IIT PEARS BUILDING PROJECT

DETAILED BASEMENT CONSTRUCTION PLAN TECHNICAL MEETING

MINUTES OF MEETING

Project	Pears Building
Date	Tuesday - 16.05.2017
Time	10:00 – 12:00hrs
Meeting Ref.	Basement – Technical Meeting
Location	Willmott Dixon's Offices – 44A Pentonville Road, London, N1 9HF

Present	
Dr Michael de Freitas (MdF)	First Steps Ltd
Michael Eldred (ME)	Eldred Geotechnics Ltd
Ian Stephenson (IS)	Stephenson Davenport Structural Associates Limited (SDStructures)
Roy Conway (RC)	Willmott Dixon - Construction
Stuart Wagstaff (SW)	Soil Consultants (SC)
Tony Suckling (TS)	ASquared
Najib Sheeka (NS)	Heyne Tillet Steel (HTS)
Dr Stephen Thomas (ST)	OGI Groundwater Specialist (OGI)
Apologies	
Phill Cracknell (PC)	Willmott Dixon - Construction

Previous Minutes
On file.

ITEM	Description	Action By	Target Date
1	**MEETING DISCUSSION** Soil Consultant's revised Borehole Layout together with their Investigation Strategy (attached) were tabled and accepted by all. RC reported that WD were in contact with Camden Highways & Parks Dept. together with London Underground (TfL) to gain relevant Licenses/clearance to undertake the works and also in the process of undertaking a Utilities Search, ahead of the works.	Note Note	
2	Previous weekend (ie 13th May'17) worked comprised: BH 202 sunk circa. 10m deep by ST with an inclinometer casing under the instruction of SST. Note inclinometer to be installed at a later date. Also water readings were taken; with the results as follows: WS101 – 2.58m / BH104 – both pipes 3.50m WS102 – 2.96m / BH3a – 1.92m WS103 – 0.97m / BH201 – 0.97m (50mm pipe – 0.67 (19mm pipe) In summary; this demonstrated that the water levels had dropped which is attributable to the prolonged dry period.	Note Note	
3	It was recorded that receipt of the SI Report from the previous Southern Testing was still awaited. POST MEETING NOTE: Southern Testing Reports dated 22ndMar'17 & 18thApr'17 covering investigation works undertaken 12th Mar'17 and 8th Apr'17 respectively received 17th May'17.	Note	
4	SW reported that in conversation with the geophysics specialists they confirmed that they would not be confident in providing a reliable depth indicator to the tower foundations using geophysical techniques due to the nature of the concrete, it's stiffness in contrast to the clay and the lack of any surface area they could use as an 'anvil'. However; Mr Taylor's email dated 10th May'17 confirmed that he is in the process of arranging for a deeper excavation in the Trial Pit 3 (TP3) area to find the bottom of the tower foundations. Date to be confirmed.	MT	

ITEM	Description	Action By	Target Date
5	It was confirmed that the structural design of the basement would only be re-worked in the event that findings from the additional GI were more onerous than the assumptions made.	HTS	
6	WD gave a brief synopsis of the forthcoming timeline in relation to undertaking the additional ground investigations, analysing results, feeding findings into the ground model, updating the Detailed Basement Construction Plan and gaining the necessary approvals.	Note	
7	It was agreed that the actual configuration of the foundations and the actual loads should where possible be ascertained. In this regard some research is to be carried out on other structures designed by Teulon (namely St Mary's Parish Church Ealing W5 5RH) to assist in uncovering his basis of design. Also comments on the limited outstand / absence of outstand of the church tower foundations in the TP's highlights the need to undertake a verticality check of the tower and possibly eccentric loadings of the foundations.	Note HTS WD	
8	Whilst it was acknowledged that to comply with the Section 106 Agreement, the use of conservative figures should be adopted, it was agreed that more realistic view ie (Serviceability Limit State (SLS)) figures should be taken into consideration. In this regard; it was agreed that before re-running the model joint agreement should be sought from all parties incl. Camden.	Note A^2/RFC	
9	MdF stated that we need to be confident that the model is providing us with a factual account of what is actually occurring underground and where possible such should be tested by proving on site. Furthermore; the models starting point should at least reflect the conditions we have at present; that is a very basic request.	A^2	
7	Dr Stephen Thomas gave a presentation on OGI's outline design concepts for dissipating the pore water pressure so preventing backing up of the water table in the grounds of the church/school. This was accepted as a potential solution by ALL albeit it was acknowledged that the specific drainage system would depend on the GI findings and a number of questions were raised which require being taken into consideration; namely: a) A baseline "reasonable accepted" water level range needs to be agreed by all parties. OGI and A^2 to work together to establish. b) How does the water get released directly back into the ground and could this clog. OGI were of the opinion that the flow rate would not be high and perhaps the use of a soak-away or the introduction of a surface drain would suffice. Furthermore; the discharge capacity would be balanced with the incoming flow. c) Taking water out aggravates desiccation; hence emphasis should be placed on maintaining a static water level not drawing down. It was stated that whilst the use of passive drainage systems is a long standing approach, cognisance should be taken of the need to provide a 50-60 year design life. POST MEETING NOTE: Whilst it was accepted that at this stage OGI's proposals could be construed as non-conclusive & non-committal, nonetheless they would issue a Preliminary Report "For Information" by 26th May'17.	OGI/A^2 OGI OGI OGI OGI	26.05.17

ITEM	Description	Action By	Target Date
8	OGI is to give opinion on the numbers, depths & specification for instrumentation relating to groundwater pressure/head measurement.	OGI	26.05.17
9	It was again commented that it would be worthy to investigate the presence of a drain/culvert running beneath the Royal Free Hospital.	WD	26.05.17
10	POST MEETING NOTE: MdF stated the fact that we have no pH, no Eh, no dissolved solids, no London Clay chemistry (be careful here, a chemical analyses is not the same as a petrological analyses; a collection of chemical elements does not tell you how they are assembled and thus their solubility), no organics etc. and therefore he advises that it would be sensible to use the services of an appropriate chemist to look at the question of how the ground water might react to changes in pressure and oxidation over time in the presence of organic activity? MdF commented on 'calcification' in sumps to the Crypt and put this in the context of guaranteeing longevity of the dewatering drainage system which may be installed.	OGI/A^2 Note	
11	TS again stated that the intent was to produce more detailed slices from the new model and to carryout a number of 'what ifs'. A^2 are to provide a proposal of what they intend to show at a further meeting prior to the next iteration of the model being run. It was also stated that the model geological boundaries would be extended further North and West.	Note A^2	
12	It was again recorded that KF Geotechnical Report dated 6th Sep'06 indicates a foundation depth of 1.02m on trial pit Nr.16. Further enquiries to be made thro. KF to validate findings. Key Question: Does TP pick-up Crypt or Tower wall ?	WD	26.05.17
13	POST MEETING NOTE: To obtain historic weather records attention was drawn to http://nw3weather.co.uk/wx12.php for weather as an alternative and if in doubt undertake a cross check with the met office.	A^2	
14	As previous; it was agreed that focus should be made on the following actions: a) Undertake addition on site ground investigations; gather data and share findings, including exploring depth and configuration of church tower foundations. b) Discuss with Camden/Campbell Reith the need to adopt more realistic parameters and/or SLS figures. c) Ensure model is truly reflecting actual underground conditions and where possible test and prove on site.	SC TS/SW/ NS/PC TS	
15	WD tabled the s106 tracker (last updated 19 Apr'17) which related principally to the production of the Detailed Basement Construction Plan and which contained the questions received and the responses given. MdF, ME & IS were invited to review and convey any comments to RC. POST MEETING NOTE: Electronic version issued to MdF, ME & IS.	MdF, ME, IS Note	
16	It was agreed that due to impending holidays and the fact that no additional information is likely to be in existence for circa. eg.7-8 wks then the next meeting would be arranged closer to that time.	Note	

Date and Time of Next Meeting

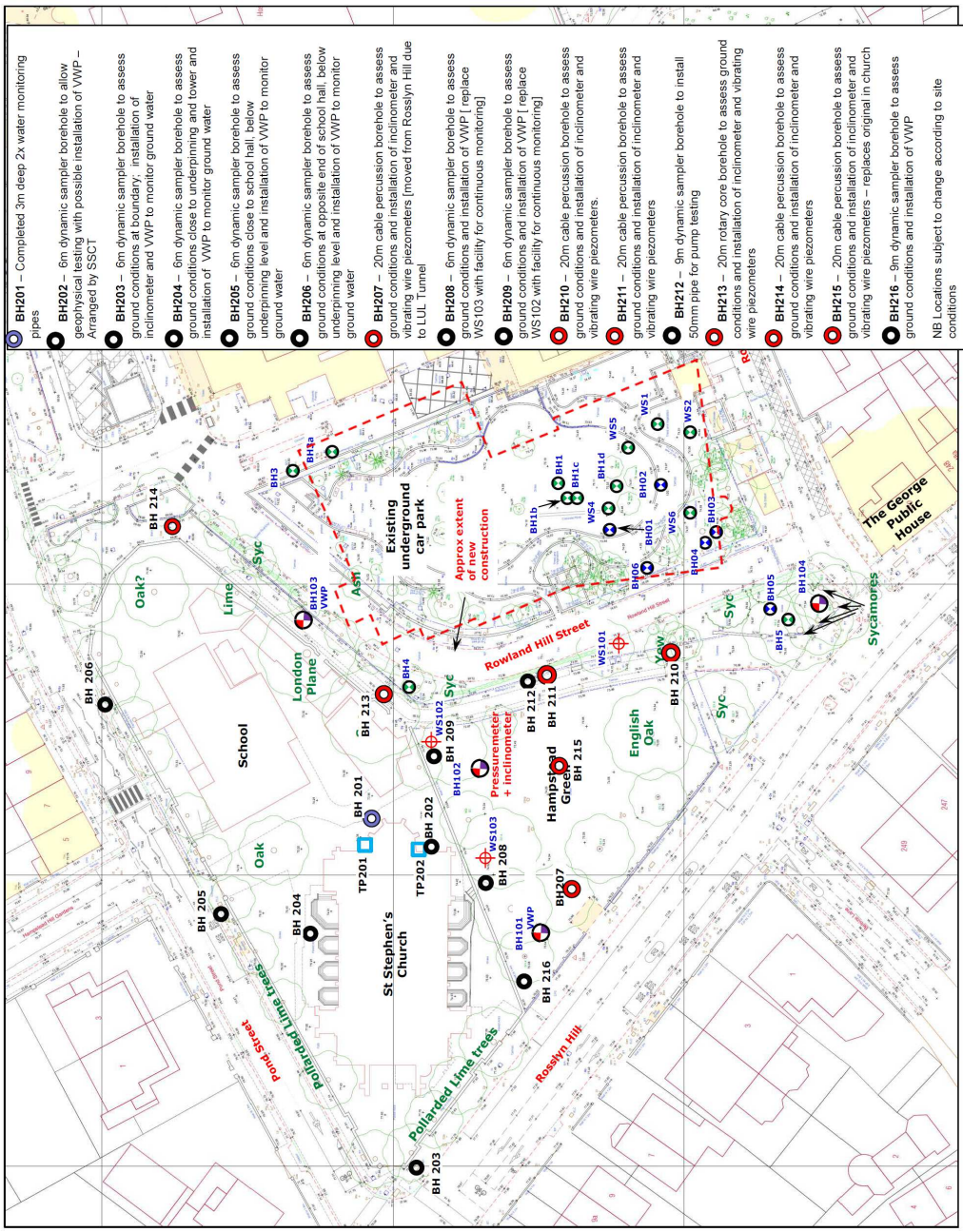
Date: tbc **Time:** 10:00am **Location:** 44A Pentonville Road, London N1 9HF

Site Location

Pears Building, Royal Free Hospital, Pond Street, London NW3 2QG

Report No: 10006/OT

Site Plan



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Pears Building - Philosophy for the Phase 3 Ground Investigation works

This phase of exploratory work has been designed to refine the ground model used in the analysis for this development and further establish the ground conditions at the boundary and around the site. From recent discussion to be addressed, namely the ground water regime/ hydraulic continuity which may indicate the presence of 'preferential pathways' through the soils which may relate to failure/slip planes. In particular, it is noted that a deep a line running perpendicular to the school hall. Secondly; the boreholes are to also provide further examination of the soils to establish the upper zone which may have undergone shallow slippage [mud flows as termed by ME affected by Freeze Thaw during the last Ice Age which may have had an effect on material properties. Pre-construction monitoring of the water levels and potential ground movement needs to be undertaken to establish ben post construction monitoring can be undertaken. These latest boreholes have provision for the installation of this monitoring equipment.

Borehole	Type	Depth m	Primary purpose(s)
202	Dynamic Sampler	10	To investigate soils near to the church tower. To facilitate investigation of the tower foundation. To record ground movements close to the church. Installation of inclinometer to be discussed but this is now considered in BH 21
203	Dynamic Sampler	6	To measure groundwater west of the church. To investigate soils west of church.
204	Dynamic Sampler	6	To measure groundwater north of the church. To investigate soils north of church.
205	Dynamic Sampler	6	To measure groundwater west of the school. To investigate soils west of the school.
206	Dynamic Sampler	6	To measure groundwater east of the school. To investigate soils east of the school.
207	Cable percussion	20	To record ground movements far up slope away from the proposed works. To measure groundwater south of the church.
208	Dynamic Sampler	6	To measure groundwater south of the church. To investigate soils south of the church.
209	Dynamic Sampler	6	To measure groundwater east of the church. To investigate soils east of the church.
210	Cable percussion	20	To record ground movements between the proposed works and the church. To measure groundwater west of the proposed works. To investigate soils.
211	Cable percussion	20	To record ground movements between the proposed works and the church. To measure groundwater west of the proposed works. To investigate soils.
212	Dynamic Sampler	9	To facilitate a permeability test.
213	Rotary Core	20	To record ground movements between the proposed works and the church and school. To measure groundwater east of the church. To investigate soils.
214	Cable percussion	20	To record ground movements between the proposed works and the church and school. To measure groundwater east of the school. To investigate soils.
215	Cable percussion	20	To record ground movements mid slope away from the proposed works. To measure groundwater mid-way between the church and the proposed works. To investigate soils.
216	Dynamic Sampler	9	To measure groundwater south of the church. To investigate soils south of the church.

Trial Pit	Type	Depth m	Primary purpose(s)
TP202 A	Trial Pit	Greater than 2.2m	To investigate depth of tower foundation.

NB Locations/depths subject to change due to site conditions/constraints and requirements dictated by LUL and location of buried services.