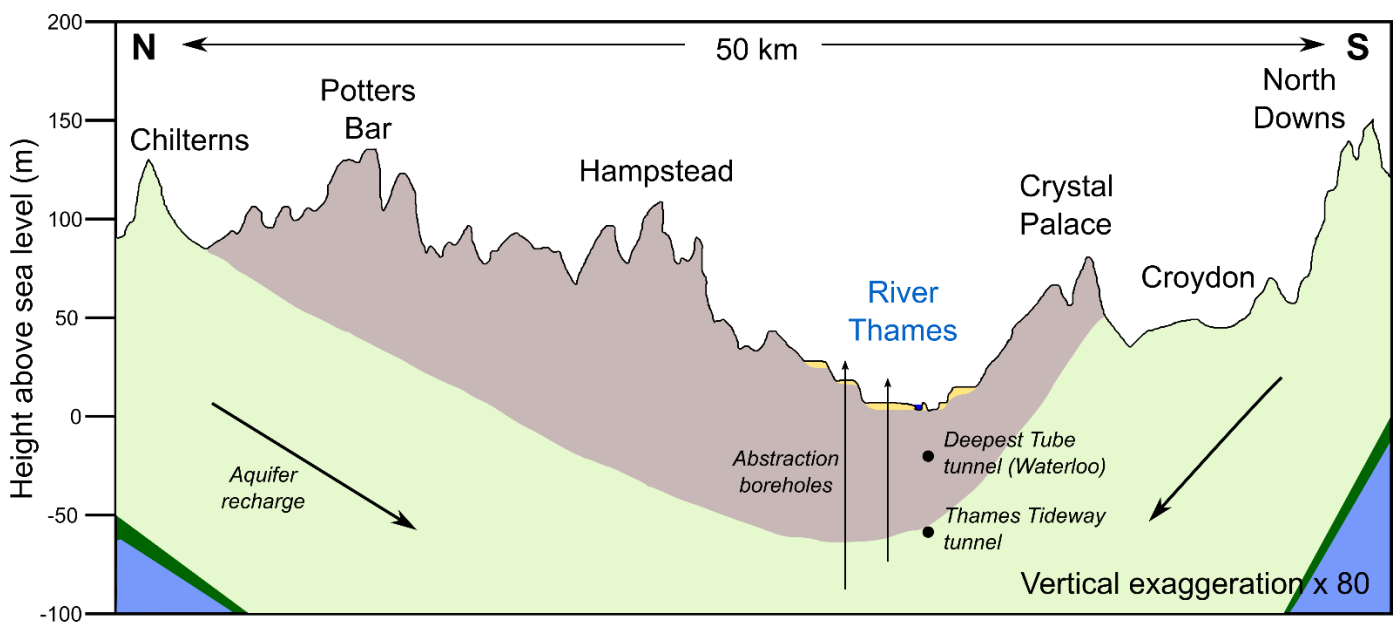


# Subsurface engineering and water resources of Greater London

Dr Jonathan D. Paul  
(Royal Holloway, University of London)

## Synopsis:

This talk gives an overview of the way in which stratigraphy, structure and water have influenced subsurface engineering in London; in particular, the London Underground. The timing of its development – and the spatial form its tunnels took – have been largely governed by the London Clay, an excellent tunnelling medium whose thickest strata extend as a narrow finger along the axis of the London basin. More minor variations are probably governed by periglacial erosion and faulting. We will explore various ‘construction calamities’ and new engineering techniques that have arisen as mitigating measures. Some unforeseen geological features have contributed to the ongoing and widely reported delays in the opening of Crossrail and the Battersea Northern Line extension, e.g. huge gravel-filled voids formerly occupied by underground spheres of ice in Devensian times (“pingos”). I will also explore the way in which the Chalk aquifer continues to shape the exploitation of London’s water resources and will discuss some new research into sustainable cooling of the Tube network by exploiting subterranean river and groundwater.



- QUATERNARY: River terrace and superficial deposits
- PALAEOCENE-EOCENE: London Clay Fm, Lambeth Group & Thanet Sand Fm
- UPPER CRETACEOUS: Chalk Group
- ALBIAN: Upper Greensand Fm
- ALBIAN: Gault Formation



### **About the speaker:**

Jonathan is a Lecturer in Earth Science at Royal Holloway, University of London. He holds PhD and MSci degrees in Geophysics from the Cambridge and Imperial College London respectively. To date, he has worked within and between three areas: (i) hydrogeological modelling and sustainable (ground)water resource management; (ii) Geohazards, in particular community-led risk reduction/resilience-building activities (including "citizen science"); (iii) Landscape development and dynamic topography (i.e. vertical surface motions in response to sub-plate convection). Other interests include developing new low-cost sensor networks for a variety of geoscience purposes, the geology of London and southern England, and Quaternary periglacial processes.

### **Forthcoming talks:**

DATE	TITLE	SPEAKER	VENUE
8th February 2022 6.30pm	A new understanding of Pleistocene glacial events as revealed from mega merge seismic data of the North Sea	Prof Mads Huuse, The University of Manchester	Zoom – Virtual meeting

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