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Beechwood House

Basement Impact Assessment (BIA) - Irrigation Water Tank Proposal

Ref: 8061/100/001

Document Verification

Project Name: Beechwood House
Document Title: Basement Impact Planning Report
Project No: 8061
Ref:

Revision	Date	Description		
01	26-10-11	Issued For Planning Approval		
		Prepared by	Checked by	Approved by
	Name	TR		
	Signature			

Revision	Date	Description		
		Prepared by	Checked by	Approved by
	Name			
	Signature			

Revision	Date	Description		
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	Name			
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	Name			
	Signature			

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1. Introduction

1.1. Techniker are consulting structural engineers for the Beechwood House development at 43 Hampstead Lane N6. This report appraises the impact of a subterranean water irrigation tank in line with the London Borough of Camden's (LBC) Guidance for Subterranean Development (GSD).

1.2. The LBC document GSD sets out a developer led methodology for assessing the impacts of underground development in line with Camden DP27 :

> As stated in Camden Development Policy DP27 [5] paragraph 27.1, LB Camden "*will only permit* [basement and other underground development that] *does not cause harm to the built and natural environment and local amenity and does not result in flooding or ground instability*". LB Camden "*will require developers to demonstrate by methodologies appropriate to the site that schemes:*
>
> - *maintain the structural stability of the building and neighbouring properties;*
> - *avoid adversely affecting drainage and run-off or causing other damage to the water environment;*
> - *avoid cumulative impacts upon structural stability or the water environment in the local area";*

1.3. The development proposals are 'screened' as per the flow charts provided in Appendix E of the GSD and the results presented in following section. A discussion relating to the main points raised follows in section 3.

1.4. As a result of the screening exercise the overall impact of the development is not considered to be problematic for neighbouring stakeholder interests. No further site investigation or detailed assessment is proposed.

2. Screening for Basement Impact Assessment (BIA)

2.1. Surface Flow & Flooding Screening Flow Chart from Appendix E of GSD.

Q	Response	Notes
1	Yes	The site is within the Highgate Chain (ponds) catchment area.
2	No	Surface Water Flows will not be changed.
3	No	No significant areas of Hard Landscaping are proposed.
4	No	No significant changes to inflows on adjacent properties will occur.
5	No	The development will not compromise the quality of surface water being received by properties downstream.
6	No	The site is not in an area prone to surface water flooding.

Table 1 – Surface Flow & Flooding Screening

2.2. Subterranean (Groundwater) Screening Flow Chart

Q	Response	Notes
1a	Yes	The site is in the upper aquifer close to the boundary between the Bagshot Formation and the Claygate Member (refer Appendix A)
1b	No	Refer Appendix A for water table depths.
2	Yes	The construction is thought to be within 100m of a spring line that feeds the ponds on the lower sections of the site.
3	Yes	The site is within Highgate Chain (ponds) catchment area. The rate of ground water flow will not, however, be significantly affected.
4	No	The proportion of hard surface/paved areas is not altered significantly.
5	No	The proposals do not affect the existing surface water run-off regime.
6	No	The formation levels in the proposal are not lower than local ponds.

Table 2- Subterranean Flow Screening

2.3. Slope Stability Screening Flow Chart

Q	Response	Notes
1	Yes	Local slopes around the proposed location are > 7 degrees. These existing gradients will not be made worse by the development proposals.
2	No	Proposed re-profiling will not include slopes greater than existing (which are stable).
3	No	The developments on the site boundaries are not greater than 7 degrees.
4	Yes	The site is within a wider 'hillside' setting, however, larger slip failures mechanisms are unlikely to be activated.
5	No	London Clay is not the shallowest strata at the site (refer BH 5/6 in Appendix A)
6	No	No trees are to be felled during the development proposals.
7	No	There is no evidence of significant seasonal shrinkage in the existing buildings.
8	Yes	The basement is thought to be within 100m of an existing spring line. Like the main works excavation this will be controlled by pumping.
9	No	The existing landscape can be traced onto historical maps dating from 1860. Earlier slip failures are not evident in the profile.
10	No	The basement is within an aquifer. The water table is however, below the basement formation level. Water control in the excavation will be by pumping as per the main works.
11	No	The site is not within 50m of the Hampstead Heath Ponds.
12	No	The proposed excavation is not within 5m of the existing highway.
13	No	The proposed excavation works are 20m away from neighbouring developments and differential effects are not considered significant.
14	No	The site is not within the exclusion zone of any public transport tunnels.

Table 3 – Slope Stability Screening

3. Discussion

3.1. The proximity of a local spring line is noted. The excavation works will be kept dry by pumping as per the main works contract. No de-watering measures are proposed.

3.2. The excavation is within a larger hill side setting – the surrounding slopes are however less than 7 degrees and a larger slip failure is not considered to be an issue.

3.3. Small local slopes around the proposed location are greater than 7 degrees. It is proposed that this profile is maintained after the works as there is no evidence of earlier slip failures. No neighbouring building foundations will be affected by this.

3.4. The location is within the Highgate Chain ponds catchment area. The rate of groundwater flow will not be significantly affected by the development.

Appendix A: Site Investigation

GEA Geotechnical & Environmental Associates

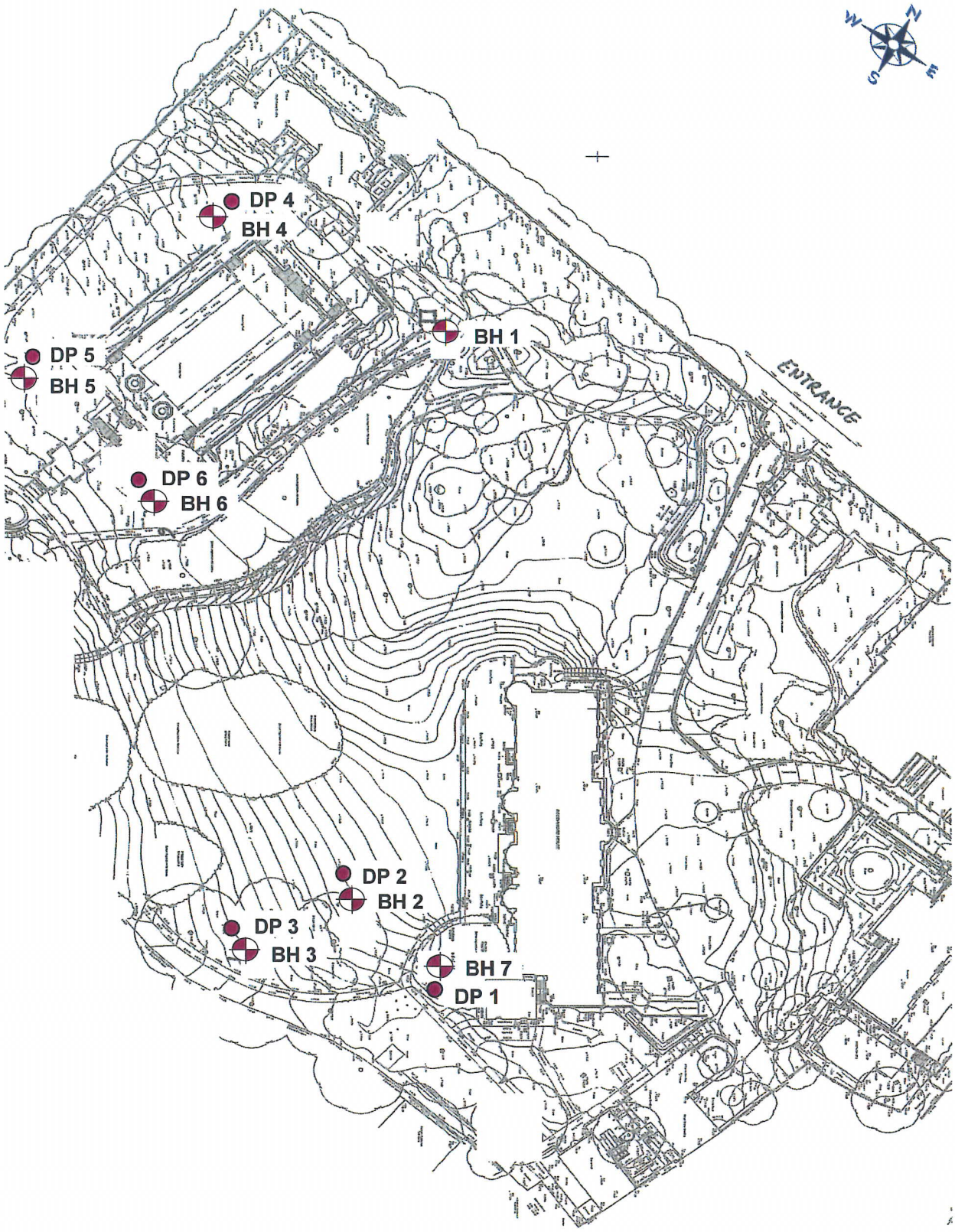
Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Site Plan

Site	Beechwood House, London, N6
Client	Hanley Ltd
Engineer	Techniker Ltd

Job Number J09038

Sheet 1 / 1



Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Beechwood House, London, N6	Borehole Number: BH1

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 1.50m	116.77	Hanley Ltd	J09038
	Location	**Dates** 25/02/2009	**Engineer** Techniker Ltd	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.35)	Made Ground (dark brown topsoil)		
					116.42	0.35			
0.60	D1						Medium dense brown clayey silty SAND - with occasional pockets of sandy clay		
1.00-1.45 1.00	SPT N=10 D2	1.00	DRY	1,2/2,3,2,3					
2.00-2.45 2.00	SPT N=18 D3	1.50	DRY	2,3/5,3,5,5					
						(4.35)			
3.00-3.45 3.00	SPT N=14 D4	1.50	DRY	2,3/3,3,4,4					
4.00-4.45 4.00	SPT N=15 D5	1.50	DRY	2,2/3,3,4,5					
					112.07	4.70			
4.80	D6						Firm becoming stiff brown sandy CLAY		
5.00-5.45	U7								
5.50	D8								
6.00-6.45 6.00	SPT N=17 D9	1.50	DRY	1,3/4,4,4,5		(2.70)			
7.40 7.50-7.95	D10 U11				109.37	7.40	Stiff brownish grey becoming grey silty fissured CLAY with traces of selenite crystals; with a layer of grey clayey sand at 13.5 m		
8.00	D12								
9.00-9.45 9.00	SPT N=19 D13	1.50	DRY	2,3/4,4,5,6					

Remarks
Service inspection pit excavated from ground level to 1.0 m - 1 hour
50 mm diameter standpipe installed to 6.0 m - response zone from 1.0 m to 6.0 m
Groundwater seepage associated with silty layer

Scale (approx)	Logged By
1:50	MK

Figure No. J09038.BH1

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Beechwood House, London, N6	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	116.77	Hanley Ltd	J09038
	Location	**Dates** 25/02/2009	**Engineer** Techniker Ltd	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.95	U14								
11.00	D15								
12.00-12.45 12.00	SPT N=19 D16	1.50	DRY	2,3/4,4,5,6		(7.60)			▽1
13.50-13.95	U17			Slow(1) at 13.50m, rose to 12.50m in 20 mins.					▽1
14.00	D18								
14.50-14.95 14.50	SPT N=24 D19	1.50	12.80	4,4/5,6,6,7					
					101.77	15.00	Complete at 15.00m		

Remarks

Scale (approx)	**Logged By**
1:50	MK

Figure No.
J09038.BH1

GEA Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	Site Beechwood House, London, N6	Number BH2
Excavation Method Drive-in Window Sampler	Dimensions	Ground Level (mOD) 113.06	Client Hanley Ltd	Job Number J09038
	Location	Dates 25/02/2009	Engineer Techniker Ltd	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	Made Ground (dark brown silty clay topsoil with occasional ash fragments)		
0.40	D1			112.56	0.50			
0.80	D2		pp = 1.5			Firm brown silty slightly sandy CLAY with pockets of orange brown silty sand and rootlets to 2.0 m		
1.30	D3		pp = 1.5					
1.80	D4		pp = 1.75 pp = 1.75					
2.40	D5		pp = 1.75		(3.50)			
2.80	D6		pp = 1.75 pp = 2.0					
3.40	D7		pp = 2.0					
3.90	D8		pp = 2.0					
				109.06	4.00			
4.40	D9		pp = 3.0			Stiff greyish brown silty fissured CLAY with occasional grey silt partings		
					(1.00)			
4.90	D10		pp = 3.0					
				108.06	5.00			
						Complete at 5.00m		

Remarks
Groundwater not encountered
pp denotes pocket penetrometer reading

Scale (approx)	Logged By
1:50	MK

Figure No.
J09038.BH2

Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Beechwood House, London, N6	Number: BH3
Excavation Method: Drive-in Window Sampler	Dimensions	Ground Level (mOD): 111.30	Client: Hanley Ltd	Job Number: J09038
	Location	Dates: 25/02/2009	Engineer: Techniker Ltd	Sheet: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	Made Ground (brown silty clay topsoil with gravel and occasional brick fragments)		
0.50	D1			110.70	0.60			
0.70	D2		pp = 2.5			"Stiff" becoming firm brown and orange brown silty CLAY with pockets of orange brown sandy silt and rootlets to a depth of 2.2 m - desiccated soil to 2.8 m		
1.20	D3		pp = 2.0					
1.50	D4		pp = 2.0					
1.90	D5		pp = 3.0					
			pp = 3.0		(3.40)			
2.40	D6		pp = 3.5					
2.80	D7		pp = 3.5					
3.00	D8		pp = 3.0					
3.40	D9		pp = 2.0					
3.80	D10		pp = 2.0					
				107.30	4.00	Stiff grey siltly fissured CLAY		
4.40	D11		pp = 3.0		(1.00)			
4.90	D12		pp = 3.0					
			pp = 4.0	106.30	5.00			
						Complete at 5.00m		

Remarks
pp denotes pocket penetrometer reading
Groundwater not encountered

Scale (approx)	Logged By
1:50	MK

Figure No. J09038.BH3

Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Beechwood House, London, N6	Number: BH4
Excavation Method: Drive-in Window Sampler	Dimensions	Ground Level (mOD): 113.75	Client: Hanley Ltd	Job Number: J09038
	Location	Dates: 25/02/2009	Engineer: Techniker Ltd	Sheet: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Made Ground (dark brown silty sandy clay with occasional gravel and rare brick fragments)		
0.70	D1				(1.50)			
				112.25	1.50			
1.80	D2					Firm silty very sandy CLAY with pockets of clayey sand		
50	D3							
			Slow seepage(1) at 3.00m.					▽1
			.		(3.50)			
3.50	D4							
4.50	D5							
				108.75	5.00			
						Complete at 5.00m		

Remarks
Groundwater associated with layer of silty clayey sand

Scale (approx)	Logged By
1:50	MK

Figure No. J09038.BH4

GEA Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Site	Number
Beechwood House, London, N6	BH5

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler		111.80	Hanley Ltd	J09038
	Location	**Dates**	**Engineer**	**Sheet**
		25/02/2009	Techniker Ltd	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Made Ground (dark brown silty sandy clay with ash fragments)		
0.80	D1				(1.65)			
1.50	D2			110.15	1.65			
					(0.35)	Firm brown silty very sandy CLAY		
1.90	D3			109.80	2.00			
2.30	D4					Firm brown mottled pale brown and grey clayey slightly sandy slightly gravelly SILT with pockets of gravelly silty sand		
2.80	D5							
					(3.00)			
3.60	D6							
4.80	D7							
				106.80	5.00			
						Complete at 5.00m		

Remarks
Groundwater seepages associated with presence of silt sand layers

Scale (approx)	Logged By
1:50	MK

Figure No.
J09038.BH5

Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Beechwood House, London, N6	Number: BH6
Excavation Method: Drive-in Window Sampler	Dimensions	Ground Level (mOD): 112.07	Client: Hanley Ltd	Job Number: J09038
	Location	Dates: 25/02/2009	Engineer: Techniker Ltd	Sheet: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.40)	Made Ground (dark brown silty gravelly clay with brick and ash fragments)		
1.10	D1			110.67	1.40			
1.50	D2				(0.60)	"Stiff" brown sandy silty CLAY with rootlets to 2.0 m - desicatted soil to 2.0 m		
1.80	D3			110.07	2.00			
			Slow seepage(1) at 2.30m.			Firm brown mottled grey and pale brown clayey very sandy SILT with pockets of silt sand		▽1
50	D4							
3.50	D5		Slow seepage(2) at 3.50m.		(3.00)			▽2
4.50	D6							
				107.07	5.00			
						Complete at 5.00m		

Remarks
Groundwater seepages associated with presence of sandy layers

Scale (approx)	Logged By
1:50	MK

Figure No. J09038.BH6

GEA Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Site	Number
Beechwood House, London, N6	BH7

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler		112.59	Hanley Ltd	J09038
	Location	**Dates** 25/02/2009	**Engineer** Techniker Ltd	**Sheet** 1/1

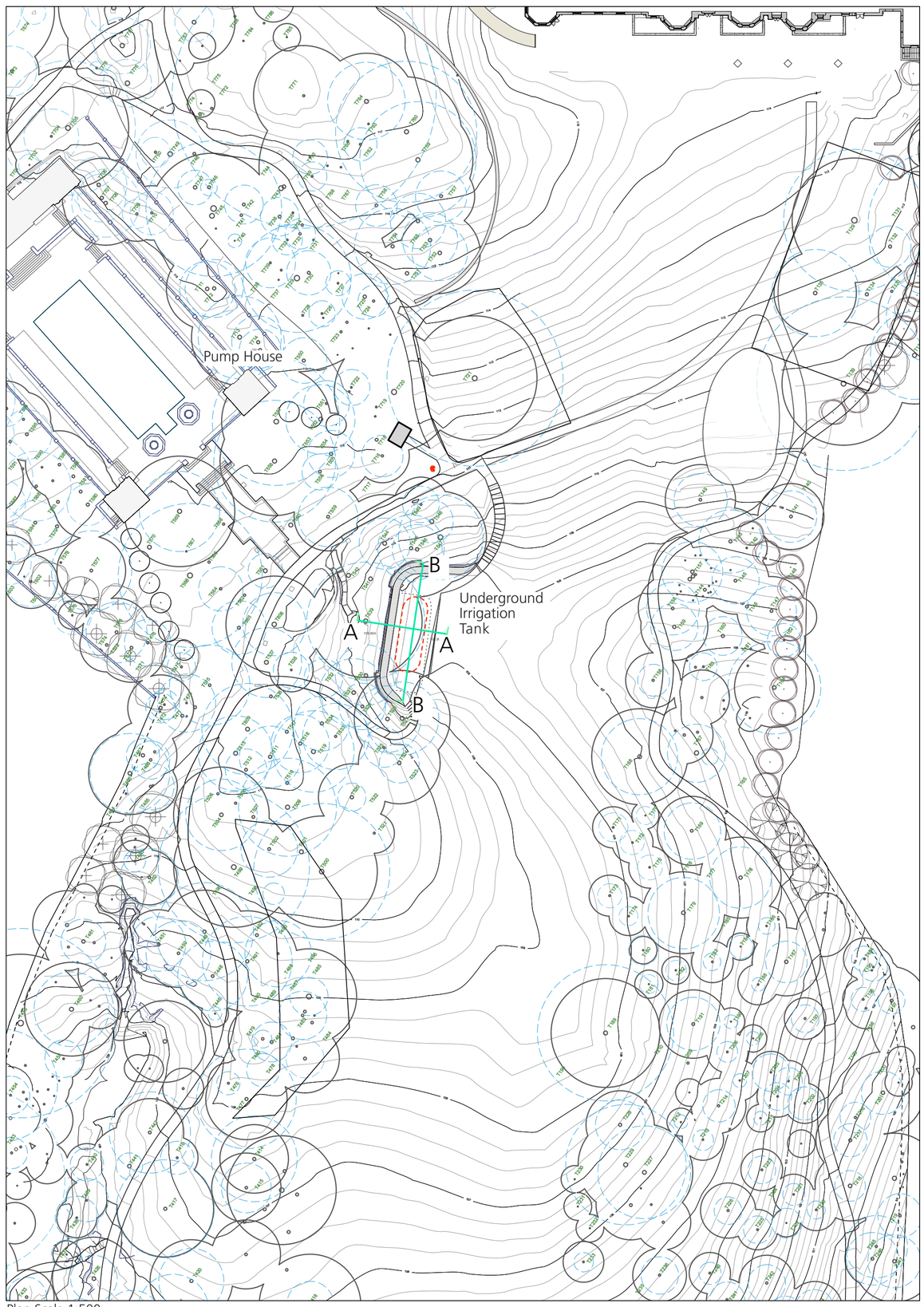
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.80)	Made Ground (dark brown silty clay topsoil with rare brick and ash fragments)		
0.70	D1			111.79	0.80			
1.00	D2		pp = 2.75			"Stiff" becoming firm from 2.4 m orange brown silty sandy gravelly CLAY with roots to 2.5 m - desiccated soil to 2.4 m		
1.50	D3		pp = 3.0					
2.00	D4		pp = 3.0		(2.20)			
2.40	D5		pp = 1.75					
2.90	D6		pp = 1.75					
			pp = 1.75	109.59	3.00			
3.40	D7		pp = 1.75			Firm becoming stiff brown mottled grey silty fissured CLAY		
3.90	D8		pp = 2.0		(2.00)			
4.50	D9		pp = 2.75					
			pp = 2.75	107.59	5.00			
						Complete at 5.00m		

Remarks
pp denotes pocket penetrometer reading
Groundwater not encountered

Scale (approx)	Logged By
1:50	MK

Figure No. J09038.BH7

Appendix B: Proposed Works



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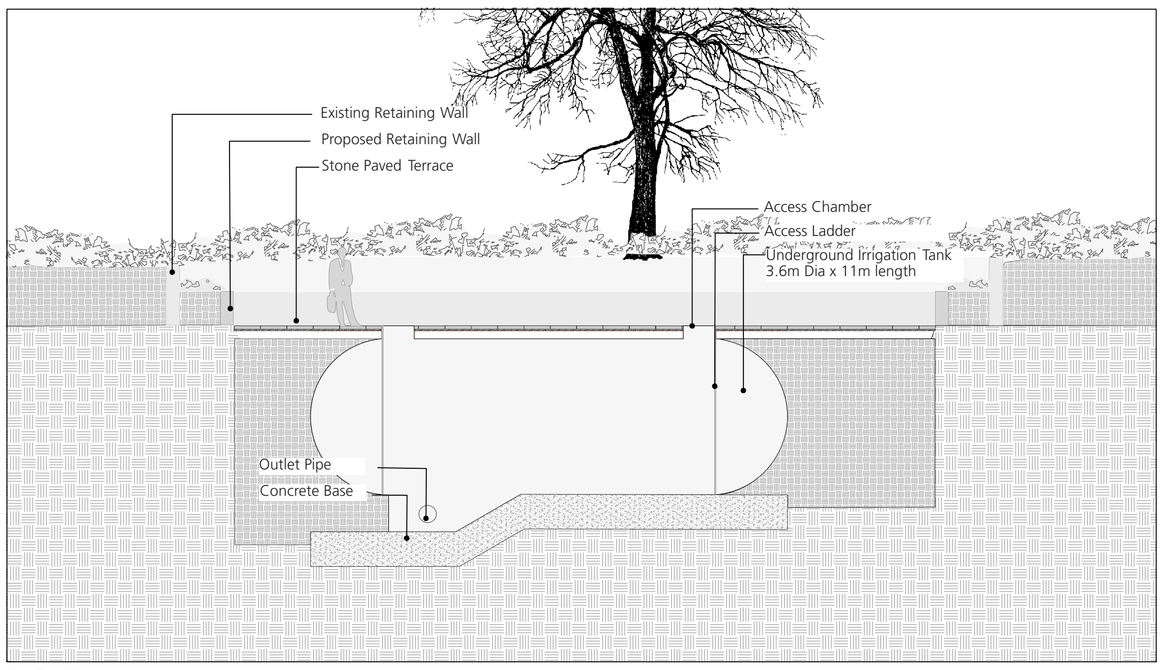

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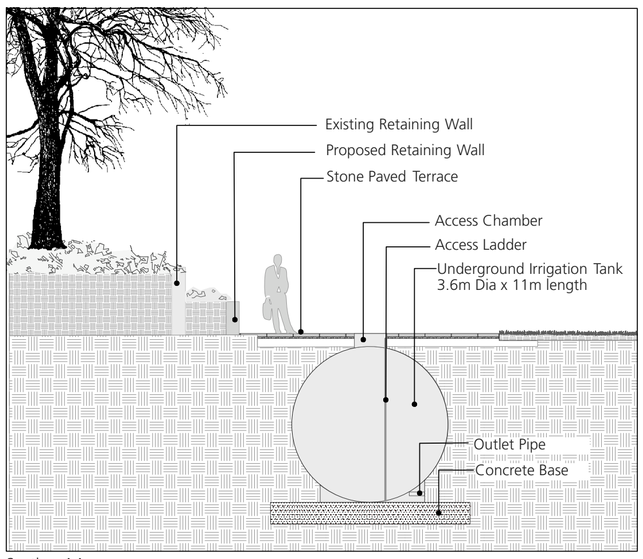

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REVISION				
	B	Tender Issue	21.10.11	JN
	A	Brick wall proposals revised to steel railing	02.09.11	JN

BEECHWOOD HOUSE

Underground
Irrigation Tank
Proposals

TENDER

SCALE	Varies @A1
DATE	16.09.11
DRAWN	JN
DRAWING No.	1257.020

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