

**JOMAS** | ENGINEERING  
ENVIRONMENTAL

## PROJECT PROFILES

GROUND MOVEMENT ASSESSMENTS  
& BASEMENT IMPACT ASSESSMENTS

# KNOLLY'S ROAD

## STREATHAM HILL

Jomas Associates Ltd were commissioned to conduct a Ground Investigation, Ground Movement Assessment and Basement Impact Assessment on Knollys Road in the London Borough of Lambeth.

The site consisted of a two storey residential semi-detached house on a steep slope such that the first floor of the house was in line with the adjacent road. At the base of this slope, a railway line is present.

The proposed development for this site comprised the demolition of existing building and replacement with a four-storey block of 19 new residential apartments with two basement levels and a terrace of three houses. The lower basement level comprised of basement car parking spaces and was to extend to form the ground floor level of the three terraced houses (due to the topography of the site).

Jomas were commissioned to carry out the Desk Study / Preliminary Risk Assessment incorporating the Screening and Scoping Stage of the Basement Impact Assessment (BIA); a Ground Investigation (with associated interpretation and reporting and updated BIA) and a Ground Movement Assessment.

Jomas undertook both cable percussive borehole drilling on the site and windowless sampler boreholes to enable soil samples to be taken for both geotechnical and contamination testing. The deeper holes were located in an attempt to intercept large slip planes that may have been reactivated by the increased loading imposed by the development, or unloading by the excavation of the basement during construction.

This range of holes across the slope, allowed Jomas to split the site into "zones" and determine effective foundation solutions. These ranged from standard strip footings to cantilever retaining walls and a continuous fully embedded retaining wall.

The ground movement assessment looked at the potential movement of the construction of a basement of varying depths on the slope and the effect that this would have on surrounding buildings and the adjacent road. Jomas was able to give advice regarding maintaining slope stability during the works.



# FITZJOHN AVENUE

## HAMPSTEAD

Jomas was appointed to carry out the Desk Study / Preliminary Risk Assessment (incorporating the Screening and Scoping Stage of the Basement Impact Assessment).

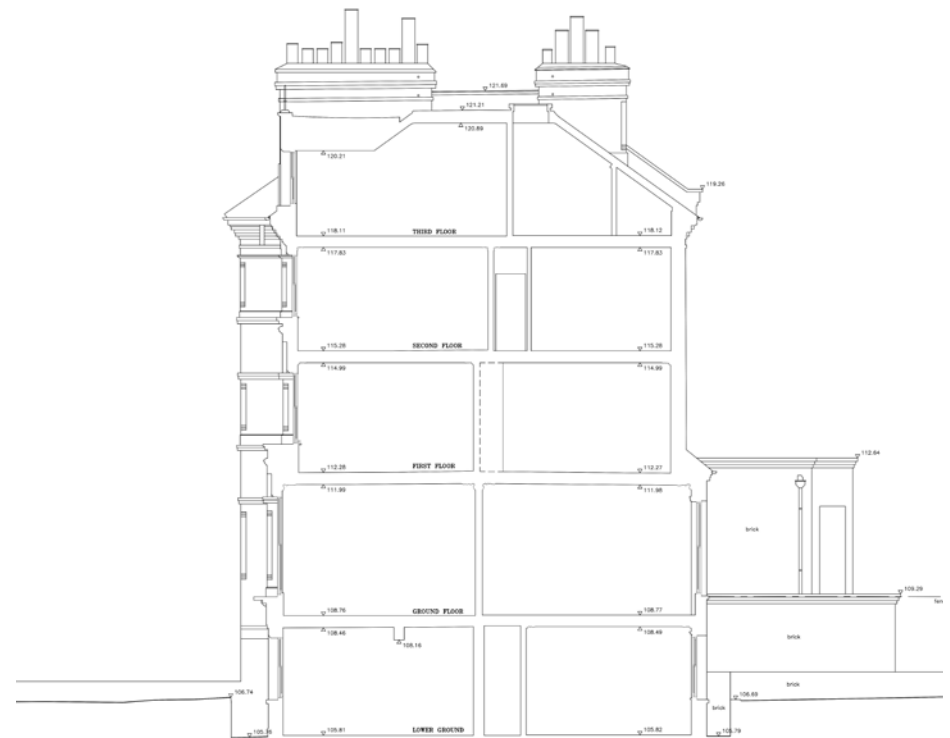
The site was formerly used as a monastery but was configured for residential end use with lower ground floor level to the rear. The southern side was considered to be a large post war extension. An air shaft associated with the Network Rail tunnel is present in the western portion of the site.

The proposed development for this site was to take place in two phases. The first phase comprised the extension of the existing building and lower ground floor. The second phase involved the construction of a new 5-storey residential building with basement level in the western end of the existing property's garden

A review of historical maps indicated an air shaft in the north-west corner of the site by the map dated 1915. This indicated the presence of a railway tunnel beneath the site. Few changes occur to the site until the map dated 1951 when the building on site is shown to have been extended and the tunnel below site is identified as the 'Belsize New Tunnel'.

Following discussions with Network Rail, it became apparent that before deep exploratory holes could be undertaken, significant surveys would be required. Consequently Jomas concentrated a BIA for the Phase 1 of the development.

Due to the works that are involved for Phase 1, Jomas was able to utilise light weight smaller equipment and obtain permission from Network Rail to carry out the shallow intrusive investigation for the Phase 1 works.



# TEMPLEWOOD AVENUE

## HAMPSTEAD



A new basement is also proposed below the entire footprint of the existing building, and an extension of the basement beyond the existing building footprint at the front garage entrance and at the rear section into the area where the existing swimming pool is present.

This new basement will be used for parking, a gymnasium, sauna, steam room and pump house.

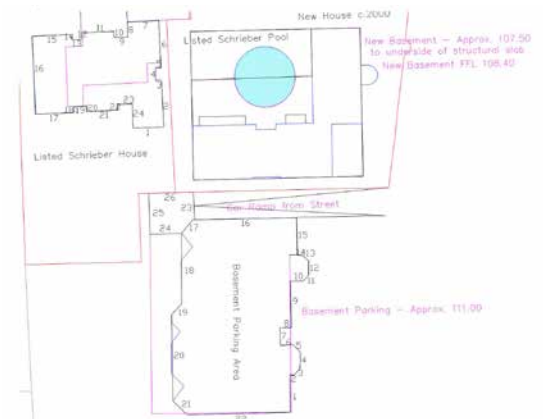
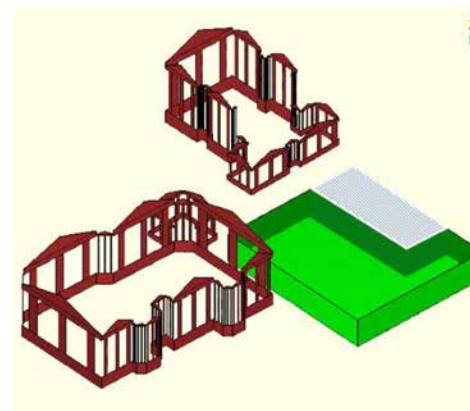
Jomas were instructed to carry out the Desk Study / Preliminary Risk Assessment incorporating the Screening and Scoping Stage of the Basement Impact Assessment; a Ground Investigation (with associated interpretation and reporting an updated BIA) and a Ground Movement Assessment.

**Value Added - Producing reports signed off by LPA. Cost savings and a rapid turn around.**

The site consisted of a large residential house with lower ground floor level. There was also an atrium style building which formerly housed a swimming pool.

The pool was constructed in 1968 following the construction of the adjacent Schreiber House. The swimming pool was originally linked to the Schreiber House. The Schreiber House and the swimming pool with its glass domed roof are Grade II listed.

The proposed development for this site was to carefully dismantle the swimming pool structure and to reconstruct it to the north so it is separate from the main building. At the same time the main dwelling was to be extended into the swimming pools' current position and to the south east corner.



# MULBERRY WALK

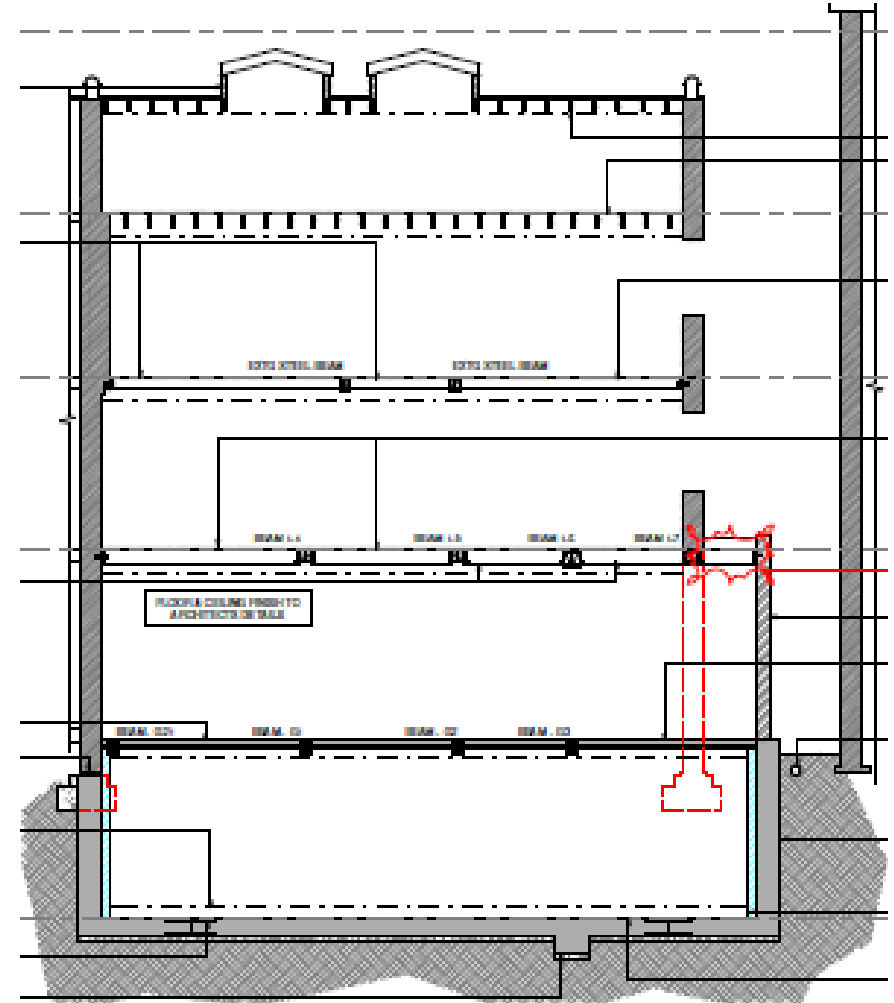
## CHELSEA

The site consisted of a three-storey double fronted residential brick construction with garage and rear garden. Refurbishment of the current construction is proposed including the demolition of rear façade and subsequent rebuilding. A basement is proposed beneath the full floor plan of the existing house and part of the rear area.

It was anticipated that sacrificial bearing piles will be required to support the rear elevation of the house during the basement works. These piles would need to both support the building and prevent the facade from toppling. Jomas were instructed to carry out the Desk Study / Preliminary Risk Assessment incorporating the Screening and Scoping Stage of the Basement Impact Assessment (BIA); a Ground Investigation (with associated interpretation and reporting and updated BIA) and a Ground Movement Assessment.

Consequently as part of the investigation, Jomas completed hand dug inspection pits to expose existing foundations, as well as windowless sampler boreholes and cable percussion boreholes extending to xmg1, as part of the Basement Impact Assessment.

The basement was deemed to be most suitably formed using cantilever retaining walls, for which Jomas provided design parameters. For the sacrificial piles Jomas was able to give recommendations on the indicative allowable carrying capacity to support the building. The calculations were also undertaken to determine purely the skin friction of the pile that would be developed so that the piles could be designed to act in tension and to anchor the façade to prevent toppling.



Value Added – Producing reports signed off by LPA. Cost savings and a rapid turn around.

# CLIFTON HILL

## ST JOHN'S WOOD

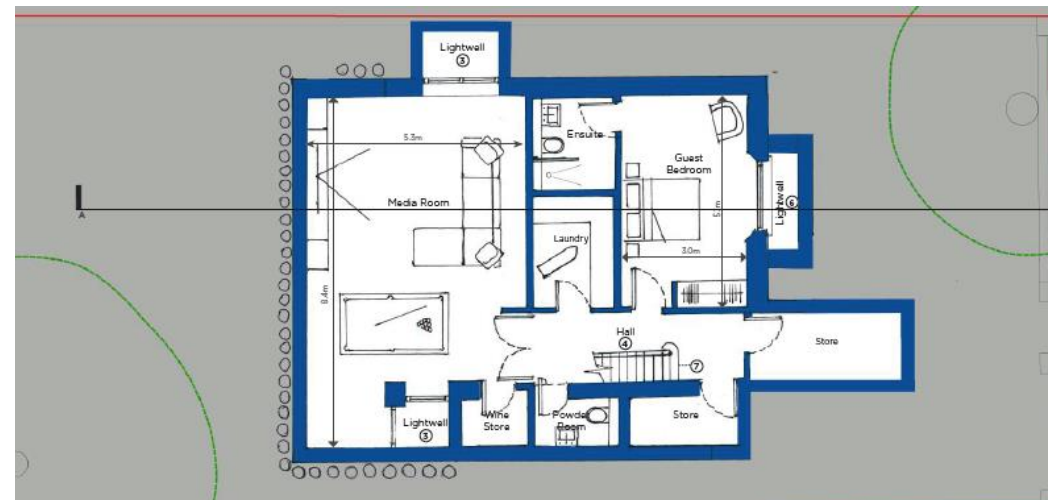
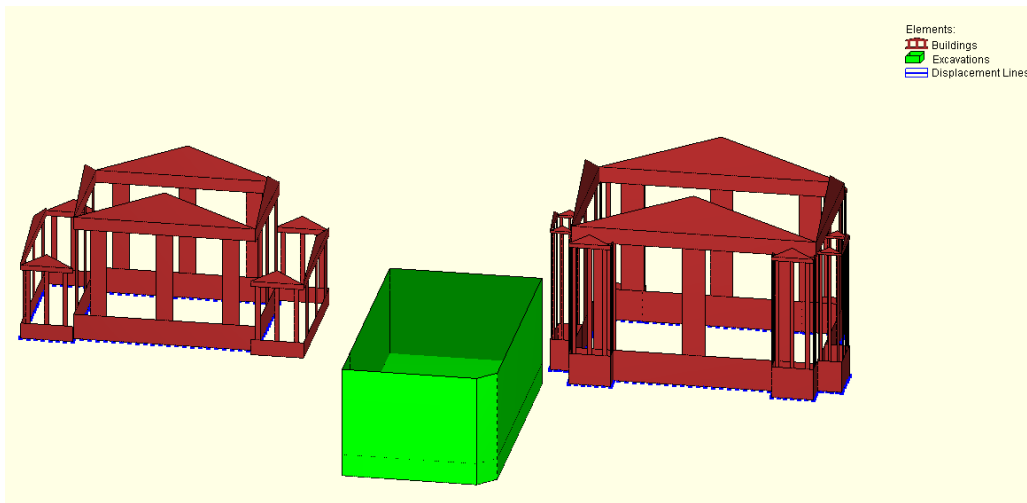
Jomas Associates Ltd were commissioned to conduct Generic Risk Assessments, Geotechnical Interpretation, Basement Impact Assessment & Ground Movement Assessment at Clifton Hill, St Johns Wood.

Jomas were requested to carry out the Desk Study / Preliminary Risk Assessment incorporating the Screening and Scoping Stage of the Basement Impact Assessment; a Ground Investigation (with associated interpretation and reporting) and a Ground Movement Assessment.

The proposed development was to form a basement beneath the full floor plan of the existing house with a new ground floor built on top of the basement. Due to access restraints we couldn't get standard equipment in. Consequently Jomas undertook a very deep windowless sampler borehole to 10m and retained the liners in metre sections allowing us to have the necessary geotechnical laboratory testing undertaken.

Jomas were then able to provide indicative allowable carrying capacities for both traditional bored piles and piles acting in tension.

**Value Added – Identifying workable solutions while minimising clients costs.**





# EAGLE WHARF ROAD

LONDON, N1

## CROSSRAIL 2 GROUND MOVEMENT ASSESSMENT

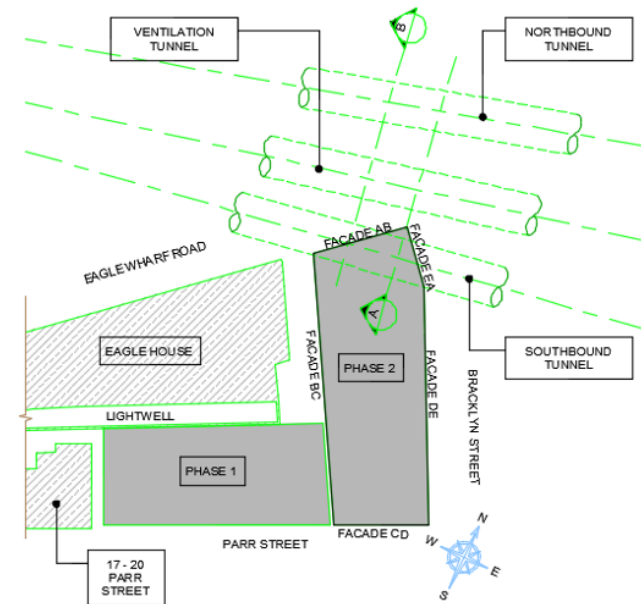
The Client proposed to construct two 5-storey buildings which share a common single-storey basement.

Jomas was commissioned to undertake a ground movement assessment as part of the scheme planning approval conditions that are associated with safeguarding the future Crossrail 2 development corridor.

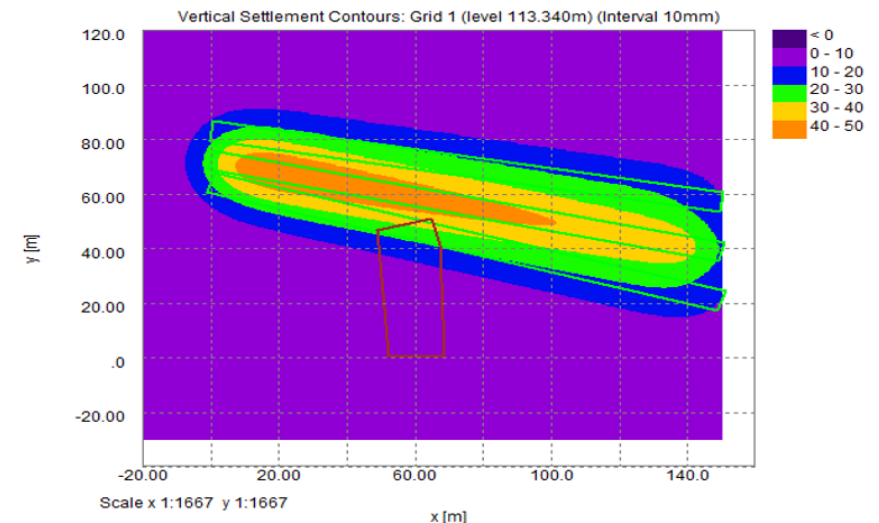
The Jomas assessment evaluated ground deformations associated with an advancing tunnelling front beneath the proposed development. The effect of the greenfield ground movement settlement troughs on the development were assessed in accordance with the Burland damage classification system.

Throughout this process, Jomas liaised actively with the structural engineers and Crossrail 2 asset protection team, attending scheme design meetings in order to talk through the results of the assessment and ensure their criteria were adhered to.

**Added value:** Jomas was able to demonstrate that the tunnelling works would result in acceptable levels of deformation of the proposed development, enabling the associated planning conditions to be satisfied and the scheme to move forward.



Plan of proposed development and CR2 tunnels.



Vertical settlement contours produced by analytical model.



# PALMER STREET

LONDON, SW1H

## GROUND MOVEMENT ASSESSMENT FOR NEW 7STOREY BUILDING WITH TRIPLE LEVEL BASEMENT

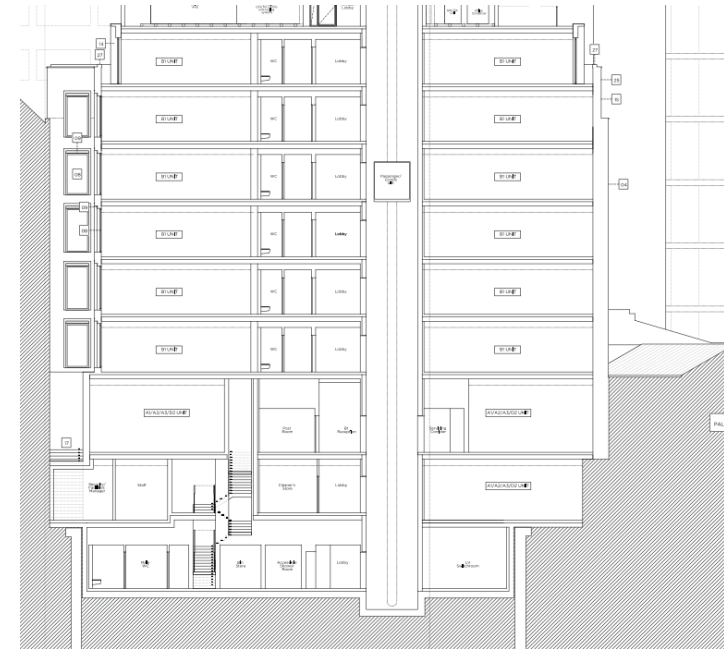
Jomas was commissioned to undertake a ground movement assessment to assess the potential structural damage induced by the proposed works to the neighbouring buildings.

Jomas' assessment evaluated ground deformations associated with the entire development process, from demolition to piling and overburden removal (heave), as well as long-term ground movements. Short-term parameters were adopted for calculating the effects of overburden removal. Long-term parameters were adopted to account for the effects of soil reloading after the completion of the proposed work.

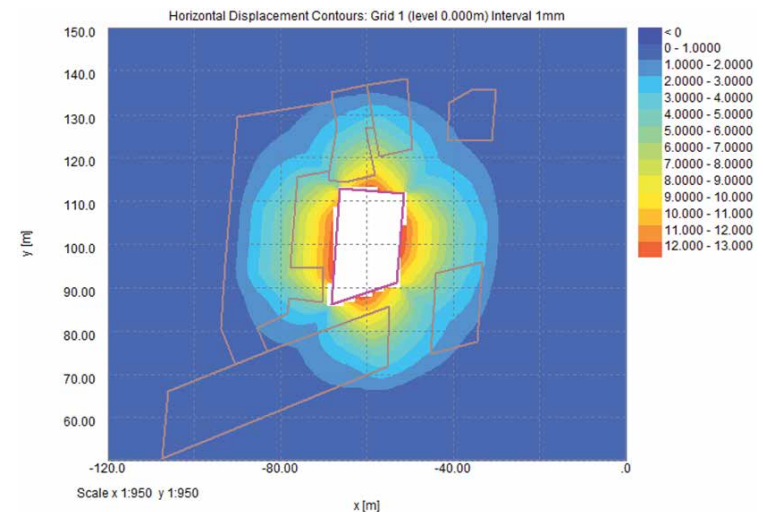
The impact of the basement excavation stage of construction was reviewed utilising the CIRIA C760 ground movement curves for installation and excavation works in stiff clay.

The assessment concluded minimal impact on adjacent properties as a result of the proposed works, with maximum vertical and horizontal displacements of 22mm and 13mm calculated respectively.

Added value: Jomas was able to demonstrate that the development would result in all façades being limited to a maximum damage of Category 1 – Very Slight based on the Burland damage criteria which was within the acceptable limits of anticipated structural damage for developments within the Local Authority (Westminster).



*Proposed Development*



*Resultant horizontal ground movement contours*

# HUNTS WHARF

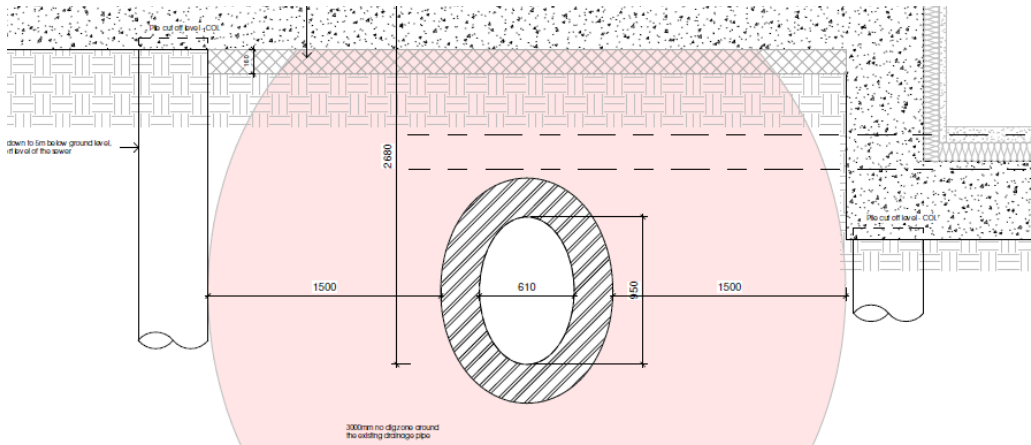
LONDON, E5

## THAMES WATER GROUND MOVEMENT ASSESSMENT

The Client proposed to demolish existing buildings and construct new commercial ground floor units whilst retaining an existing boat yard usage, and to create residential apartments on upper floors.

Jomas was commissioned to undertake a ground movement assessment to assess the evaluate the impact of the proposed development on the Victorian era brick sewer asset. The invert of the sewer was located approximately 2.5m below the ground floor FFL.

A detailed ground model and geotechnical parameters were produced using information obtained by Jomas' ground investigation, and adopted for analysis

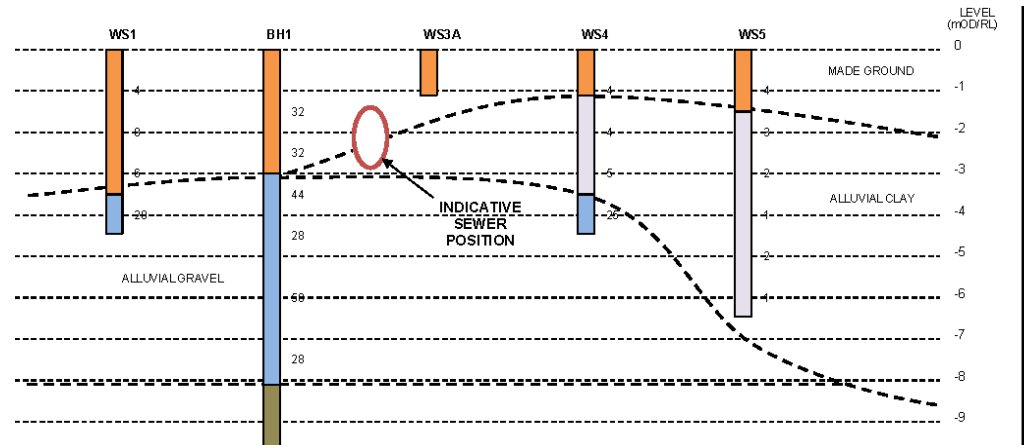


Section through existing brick sewer illustrating proposed build-over arrangement

purposes.

Jomas, working closely with the contractor and structural engineers, was able to assist in developing an appropriate construction design including implementing a heave protection layer and non-sleeved piles in order to limit the stresses transferred into the soil mass around the sewer.

**Added value:** Jomas was able to demonstrate that the sewer would be subject to less than 5mm of movement throughout the works and that the overall risk of adversely affecting the existing condition of the sewer was low. This was satisfactory to Thames Water's limiting assessment criteria.



Geological cross-section based on Jomas' Ground Investigation



# JOMAS | ENGINEERING ENVIRONMENTAL

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