

Research on The Long Term Performance of Energy Piles[®] (Field Installation)

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Outlines

- Issues being raised from previous experience @ Lambeth College.
- Long term Energy Piles[®] monitoring programme set up for @ Bankside, London.
- Future prospects and challenges.

Issues to be explored...

Field test

- Energy aspect:
 - Thermal properties of soil material.
 - Efficiency of energy extraction.

Long term monitoring

- Geotechnical aspect:
 - Influence of geothermal energy extraction to the changes in soil material and affects to the adjacent infrastructure.

Future prospects

- Long term thermal cycles to the geotechnical performance of energy piles group.

Long Term Monitoring Project @ Bankside

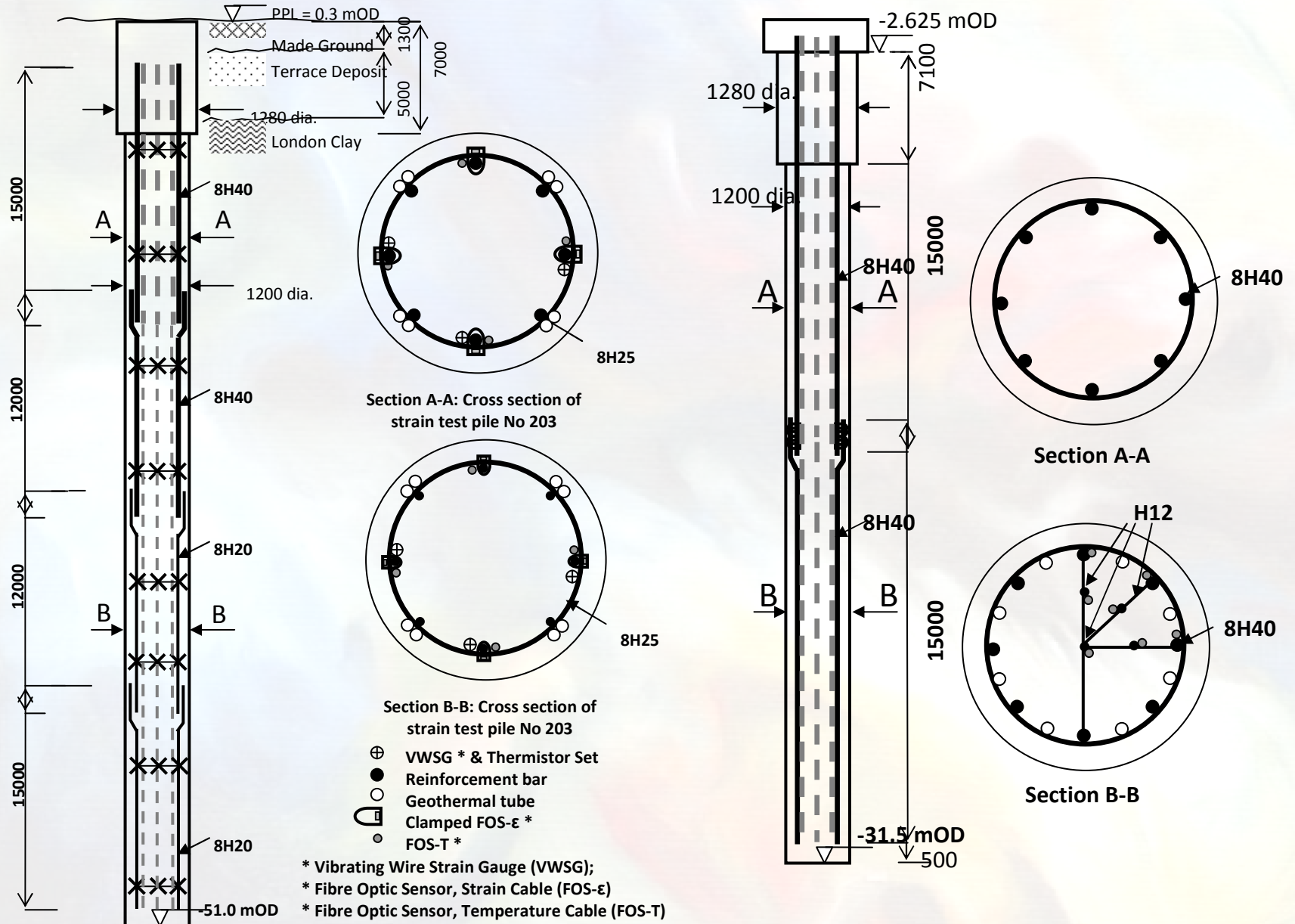
- Long term monitoring programme setup.

Pile Info		Dry (ϵ)	Wet (ϵ)	Dry (T)
Dia (mm.)		1200		
Pile length (m)		30	50	30
Load (kN)		4650	13000	700
No of energy loops		4	4	4
Instrumentation	VWSG	20	24	-
	OFS - ϵ (loops)	2	2	-
	Thermistor	2	2	-
	OFS - T (loops)	2		2

field test
 Long term monitoring
 Future prospects

Instrumented EPs (Strain & Temperature)

field test
 Long term monitoring
 Future prospects

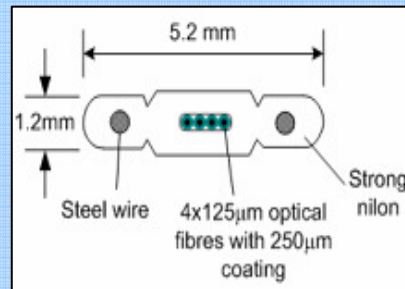


Instrumentations

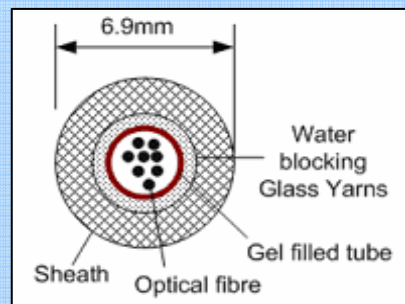
field test
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Optical Fibre Strain Sensors (OFS)

Strain OFS



Temperature OFS

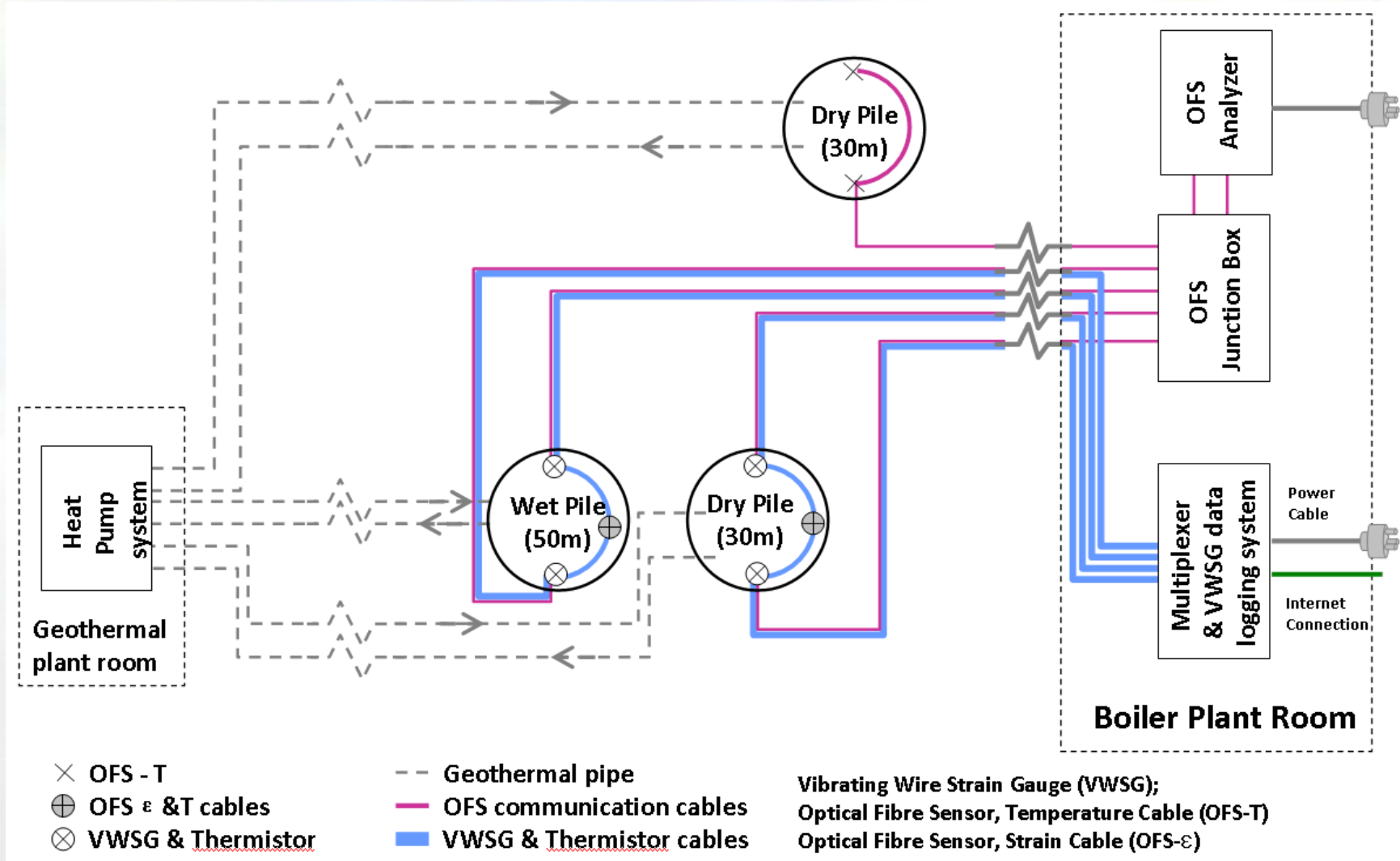


Vibrating Wire Strain Gauge (VWSG) and Thermistors



Schematic layout

field test
Long term monitoring
Future prospects



Pile Installation

Future prospects
Long term monitoring
field test



Pile Installation – The 50m long Energy Pile®

Future prospects
Long term monitoring
field test

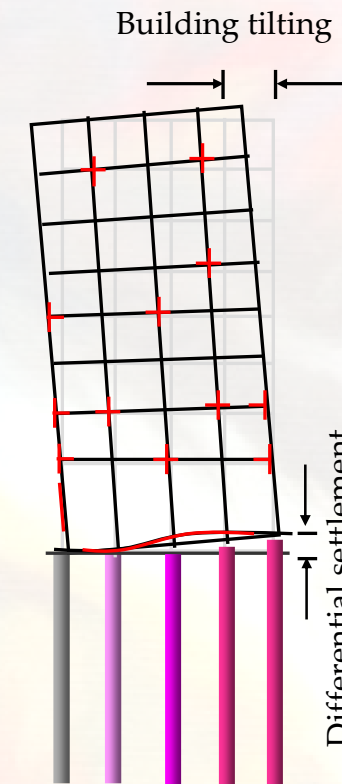
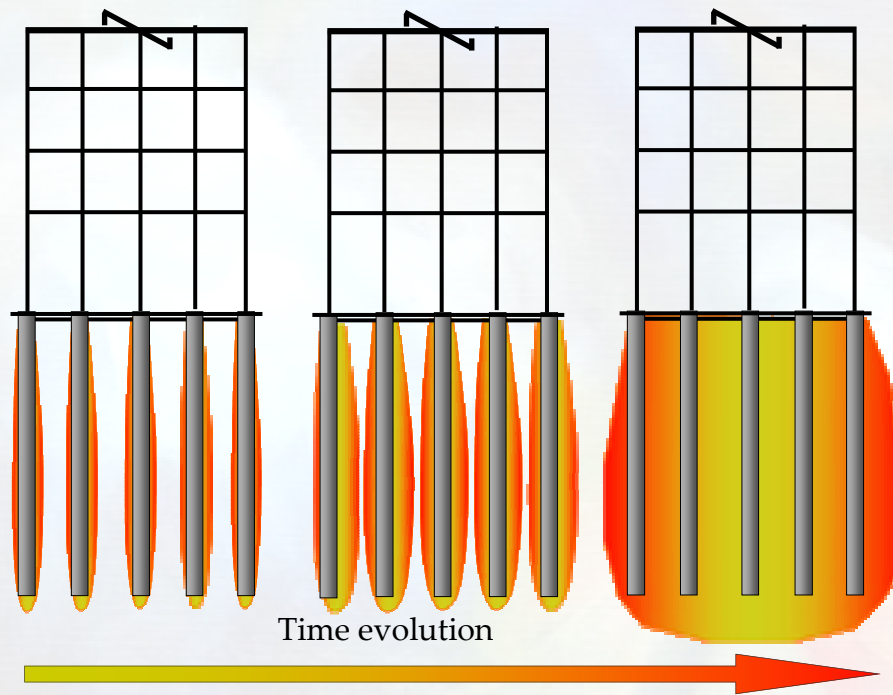


Challenges

- Long term thermal cyclic loading effects on energy piles group.

- Differential settlement control

field test
Long term monitoring
Future prospects



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Thank you