000	-7.40000	-4.9875	
0.0	5.1750	0.0				5.0000	49.00000	33.00000	-7.40000	-5.1750	
0.0	5.3625	0.0				6.0000	48.00000	33.00000	-7.40000	-5.3625	
0.0	5.5500	0.0				7.0000	47.00000	33.00000	-7.40000	-5.5500	
0.0	0.0	-5.5500	12	7-8 NCP	7-8F	0.0	47.00000	33.00000	-7.40000	-5.5500	
0.0	0.0	-5.5500				1.0000	47.00000	32.00000	-7.40000	-5.5500	
0.0	0.0	-5.5500				2.0000	47.00000	31.00000	-7.40000	-5.5500	
0.0	5.5500	0.0	13	7-8 NCP	7-8G	0.0	47.00000	31.00000	-7.40000	-5.5500	
0.0	5.7375	0.0				1.0000	46.00000	31.00000	-7.40000	-5.7375	
0.0	5.9250	0.0				2.0000	45.00000	31.00000	-7.40000	-5.9250	
0.0	0.0	-5.9250	14	7-8 NCP	7-8H	0.0	45.00000	31.00000	-7.40000	-5.9250	
0.0	0.0	-5.9250				1.8333	45.00000	29.16667	-7.40000	-5.9250	
0.0	0.0	-5.9250				3.6667	45.00000	27.33333	-7.40000	-5.9250	
0.0	0.0	-5.9250				5.5000	45.00000	25.50000	-7.40000	-5.9250	
0.0	0.0	-5.9250				7.3333	45.00000	23.66667	-7.40000	-5.9250	
0.0	0.0	-5.9250				9.1667	45.00000	21.83333	-7.40000	-5.9250	
0.0	0.0	-5.9250				11.000	45.00000	20.00000	-7.40000	-1.9849	
1.9849	-1.9849	-1.9849	15	39 College Crescent	CC-A	0.0	26.00000	49.50000	-3.00000	1.7716	
-8.7872	2.9636	-8.4599				1.0384	27.02857	49.35714	-3.00000	1.8233	
-9.0343	3.0488	-8.6975				2.0769	28.05714	49.21429	-3.00000	1.8430	
-9.2974	3.1045	-8.9555				3.1153	29.08571	49.07143	-3.00000	1.8259	
-9.5792	3.1263	-9.2369				4.1538	30.11429	48.92857	-3.00000	1.8120	
-9.9280	3.1606	-9.5843				5.1922	31.14286	48.78571	-3.00000	1.7932	
-10.345	3.1993	-10.000				6.2307	32.17143	48.64286	-3.00000	1.7392	
-10.811	3.2100	-10.469				7.2691	33.20000	48.50000	-3.00000	1.6449	
-11.332	3.1881	-10.998	16	39 College Crescent	CC-B	0.0	33.00000	46.00000	-3.00000	2.3667	
-12.342	-11.813	-4.2869				2.1098	33.33333	48.08333	-3.00000	1.7226	
-11.609	-11.191	-3.5351				4.2197	33.66667	50.16667	-3.00000	1.2451	
-10.584	-10.255	-2.9017				6.3295	34.00000	52.25000	-3.00000	0.89304	
-9.3461	-9.0876	-2.3584				8.4393	34.33333	54.33333	-3.00000	0.63183	
-8.0055	-7.8051	-1.8887				10.549	34.66667	56.41667	-3.00000	0.43703	
-6.8577	-6.7026	-1.5150				12.659	35.00000	58.50000	-3.00000	0.31370	
-5.7968	-5.6745	-1.2256	17	39 College Crescent	CC-C	0.0	33.00000	46.00000	-3.00000	2.3667	
-12.342	4.0883	-11.883				2.0203	35.00000	45.71429	-3.00000	2.0400	
-13.681	3.9543	-13.255				4.0406	37.00000	45.42857	-3.00000	1.3722	



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Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked
		Date

Stage: δH // Ref.	Stage: δH perp. Building: Ref.	Specific Building: Name	Specific Building: Name	Sub-building Name	Dist.	x	y	z	δx	δy
-15.493	3.5495	-15.143				6.0609	39.00000	45.14286	-3.00000	0.31314
-17.777	2.8241	-17.554				8.0812	41.00000	44.85714	-3.00000	0.0
-12.320	1.7424	-12.197				10.102	43.00000	44.57143	-3.00000	0.0
-12.516	1.7700	-12.390				12.122	45.00000	44.28571	-3.00000	-0.75279
-14.396	1.2906	-14.357				14.142	47.00000	44.00000	-3.00000	-2.9607
-10.495	-1.4467	-10.809	18	39 College Crescent	CC-D	0.0	47.00000	44.00000	-3.00000	-2.9607
-10.495	-10.795	1.5477				1.8916	47.25000	45.87500	-3.00000	-2.2523
-10.116	-10.324	0.89564				3.7832	47.50000	47.75000	-3.00000	-1.7777
-9.3943	-9.5468	0.52057				5.6748	47.75000	49.62500	-3.00000	-1.4295
-8.5095	-8.6238	0.29230				7.5664	48.00000	51.50000	-3.00000	-1.1562
-7.5373	-7.6240	0.14989				9.4580	48.25000	53.37500	-3.00000	-0.93028
-6.5111	-6.5770	0.061584				11.350	48.50000	55.25000	-3.00000	-0.75115
-5.6013	-5.6514	0.0042823				13.241	48.75000	57.12500	-3.00000	-0.60627
-4.7621	-4.8005	-0.028426				15.133	49.00000	59.00000	-3.00000	-0.49088
-4.0092	-4.0389	-0.043299	19	39 College Crescent	CC-E	0.0	48.00000	47.00000	-3.00000	-2.2695
-9.0072	-1.0751	-9.2263				1.0951	49.08571	46.85714	-3.00000	-2.8358
-7.8050	-1.7934	-8.1083				2.1901	50.17143	46.71429	-3.00000	-3.3122
-6.6749	-2.4132	-7.0499				3.2852	51.25714	46.57143	-3.00000	-3.6918
-5.6396	-2.9245	-6.0730				4.3803	52.34286	46.42857	-3.00000	-4.0866
-4.8225	-3.4225	-5.3144				5.4754	53.42857	46.28571	-3.00000	-4.3995
-4.1243	-3.8238	-4.6630				6.5704	54.51429	46.14286	-3.00000	-4.5980
-3.5019	-4.1019	-4.0718				7.6655	55.60000	46.00000	-3.00000	-4.7384
-2.9963	-4.3070	-3.5888	20	New College Court	NCC-A	0.0	2.00000	44.00000	-2.00000	2.0015
-0.66565	1.9330	-0.84412				3.6818	5.66667	44.33333	-2.00000	2.5853
-1.0225	2.4821	-1.2523				7.3636	9.33333	44.66667	-2.00000	3.1944
-1.5245	3.0433	-1.8075				11.045	13.00000	45.00000	-2.00000	4.0472
-2.3397	3.8187	-2.6965				14.727	16.66667	45.33333	-2.00000	4.0668
-3.4006	3.7422	-3.7548				18.409	20.33333	45.66667	-2.00000	3.5749
-5.4556	3.0663	-5.7569				22.091	24.00000	46.00000	-2.00000	2.5039
-7.7904	1.7883	-7.9851	21	New College Court	NCC-B	0.0	24.00000	46.00000	-2.00000	2.5039
-7.7904	-8.0408	-1.5183				1.0078	23.87500	47.00000	-2.00000	2.2750
-7.3396	-7.5651	-1.3471				2.0156	23.75000	48.00000	-2.00000	2.0574
-6.8991	-7.1010	-1.1858				3.0233	23.62500	49.00000	-2.00000	1.8775
-6.4771	-6.6599	-1.0596				4.0311	23.50000	50.00000	-2.00000	1.7034
-6.0579	-6.2224	-0.93886				5.0389	23.37500	51.00000	-2.00000	1.5365
-5.6389	-5.7859	-0.82519								



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Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked
		Date

Stage Ref.	Stage Name	Specific Building Ref.	Specific Building Name	Sub-building Name	Dist.	x	y	z	δx	δy
-5.2182		-0.71953			6.0467	23.25000	52.00000	-2.00000	1.3774	
-4.7941		-0.62236			7.0545	23.12500	53.00000	-2.00000	1.2265	
-4.3666		-0.53373			8.0623	23.00000	54.00000	-2.00000	1.0837	

Specific Building Damage Results - Vertical Displacements

Stage Ref.	Stage Name	Specific Building Ref.	Specific Building Name	Sub-building Name	Vertical Offset	Dist.	x	y	z	δz
					[m]	[m]	[m]	[m]	[m]	[mm]
0.0	Base Model	1	13-14 NCP	13-14A	0.0	0.0	11.00000	20.00000	-7.40000	
0.0						1.8333	12.83333	20.00000	-7.40000	
0.21801						3.6667	14.66667	20.00000	-7.40000	
0.92333						5.5000	16.50000	20.00000	-7.40000	
1.6286						7.3333	18.33333	20.00000	-7.40000	
2.3340						9.1667	20.16667	20.00000	-7.40000	
3.1308						11.000	22.00000	20.00000	-7.40000	
3.1308		2	13-14 NCP	13-14B	0.0	0.0	22.00000	20.00000	-7.40000	
4.9757						0.94862	22.08889	20.94444	-7.40000	
4.9744						1.8972	22.17778	21.88889	-7.40000	
4.9731						2.8459	22.26667	22.83333	-7.40000	
4.9718						3.7945	22.35556	23.77778	-7.40000	
4.9705						4.7431	22.44444	24.72222	-7.40000	
4.9693						5.6917	22.53333	25.66667	-7.40000	
4.9680						6.6403	22.62222	26.61111	-7.40000	
4.9667						7.5889	22.71111	27.55556	-7.40000	
4.9654						8.5376	22.80000	28.50000	-7.40000	
4.9654		3	13-14 NCP	13-14C	0.0	0.0	22.80000	28.50000	-7.40000	
4.0874						1.4000	21.40000	28.50000	-7.40000	
3.2095						2.8000	20.00000	28.50000	-7.40000	
3.2095		4	13-14 NCP	13-14D	0.0	0.0	20.00000	28.50000	-7.40000	
3.1552						0.90000	20.00000	29.40000	-7.40000	
3.1008						1.8000	20.00000	30.30000	-7.40000	
3.0465						2.7000	20.00000	31.20000	-7.40000	
2.9921						3.6000	20.00000	32.10000	-7.40000	
2.9378						4.5000	20.00000	33.00000	-7.40000	
2.9378		5	13-14 NCP	13-14E	0.0	0.0	20.00000	33.00000	-7.40000	
2.3107						1.0000	19.00000	33.00000	-7.40000	



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 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Stage Ref.	Stage Name	Specific Building Ref.	Specific Building Name	Building Name	Sub-building Name	Vertical Offset [m]	Dist. [m]	x [m]	y [m]	z [m]	δz [mm]
1.6836							2.0000	18.00000	33.00000	-7.40000	
1.0565							3.0000	17.00000	33.00000	-7.40000	
0.42937							4.0000	16.00000	33.00000	-7.40000	
0.0							5.0000	15.00000	33.00000	-7.40000	
0.0							6.0000	14.00000	33.00000	-7.40000	
0.0							7.0000	13.00000	33.00000	-7.40000	
0.0							8.0000	12.00000	33.00000	-7.40000	
0.0							9.0000	11.00000	33.00000	-7.40000	
0.0		6	13-14 NCP		13-14F	0.0	0.0	11.00000	33.00000	-7.40000	
0.0							1.8571	11.00000	31.14286	-7.40000	
0.0							3.7143	11.00000	29.28571	-7.40000	
0.0							5.5714	11.00000	27.42857	-7.40000	
0.0							7.4286	11.00000	25.57143	-7.40000	
0.0							9.2857	11.00000	23.71429	-7.40000	
0.0							11.143	11.00000	21.85714	-7.40000	
0.0							13.000	11.00000	20.00000	-7.40000	
0.0		7	7-8 NCP		7-8A	0.0	0.0	45.00000	20.00000	-7.40000	
3.9698							1.8333	46.83333	20.00000	-7.40000	
3.7394							3.6667	48.66667	20.00000	-7.40000	
3.5091							5.5000	50.50000	20.00000	-7.40000	
3.2788							7.3333	52.33333	20.00000	-7.40000	
3.0485							9.1667	54.16667	20.00000	-7.40000	
2.8182							11.000	56.00000	20.00000	-7.40000	
2.5879		8	7-8 NCP		7-8B	0.0	0.0	56.00000	20.00000	-7.40000	
2.5879							1.8333	56.00000	21.83333	-7.40000	
3.8625							3.6667	56.00000	23.66667	-7.40000	
3.8625							5.5000	56.00000	25.50000	-7.40000	
3.8625							7.3333	56.00000	27.33333	-7.40000	
3.8625							9.1667	56.00000	29.16667	-7.40000	
3.8625							11.000	56.00000	31.00000	-7.40000	
3.8625		9	7-8 NCP		7-8C	0.0	0.0	56.00000	31.00000	-7.40000	
3.8625							1.0000	55.00000	31.00000	-7.40000	
4.0500							2.0000	54.00000	31.00000	-7.40000	
4.2375		10	7-8 NCP		7-8D	0.0	0.0	54.00000	31.00000	-7.40000	
4.2375							1.0000	54.00000	32.00000	-7.40000	
4.2375							2.0000	54.00000	33.00000	-7.40000	



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 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Job No.	Sheet No.	Rev.
DJ22390		
Drg. Ref.		
Made by ML	Date 24-Jul-2024	Checked Date

Stage Ref.	Stage Name	Specific Building Ref.	Specific Building Name	Building Name	Sub-building Name	Vertical Offset	Dist.	x	y	z	δz
						[m]	[m]	[m]	[m]	[m]	[mm]
4.2375		11	7-8 NCP		7-8E	0.0	0.0	54.00000	33.00000	-7.40000	
4.2375							1.0000	53.00000	33.00000	-7.40000	
4.4250							2.0000	52.00000	33.00000	-7.40000	
4.6125							3.0000	51.00000	33.00000	-7.40000	
4.8000							4.0000	50.00000	33.00000	-7.40000	
4.9875							5.0000	49.00000	33.00000	-7.40000	
5.1750							6.0000	48.00000	33.00000	-7.40000	
5.3625							7.0000	47.00000	33.00000	-7.40000	
5.5500		12	7-8 NCP		7-8F	0.0	0.0	47.00000	33.00000	-7.40000	
5.5500							1.0000	47.00000	32.00000	-7.40000	
5.5500							2.0000	47.00000	31.00000	-7.40000	
5.5500		13	7-8 NCP		7-8G	0.0	0.0	47.00000	31.00000	-7.40000	
5.5500							1.0000	46.00000	31.00000	-7.40000	
5.7375							2.0000	45.00000	31.00000	-7.40000	
5.9250		14	7-8 NCP		7-8H	0.0	0.0	45.00000	31.00000	-7.40000	
5.9250							1.8333	45.00000	29.16667	-7.40000	
5.9250							3.6667	45.00000	27.33333	-7.40000	
5.9250							5.5000	45.00000	25.50000	-7.40000	
5.9250							7.3333	45.00000	23.66667	-7.40000	
5.9250							9.1667	45.00000	21.83333	-7.40000	
5.9250							11.000	45.00000	20.00000	-7.40000	
3.9698		15	39 College Crescent		CC-A	0.0	0.0	26.00000	49.50000	-3.00000	
7.5960							1.0384	27.02857	49.35714	-3.00000	
7.9238							2.0769	28.05714	49.21429	-3.00000	
8.2434							3.1153	29.08571	49.07143	-3.00000	
8.5490							4.1538	30.11429	48.92857	-3.00000	
8.9027							5.1922	31.14286	48.78571	-3.00000	
9.3006							6.2307	32.17143	48.64286	-3.00000	
9.7035							7.2691	33.20000	48.50000	-3.00000	
10.109		16	39 College Crescent		CC-B	0.0	0.0	33.00000	46.00000	-3.00000	
11.815							2.1098	33.33333	48.08333	-3.00000	
10.474							4.2197	33.66667	50.16667	-3.00000	
8.8496							6.3295	34.00000	52.25000	-3.00000	
7.1005							8.4393	34.33333	54.33333	-3.00000	
5.3614							10.549	34.66667	56.41667	-3.00000	
3.7358											



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 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

Stage Ref.	Stage Name	Specific Building Ref.	Specific Building Name	Building Name	Sub-building Name	Vertical Offset [m]	Dist. [m]	x [m]	y [m]	z [m]	δz [mm]
2.2913		17	39 College Crescent	CC-C		0.0	12.659	35.00000	58.50000	-3.00000	
11.815							2.0203	35.00000	45.71429	-3.00000	
12.611							4.0406	37.00000	45.42857	-3.00000	
13.428							6.0609	39.00000	45.14286	-3.00000	
14.276							8.0812	41.00000	44.85714	-3.00000	
9.3891							10.102	43.00000	44.57143	-3.00000	
9.4433							12.122	45.00000	44.28571	-3.00000	
11.720							14.142	47.00000	44.00000	-3.00000	
10.506		18	39 College Crescent	CC-D		0.0	1.8916	47.25000	45.87500	-3.00000	
10.506							3.7832	47.50000	47.75000	-3.00000	
9.8719							5.6748	47.75000	49.62500	-3.00000	
8.8637							7.5664	48.00000	51.50000	-3.00000	
7.6348							9.4580	48.25000	53.37500	-3.00000	
6.3061							11.350	48.50000	55.25000	-3.00000	
4.9725							13.241	48.75000	57.12500	-3.00000	
3.7056							15.133	49.00000	59.00000	-3.00000	
2.5548		19	39 College Crescent	CC-E		0.0	1.0951	49.08571	46.85714	-3.00000	
1.5473							2.1901	50.17143	46.71429	-3.00000	
8.9923							3.2852	51.25714	46.57143	-3.00000	
8.4726							4.3803	52.34286	46.42857	-3.00000	
7.9236							5.4754	53.42857	46.28571	-3.00000	
7.3557							6.5704	54.51429	46.14286	-3.00000	
6.9550							7.6655	55.60000	46.00000	-3.00000	
6.5626		20	New College Court	NCC-A		0.0	3.6818	5.66667	44.33333	-2.00000	
6.1200							7.3636	9.33333	44.66667	-2.00000	
5.7023							11.045	13.00000	45.00000	-2.00000	
0.48327							14.727	16.66667	45.33333	-2.00000	
1.3921							18.409	20.33333	45.66667	-2.00000	
2.4641							22.091	24.00000	46.00000	-2.00000	
3.5019		21	New College Court	NCC-B		0.0	1.0078	23.87500	47.00000	-2.00000	
4.3114							2.0156	23.75000	48.00000	-2.00000	
6.0701											
7.7383											
7.7383											
7.1071											



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 Ground Movement Analysis from Basement Construction
 Combined Installation & Excavation Movements

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Stage Ref.	Stage Name	Specific Building Ref.	Specific Building Name	Building Name	Sub-building Name	Vertical Offset [m]	Dist. [m]	x [m]	y [m]	z [m]	δz [mm]
6.4596							3.0233	23.62500	49.00000	-2.00000	
5.8063							4.0311	23.50000	50.00000	-2.00000	
5.1568							5.0389	23.37500	51.00000	-2.00000	
4.5193							6.0467	23.25000	52.00000	-2.00000	
3.9012							7.0545	23.12500	53.00000	-2.00000	
3.3086							8.0623	23.00000	54.00000	-2.00000	
2.7464											

Specific Building Damage Results - Detail

Stage Ref.	Stage Name	Specific Building Ref.	Specific Building Name	Building Name	Sub-building Name	Vertical Offset [m]	Segment	Start	Length	Damage Category
Ratio	Horizontal Strain	Tensile Strain	of Horizontal Displacement	of Vertical Curvature	of Vertical Movement	from Line for Calculations				
0	Base Model	1	13-14 NCP	13-14A	13-14A	0.0	1	3.6667	7.3333	None
937.76E-6	0.018420	0.018984	-365.86E-6	-434.79E-6	11280.0 (Negligible)	0.0	1	0.0	2.8459	None
0.043273	-0.055023	0.032200	0.0016534	-0.0019481	389.04 0 (Negligible)	0.0	2	2.8459	1.1856	None
0.0	293.68E-9	321.87E-9	-2.9368E-9	1.3602E-6	4.1479E+18 0 (Negligible)	0.0	3	4.0315	1.6601	None
0.0	293.68E-9	321.87E-9	-2.9368E-9	1.3602E-6	1.3965E+18 0 (Negligible)	0.0	4	5.6916	1.2919	None
0.0	293.68E-9	321.87E-9	-2.9368E-9	1.3602E-6	1.3293E+18 0 (Negligible)	0.0	5	6.9835	1.5535	None
0.0	293.68E-9	321.87E-9	-2.9368E-9	1.3602E-6	240.05E+15 0 (Negligible)	0.0	1	0.0	2.8000	None
0.0	0.062421	0.062421	-623.82E-6	626.71E-6	6.4604E+18 1 (Very Slight)	0.0	1	0.0	1.8247	None
0.0	578.83E-6	578.82E-6	-5.7883E-6	60.387E-6	541.01E+15 0 (Negligible)	0.0	2	1.8247	2.6753	None
0.0	578.83E-6	578.82E-6	-5.7883E-6	60.387E-6	983.83E+15 0 (Negligible)	0.0	1	0.0	2.0000	None
0.0	0.062421	0.062421	-623.82E-6	626.71E-6	615.28E+15 1 (Very Slight)	0.0	2	2.0000	2.0000	None
0.0	0.062421	0.062421	-623.82E-6	626.71E-6	4854.5 1 (Very Slight)	0.0				All vertical displacements are less than the limit sensitivity.
2.2061E-6	-0.0097275	0.0019455	957.95E-6	125.75E-6	10.771E+6 0 (Negligible)	0.0	1	0.0	8.9048	None
0.0	0.012563	0.012563	-125.61E-6	125.61E-6	9.0195E+18 0 (Negligible)	0.0	2	8.9048	2.0952	None
0.015450	0.0	0.014660	0.0	-695.25E-6	2109.6 0 (Negligible)	0.0	1	0.0	5.5000	None
0.0	0.0	35.763E-9	0.0	0.0	0 (Negligible)	0.0	2	5.5000	5.5000	None
0.0	0.018750	0.018750	-187.46E-6	-187.46E-6	723.54E+15 0 (Negligible)	0.0	1	0.0	2.0000	None
0.0	0.0	35.763E-9	0.0	0.0	0 (Negligible)	0.0	1	0.0	2.0000	None
0.0	0.018750	0.018750	-187.46E-6	-187.46E-6	2.3063E+18 0 (Negligible)	0.0	1	0.0	0.50000	None
0.0	0.018750	0.018750	-187.46E-6	-187.46E-6	2.3092E+18 0 (Negligible)	0.0	2	0.50000	1.7656	None



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Stage Ref.	Stage Name	Specific Building: Name	Specific Building: Name	Specific Building: Name	Sub-building Name	Sub-building Name	Vertical Offset from Line	Vertical Offset from Line	Segment Damage Category	Start	Length	
Ratio	Horizontal	Tensile	Max	Max	Max	Max	Min Radius	Min Radius				
0.0	0.018750	0.018750	-187.46E-6	-187.46E-6	1.5770E+18	0	(Negligible)	0	3	2.2656	1.7656	None
0.0	0.018750	0.018750	-187.46E-6	-187.46E-6	2.4046E+18	0	(Negligible)	0	4	4.0313	1.4608	None
0.0	0.018750	0.018750	-187.46E-6	-187.46E-6	768.76E+15	0	(Negligible)	0	5	5.4921	1.5079	None
0.0	0.0	35.763E-9	7-8 NCP	0.0	0.0	-	0 (Negligible)	0.0	1	0.0	2.0000	None
0.0	0.018750	0.018750	-187.46E-6	-187.46E-6	-	-	0 (Negligible)	0.0	1	0.0	2.0000	None
0.0	0.0	35.763E-9	7-8 NCP	0.0	0.0	-	0 (Negligible)	0.0	1	0.0	5.5000	None
0.023709	-0.036089	0.016789	0.0010838	0.0010677	1373.1	0	(Negligible)	0	2	5.5000	5.5000	None
193.13E-6	0.0069729	0.0070180	-82.030E-6	-315.63E-6	111940.0	0	(Negligible)	0.0	1	0.0	1.8322	None
0.0017302	0.0017789	0.0029246	-53.624E-6	-390.72E-6	30513.0	0	(Negligible)	0.0	2	1.8322	5.4368	None
0.0036128	0.042994	0.045717	-552.79E-6	828.57E-6	13860.0	0	(Negligible)	0.0	1	0.0	6.2951	None
0.0024985	0.053932	0.055834	-607.50E-6	828.57E-6	22521.1	1	(Very Slight)	0.0	2	6.2951	6.3629	None
16.623E-6	-0.0068491	0.0013698	200.42E-6	-404.44E-6	173090.0	0	(Negligible)	0.0	1	0.0	2.0535	None
Sagging	0.045603	-0.033214	0.034688	535.71E-6	0.0024200	2518.0	0 (Negligible)	0.0	2	2.0535	5.0280	
Hogging	0.052995	-0.018316	0.046454	535.71E-6	0.0024200	2564.1	0 (Negligible)	0.0	3	7.0815	3.8610	
Sagging	0.039936	-0.094295	0.031124	0.0013568	-0.0011271	828.87	0 (Negligible)	0.0	4	10.942	3.1996	
0.0060665	0.042385	0.047885	-553.21E-6	704.61E-6	8683.5	0	(Negligible)	0.0	1	0.0	7.8476	None
0.0028713	0.047075	0.049525	-553.21E-6	704.61E-6	23841.0	0	(Negligible)	0.0	2	7.8476	7.2844	None
595.65E-6	-0.062533	0.012511	656.36E-6	501.55E-6	37746.0	0	(Negligible)	0.0	1	0.0	1.6597	None
0.0037186	-0.045706	0.0093819	566.29E-6	518.92E-6	14895.0	0	(Negligible)	0.0	2	1.6597	3.4503	None
982.80E-6	-0.028918	0.0058113	366.60E-6	404.22E-6	71553.0	0	(Negligible)	0.0	3	5.1100	1.1668	None
378.36E-6	-0.020137	0.0040334	254.00E-6	404.22E-6	27505.0	0	(Negligible)	0.0	4	6.2767	1.3883	None
0.0010847	0.015057	0.015901	-152.40E-6	-291.10E-6	63840.0	0	(Negligible)	0.0	1	0.0	6.5288	None
230.84E-6	0.018140	0.018189	-210.57E-6	-291.10E-6	409100.0	0	(Negligible)	0.0	2	6.5288	1.6631	None
0.0054573	-0.0049787	0.0033508	347.23E-6	-477.76E-6	34503.0	0	(Negligible)	0.0	3	8.1919	11.419	None
0.0	-0.034711	0.0069422	347.23E-6	-453.26E-6	38714.0	0	(Negligible)	0.0	4	19.610	2.4796	None
429.33E-6	0.045933	0.046077	-471.80E-6	647.92E-6	53979.0	0	(Negligible)	0.0	1	0.0	2.6597	None
0.0013825	0.043531	0.044441	-438.24E-6	647.92E-6	32142.0	0	(Negligible)	0.0	2	2.6597	5.4023	None

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Building

Stage Ref.	Stage Name	Specific Building: Name	Specific Building: Name	Specific Building: Name	Sub-building Name	Sub-building Name	Vertical Deflection Ratio	Deflection Ratio	Average Horizontal Strain	Max Slope	Max
Settlement	Tensile	Horizontal	Vertical	Vertical	of	of	of	Horizontal	Strain		
Strain	Displacement	Displacement	Curvature	Curvature	Vertical	Vertical	of	Strain			
Curve	Curve	(Hogging)	(Sagging)								



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[mm]	[%]		[m]	[m]					
0	Base Model	1	13-14 NCP	13-14A	0.0	937.76E-6	0.018420	-434.79E-6	
3.1308	0.018984	2	-365.86E-6 13-14 NCP	13-14B	-	0 (Negligible)			
4.9757	0.032200	3	0.0016534 -0.0019481	13-14C	-	0.0 0.043273	-0.055023	-0.0019481	
4.9654	0.062421	4	-623.82E-6 13-14 NCP	13-14D	-	0.0 0.0	0.062421	626.71E-6	
3.2095	578.82E-6	5	-5.7883E-6 13-14 NCP	13-14E	-	0.0 0.0	0.062421	626.71E-6	
2.9378	0.062421	7	-623.82E-6 7-8 NCP	7-8A	-	0.0 2.2061E-6	0.012563	125.75E-6	
3.9698	0.012563	8	957.95E-6 7-8 NCP	7-8B	-	0.0 0.015450	0.0	-695.25E-6	
3.8625	0.014660	9	0.0 -695.25E-6	7-8C	-	0.0 0.0	0.018750	-187.46E-6	
4.2375	0.018750	10	-187.46E-6 7-8 NCP	7-8D	-	0.0 0.0	0.0	0.0	
4.2375	35.763E-9	11	0.0 0.0	7-8E	-	0.0 0.0	0.018750	-187.46E-6	
5.5500	0.018750	12	-187.46E-6 7-8 NCP	7-8F	-	0.0 0.0	0.0	0.0	
5.5500	35.763E-9	13	0.0 0.0	7-8G	-	0.0 0.0	0.018750	-187.46E-6	
5.9250	0.018750	14	-187.46E-6 7-8 NCP	7-8H	-	0.0 0.023709	-0.036089	0.0010677	
5.9250	0.016789	15	0.0010838 0.0010677	CC-A	-	0.0 0.0017302	0.0069729	-390.72E-6	
10.109	0.0070180	16	-82.030E-6 -390.72E-6	CC-B	-	0.0 0.0036128	0.053932	828.57E-6	
11.815	0.055834	17	-607.50E-6 828.57E-6	CC-C	-	0.0 0.052995	-0.094295	0.0024200	
14.264	0.046454	18	0.0013568 0.0024200	CC-D	-	0.0 0.0060665	0.047075	704.61E-6	
10.506	0.049525	19	-553.21E-6 704.61E-6	CC-E	-	0.0 0.0037186	-0.062533	518.92E-6	
8.9923	0.012511	20	656.36E-6 518.92E-6	NCC-A	-	0.0 0.0054573	-0.034711	-477.76E-6	
7.7380	0.018189	21	347.23E-6 -477.76E-6	NCC-B	-	0.0 0.0013825	0.045933	647.92E-6	
7.7383	0.046077		-471.80E-6 647.92E-6		-	0 (Negligible)			

Specific Building Damage Results - Critical Segments within Each Building

Stage: End Ref.	Stage: Curvature	Name: Building: Ref.	Specific: Max Slope	Specific: Max	Building: Max	Parameter: Min	Parameter: Min	Damage Category	Critical	Critical	Start
			Radius of Curvature						Sub-Building	Segment	
Settlement	Tensile	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.				
Strain	Curvature	Curvature									

(Hogging) (Sagging)

[m]	[mm]	[%]	[m]	[m]	[m]
0	Base Model	0	13-14 NCP	Max Slope	13-14B 1 0.0
2.8459	None	0.0019481	4.9757 0.032200	-	- 0 (Negligible)
2.8459	None	0.0019481	4.9757 0.032200	Max Settlement	13-14B 1 0.0
2.8000	None	626.71E-6	4.9654 0.062421	-	- 0 (Negligible)
-	-	-	-	Max Tensile Strain	13-14C 1 0.0
-	-	-	-	-	- 1 (Very Slight)
-	-	-	-	Min Radius of Curvature (Hogging)	- -
-	-	-	-	Min Radius of Curvature (Sagging)	- -
11.000	None	0	7-8 NCP	Max Slope	7-8H 2 5.5000
11.000	None	0.0010677	5.9250 0.016789	-	- 0 (Negligible)
				Max Settlement	7-8G 1 0.0



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Ground Movement Analysis from Basement Construction
Combined Installation & Excavation Movements

Stage:	Stage:	Name	Specific	Specific	Building:	Parameter	Critical	Critical	Start
End	Curvature	Max Slope	Max	Max	Max	Min	Min	Damage	Category
Ref.	Building:	Building:	Radius of	Radius of	Name	Min	Min	Category	Sub-Building Segment
Settlement	Tensile	Radius of	Radius of	of	Name	Min	Min	Category	Sub-Building Segment
2.0000	None	187.46E-6	5.9250	0.018750		-	-	0 (Negligible)	
						Max Tensile Strain			7-8C 1 0.0
2.0000	None	187.46E-6	4.2375	0.018750		-	-	0 (Negligible)	
						Min Radius of Curvature (Hogging)			
-	-	-	-	-		Min Radius of Curvature (Sagging)			
						Min Radius of Curvature (Sagging)			
7.0815	Sagging	0	39 College Crescent	14.264	0.034688	Max Slope			CC-C 2 2.0535
		0.0024200				-	2518.0	0 (Negligible)	
7.0815	Sagging	0.0024200	14.264	0.034688		Max Settlement			CC-C 2 2.0535
						-	2518.0	0 (Negligible)	
12.658	None	828.57E-6	7.1290	0.055834		Max Tensile Strain			CC-B 2 6.2951
						-	-	1 (Very Slight)	
10.942	Hogging	0.0024200	11.807	0.046454		Min Radius of Curvature (Hogging)			CC-C 3 7.0815
						2564.1	-	0 (Negligible)	
14.142	Sagging	0.0011271	11.711	0.031124		Min Radius of Curvature (Sagging)			CC-C 4 10.942
						-	828.87	0 (Negligible)	
2.6597	None	647.92E-6	New College Court	7.7383	0.046077	Max Slope			NCC-B 1 0.0
		647.92E-6				-	-	0 (Negligible)	
2.6597	None	647.92E-6	7.7383	0.046077		Max Settlement			NCC-B 1 0.0
						-	-	0 (Negligible)	
2.6597	None	647.92E-6	7.7383	0.046077		Max Tensile Strain			NCC-B 1 0.0
						-	-	0 (Negligible)	
						Min Radius of Curvature (Hogging)			
-	-	-	-	-		Min Radius of Curvature (Sagging)			
-	-	-	-	-		Min Radius of Curvature (Sagging)			



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