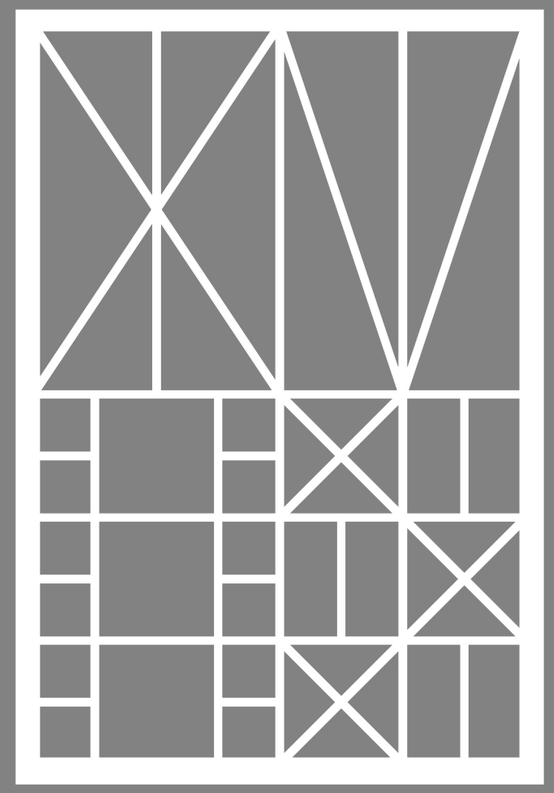

NEW CITY COURT

Structural Statement

AKT II

3948 New City Court

Structural Statement

April 2021

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Revision	**Date**	**Status**
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1 Introduction

The following report provides a summary of the work undertaken to date in assessing the impact of the proposed redevelopment scheme of New City Court. The report refers mainly to the superstructure since the impact of the new basement is outlined in the 'Basement Impact Assessment' report.

The report sets out the preferred strategy based on the information currently available. It is noted that site specific geotechnical and fabric investigations with detailed information will be available at later design stages. As such, the proposals outlined here are preliminary and based upon recorded information for this and adjacent sites obtained following a comprehensive desk study.

This information is to be read in conjunction with, and forms part of, the planning application and responds to the requirements outlined by Southwark Council. Detailed construction drawings and supporting calculations will be prepared during subsequent design stages.

Figure 1.1 Architectural rendering of main Tower (St Thomas Street view)

2 The Project

The Site to be redeveloped is located in the London borough of Southwark in the London Bridge area. The Site boundary lies directly along the south side of St. Thomas Street, between the cross roads of London Bridge Street to the east; and Borough High Street to the west. It is located adjacent to the Guy's Hospital accommodation and King's College Guy's Campus buildings. The Site is bordered by Kings Head Yard, south. Please refer to the next chapter for more information on the Site's location and surrounding land use.

The project comprises the construction of a 26-storey building (with mezzanine and two basement levels), adjacent to King's Head Yard, after demolishing the existing New City Court office building.

Keats House, a smaller building located in the northeast corner, will be reconstructed with a new internal structure intended to reflect the Venetian style of its facade. The existing Keats House front facade is to be relocated by approximately 6m away to the West to allow for space for a servicing access.

Expansion of the existing level of basement and also the construction of a second level across the whole site is proposed to accommodate extensive cycle parking in addition to servicing and plantrooms.

Additionally the proposed development will provide office floorspace, flexible office/retail floorspace, restaurant/café floorspace and a public rooftop garden, associated public realm and highways improvements, provision for a new access to the Borough High Street entrance to the Underground Station, cycling parking, car parking, service, refuse and plant areas, and all ancillary or associated works.

Finally, the project proposes to retain and refurbish the existing Georgian terrace houses located along St. Thomas Street (no. 4 to 16), following special requirements for listed buildings (Grade II).

This report provides reference to the preliminary findings from the desk study; an outline of the Site constraints; a description of the proposed superstructure and substructure works.

Please note that this report is to be read in conjunction with all relevant documents supporting the planning application and in particular with the Basement Impact Assessment.

Figure 2.1 North-east perspective of New City Court (AHMM render)

Figure 2.2 View of New City Court from the King's Head Yard (AHMM render)

Figure 2.3 View of New City Court from the LUL side (AHMM render)

Figure 2.4 St. Thomas Street - axial view (AHMM render)

Figure 2.5 Southwark Cathedral, norh-west perspective of New City Court (AHMM render)

3 The Site

3.1 Site Location

The Site is currently occupied by office blocks with pedestrian access from St. Thomas Street and vehicular access to the building from the carpark located on the SW corner, plus a loading bay on St. Thomas Street.

The wider contextual location (Fig 3.2) shows the Site located South of the River Thames.

Among the buildings along Borough High Street there is London Bridge Underground station which serves the Jubilee and Northern Lines.

On the south east corner the existing building is bounded adjacent with the nurses' accommodation on the East elevation.

3.2 Surrounding Land Use

The Site is surrounded by a series of low rise buildings and several buildings of interest.

Borough High Street is lined by shops with limited residential units above. It also accommodates one of the entrances to London Bridge Underground Station, with the access platforms to the trains cutting across the North-West boundary of the site. On the western edge of the site a large ventilation grill enclosure can be seen.

Directly west of the St. Thomas Street properties is a public house called 'Bunch of Grapes', which was built in 1819.

To the east of Keats House are the Guy's and St. Thomas Hospital accommodation buildings and Kings College Guy's campus. Also adjacent is the Guy's Chapel, which was completed in 1780. The Chapel borders the existing Site boundary and has had an extension added, although it is not believed to be part of the chapel building itself. Existing record drawings show this to be a computer suite for the college campus with a basement bar and an art store above. The extent of the Site boundary of the proposed development here is uncertain due to the extent of the extension, existing chapel and constraints of the party walls, as much of this area was previously connected and changed over time.

On King's Head Yard, there is another public house, 'Old King's Head' which burnt down in the borough fire of 1676 and was later rebuilt. The pub itself has a cellar located on the King's Head Yard cobbled street and close to the Borough High Street egress point.

Figure 3.1 Aerial image of the Site

Figure 3.2 The Site Location (wider view)

3.3 Site History

Historical Background

The history of the Site and its surrounding area has been assessed using extracts of historical Ordnance Survey (OS) maps dating from 1875 to the present day. Note that the maps only indicate information on the date the survey was carried out, they do not give a continuous record of the development. Other sources used include archive information from the London Metropolitan archives and from reports commissioned for the local area and research online.

It is suggested that the area was first occupied as part of the Roman settlement. During this time the area was actually an islet sitting within the course of the Thames. During its peak, in around the 2nd century, it is estimated as many as 3000 people may have lived in this area.

The area's history is intrinsically connected with that of Guy's Hospital which was built on the site in the 18th century. During this time, the area to the east of Borough High Street from St Thomas Street in the north, down to Newcomen Street in the south and across to the Maze was within the demise of the Archbishop of Canterbury's manor.

Site History

The earliest map showing the Site dates from 1878-79 and shows St Thomas Street and King's Head Yard both flanked by rows of houses. This arrangement had not changed to any great extent by 1973. However, by 1991 the buildings along King's Head Yard had been demolished and replaced with the current building that occupies the Site, the New City Court office development.

The historical map shown in Figure 3.3 shows a graveyard to the south of numbers 4-16 St Thomas Street which was used by St Thomas Church (on the north side of St Thomas Street) and was accessed via a narrow lane between the houses.

Historic information collated as part of this desk study indicates that terraces 2-14 along St Thomas Street were constructed in 1819 at a cost of £7,000. No. 2 St Thomas Street which is now 'Bunch of Grapes' public house was formerly two houses that were combined, now adjacent to the Site boundary.

The terraces, along with Keats House were built at the request of Guy's Hospital. The terraces were originally used as lodgings for students although converted to offices when the New City Court development in the 1980's was built.

The office development was completed by 1984 as a 6 storey office building. Drawings from the architects at the time (The Halpern Partnership) have been used to assess the existing building.

London Bridge Area

Of all the bridges along the Thames in London, London Bridge has the longest history. The earliest bridge dates back to Roman founders of London and until Putney Bridge opened in 1729, London Bridge was the only road crossing on the Thames downstream of Kingston upon Thames. The current bridge crossing, which opened to traffic in 1974, is a box girder bridge built from concrete and steel, designed by Lord Holford which took 5 years to complete. This replaced a 19th century stone arched bridge and previously a 600 year old medieval structure. During the tudor period there were 200 buildings on London bridge, some more than 6 storeys.

By the 19th century ships from around the world came to trade in the area bringing great prosperity. The trading benefitted from the fact that London Bridge Station was also Central London's first railway terminus.

In the 1960s the area started to lose importance as an international port. The warehouse and port buildings not destroyed in the blitz fell into disrepair.

The 1980's property boom later meant St. Martins Property Corporation Ltd developed what is known as London Bridge area today, recognising the need for central London to grow and converting the wharf buildings into housing, offices and retail units.

During the mid 1990's local landowners became increasingly concerned with the poor environment of the area and three local authorities formed to become the Pool of London Partnership (PLP), recognising the potential of the area and the need to capitalise on the decision to extend the Jubilee Line in time for the millennium.

The Site is within the London Bridge, Borough & Bankside Opportunity Area, as designated in the London Plan. The Opportunity Area has an indicative employment capacity in the London Plan for up to 5,500 new jobs.

In 2006 the Business improvement District (BID) was founded to manage and continue to improve the area when PLP ended activities in March 2007.

The BID, which includes Guy's and St. Thomas' Hospital, is an area of commercial and historic interest today. Also known as the pool of London, stretching from London bridge to Tower Bridge, it includes: London Dungeons; Borough Market (the oldest food market in London); the oldest gothic church, Southwark Cathedral; and more recently the Shard, the tallest building in western Europe. Fig. 3.4 shows the new construction sites in and around this BID which borders the New City Court Site:

- The News Building: 600,000 sq ft office and retail (1)
- The Shard: 72 storey tower over 300m tall (2)
- London Bridge Station and Thameslink (5)
- Capital House: planning application to be determined (6)
- Vinegar Yards: planning application to be determined (7)
- Sellar and CIT developments: planning application to be determined

Guy's & St. Thomas' Hospital

Guy's Hospital along with St. Thomas' and Kings College Hospital are all part of Guy's and St. Thomas' NHS Foundation Trust. It is the largest teaching hospital in London and the location of Kings College London School of Medicine.

The Tower Wing (formerly known as Guy's tower) is the World's tallest hospital building, standing 148.65m with 34 floors, which was added in 1974 to the hospital.

The hospital was founded in 1721 by Thomas Guy, a publisher of unlicensed bibles, originally established as a hospital to treat 'incurables'.

Guy's has expanded over the centuries. Despite substantial bomb damage during World War II, the original 18th Century chapel remains intact including the tomb of Thomas Guy.

Now over 13,650 staff work in the hospital and the ite consists of 19 buildings.

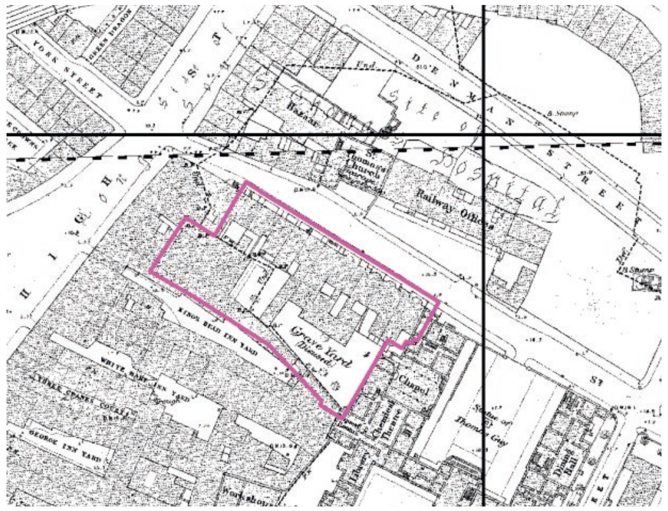


Figure 3.3 Site historical map (1975-76)

Figure 3.4 BID area including new constructtion sites of interest

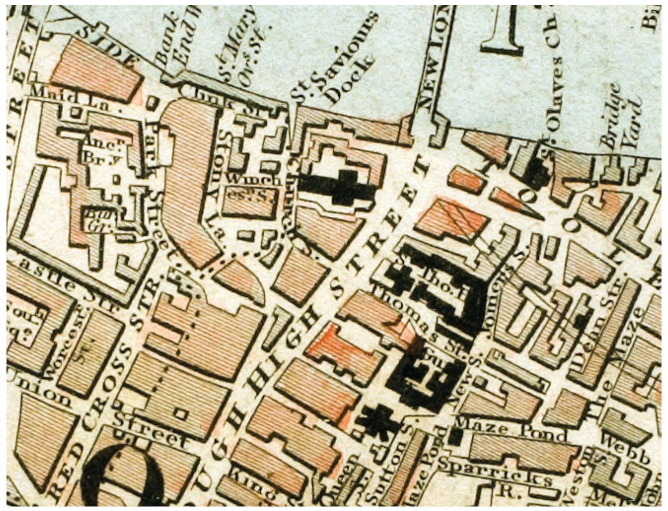


Figure 3.5 Map of site from 1883 showing Guy's & St. Thomas Hospital extent

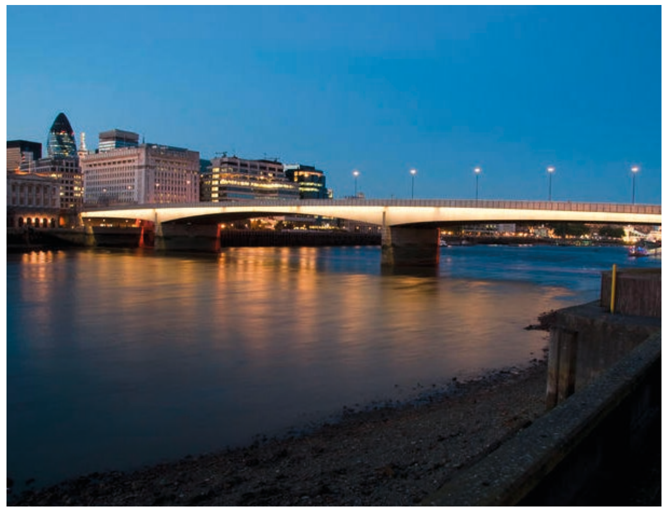


Figure 3.6 ILondon Bridge today

4 Ground Conditions

4.1 Typical Geology

Alluvium

Alluvium consists of a variety of materials ranging from soft compressible variable clays to silts, sands, gravels and also commonly contain organic material in the form of peat and vegetation remains. It may have previously been removed during excavations of the existing Site and replaced by Made Ground (refer to paragraph 4.2), therefore it is only likely to be anticipated of a thickness of 0.5m to 1m.

Terrace Gravels

Terrace Gravels are a mixture of quartz sand, comminuted quartz and mainly brown flint and chert gravel. The proportions of sand and gravel vary considerably in short lateral and vertical distances, depending on the local conditions at deposition. There are also frequent zones of finer-grained material, such as clay and silty sand and even occasional organic deposits. The Terrace Gravel is typically medium dense to dense orange brown, very sandy (medium to coarse) sub-angular to sub-rounded, fine to coarse, flint gravel.

It is anticipated that it is likely to encounter Terrace Gravels at thickness of approximately 1.5-5.5m underlying the Site.

London Clay

London Clay is well documented locally and is generally weathered with silty sandy bands and Limestone nodules, becoming firm grey fissured silty clay with depth. It is generally characterised by a high plasticity, high shrinkage potential, low to very low compressibility and low hydraulic conductivity.

It is anticipated that it is likely to encounter London Clay at thicknesses of approximately 20-25m underlain the Site.

Lambeth Group

Lambeth Group is well documented throughout the London and Hampshire basins, comprising of a variable series of clay, loam, sand and pebble beds which are locally cemented into sandstone or conglomerate. It consists of three formations

The Reading Formation is a series of lenticular mottled clays and masses of fine sands converted into quartzite.

The Woolwich Formation consists of grey clays and pale sands, often full of estuarine shells with pebble beds located at the base.

The Upnor formation consists of light coloured false bedded sands. Where it overlies Thanet Sands, it is formed of an argillaceous greensand with rounded flint pebbles. Where it directly overlies chalk, it is more clayey and the flints are less rounded and are green-coated.

It is anticipated that it is likely to encounter the Lambeth Group at thicknesses of approximately 15-17m underlying the clay.

Thanet Beds

The Thanet Sand formation is the oldest deposit from the Palaeogene. At the base, the "Bullhead bed" comprising a conglomerate of rounded flint pebbles and almost unworn nodular flints "Bullhead". The flints are typically coated with dark green glauconite and lie within a matrix of glauconitic sandy clay. The bulk of the Thanet Sand comprises of silty, fine-grained sand. The colour varies between greenish and brownish grey. At the surface, the sands weather to a pale yellowish grey.

It is anticipated that it is likely to encounter Thanet Sands at thicknesses of approximately 10-11m.

Upper Chalk

The Upper Chalk band is softer than the Middle Chalk. Flints are abundant as a general rule. The base of the division is a hard band called the Chalk Rock, which in the area north of the Thames, is the most prominent horizon in the Chalk. It consists of one or more beds of hard, creamy limestone each approximately 1 foot thick, usually with scattered green grains of glauconite. Between the creamy limestone bands are layers of hard nodular chalk formed in a softer matrix.

Observations

Although the boreholes purchased from BGS provide a good indication of the likely conditions on the Site, it is recommended that a full site investigation is carried out in order to investigate the ground conditions specific to the Site.

Preliminary geotechnical design parameters are advised in this report. This data is based on referenced material and AKT II's experience of the geology local to the Site and will be confirmed by a comprehensive, site specific investigation.

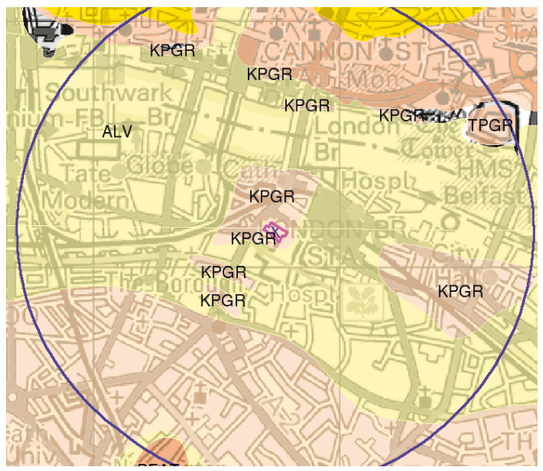


Figure 4.1 Superficial geology

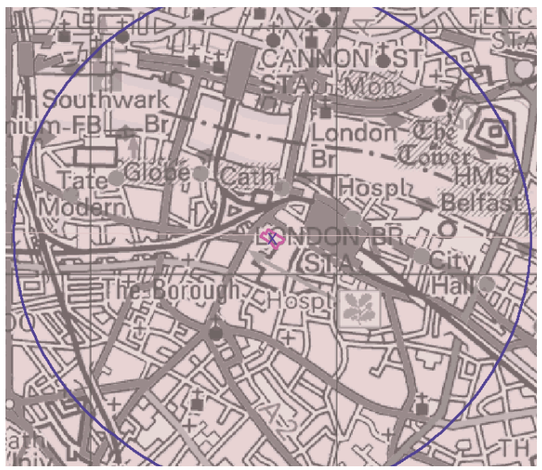


Figure 4.2 Underlaying geology

Figure 4.3 Topography 3D Map

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay and Silt	Flandrian - Pleistocene
	KPGR	Kempton Park Gravel Formation	Sand and Gravel	Devensian - Ipswichian
	LASI	Langley Silt Member	Silt	Devensian - Ipswichian
	TPGR	Taplow Gravel Formation	Sand and Gravel	Wolstonian - Chokierian
	HAGR	Hackney Gravel Member	Sand and Gravel	Wolstonian - Chokierian
	PEAT	Peat	Peat [Unlithified Deposits Coding Scheme]	Quaternary - Ryazanian

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	LC	London Clay Formation	Clay	Eocene - Eocene
	LMBE	Lambeth Group	Clay, Silt, Sand and Gravel	Paleocene - Paleocene

Figure 4.4 Geology strata

4.2 Anticipated Ground Conditions

The results from the Envirocheck report form the outline description of the ground conditions and borehole information taken within close vicinity to the Site.

This allows an initial picture to be developed of the underlying geology and depth of the key layers outlined in section 4.1 although none of the boreholes have been taken directly on the Site of the proposed development.

Whilst no boreholes are available for the actual Site the borehole records that are available from the wider area (Figure 4.5) indicate the Site to be highly consistent in terms of the depth of each layer of strata below the surface.

The deep borehole logs show that the London Clay extends only to a depth of approximately 27m and sits on the Lambeth group layer.

The superficial geology and borehole logs showed the Site to be underlaid by 4 main layers:

Made Ground

Made ground is a layer of fill material considered to have little or no bearing capacity, usually consisting of a variety of materials, often sands and gravels but in some cases concrete and brick among other substances. The thickness of the made ground, and its composition, vary accross the borehole logs. On the Eastern side within the site of Guy's & St. Thomas' a larger thickness of made ground is found ranging from 9m to 12.5m (Boreholes 4 & 5). The investigations have found the made ground to consist of topsoil, coarse gravel sized brick, concrete, flint and some coal fragments.

Alluvium

The alluvium layer is found in three out of the 5 chosen borehole logs (1,2 &3) which range from 40-110mm in thickness, therefore it is possible that alluvium will be found on Site. The alluvium consists of a 'soft bluish-grey mottled grey and black sandy clay'. The stiffness range in laboratory tests range from very soft to stiff in nature.

Kempton Park Gravels

Kempton Park Gravels are a form of terrace gravels, a layer of material deposited by the river and are a mixture of quartz sand, comminuted quartz and mainly brown flint and chert gravel. From the borehole logs it is assumed that the Site may experience terrace gravels from om to -6m Above Ordnance Datum (AOD).

London Clay

London Clay is well documented locally and the clay located can be expected to be approximately 20m in depth. Formation is described to consist of stiff to very stiff grey-brown clay with occasional pockets of light grey silt.

During the construction of the Shard, located close to the proposed New City Court site, a fault was discovered below the Site running north-to-south direction, with a downthrow of about 6m to the SE. This is documented in the pile test reported by Byrne Looby partners in 2012. To the West another fault of similar displacement and orientation was encountered during the JLE construction. Along these two geological faults, the ground forms a minor horst feature, with marginally elevated London clay.

Lambeth Group

Lambeth group is expected to be in between 30m and 35m below ground level and consists of a very stiff clay matrix, either grey or multicoloured fissured clay, with gravel, green gravelly sand or green shelly gravelly clay pebbles.

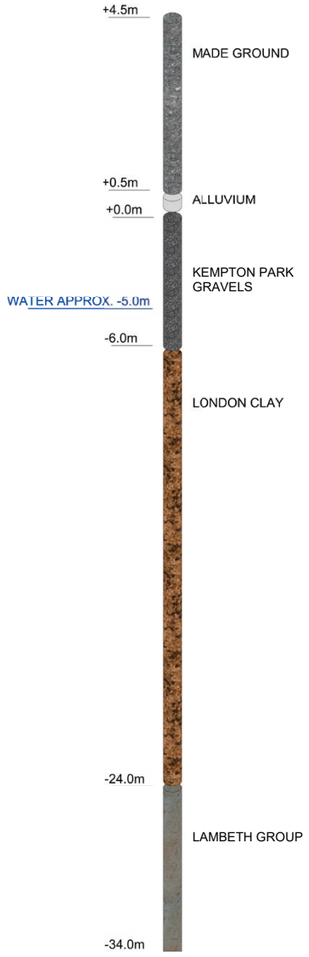


Figure 4.5 Predicted borehole diagram

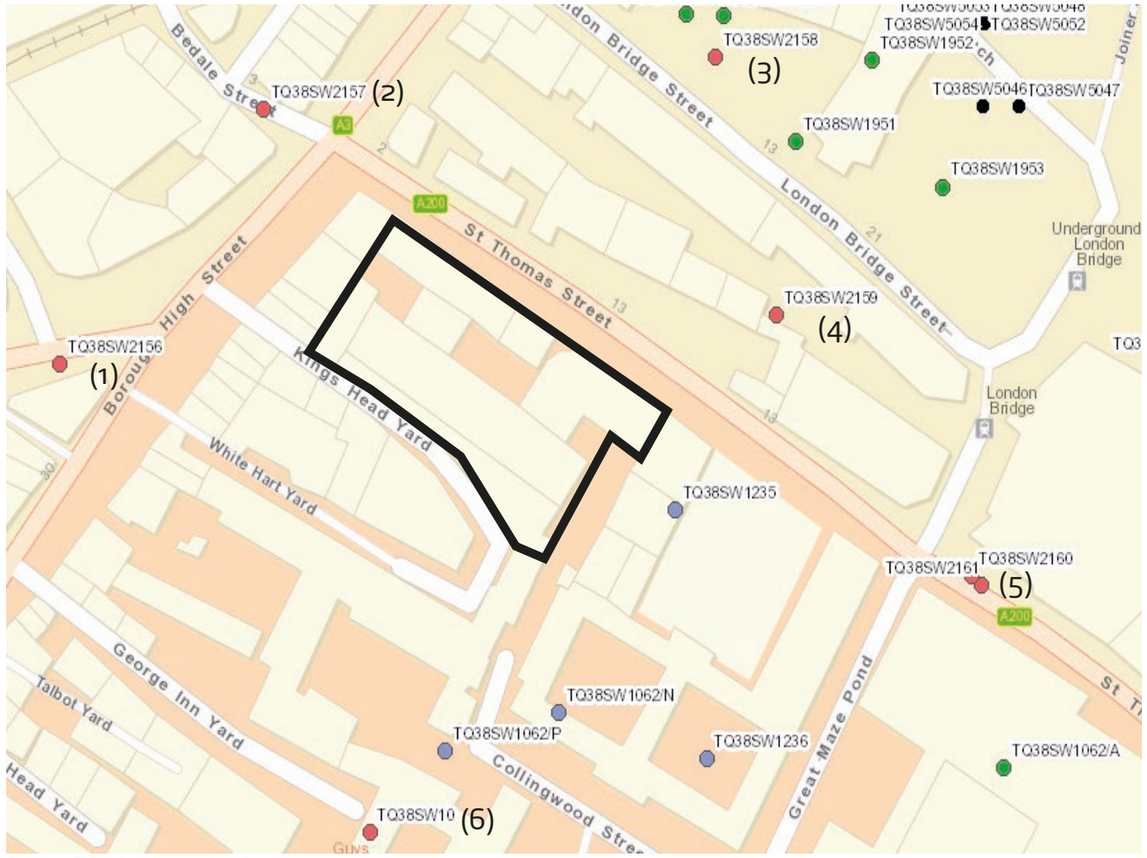


Figure 4.6 Borehole location key plan map

4.3 Hydrogeology and Hydrology

4.3.1 Environmental Agency Classification

A Principal Aquifer is defined by the Environment Agency as layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.

A Secondary A Aquifer is defined by the environment Agency as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

A Secondary B Aquifer is defined by the Environment Agency as predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.

A Secondary Undifferentiated (U) Aquifer is defined by the Environment Agency as has been assigned in cases where it has not been possible to attribute either category A or B to a rock type.

According to the Envirocheck Superficial Aquifer Map in Fig 4.7, the Site is underlain by a Secondary A Aquifer with surrounding areas of A secondary Undifferentiated Aquifer.

According to the Bedrock Aquifer Map in Fig 4.8, the bedrock underlying the Site is defined as unproductive Strata. Unproductive Strata have negligible permeability and are generally regarded as not containing groundwater in exploitable quantities. In this stratum, the groundwater flows imperceptibly and requires consideration for the risk of slow degrading pollutants.

London Clay and Lambeth Group are classified as non-aquifers and should provide a natural barrier to prevent contaminants migrating to the deep Thanet Sands and Chalk Aquifers. A summary of the hydrogeological properties of the main geological units that are anticipated to underlie the Site is shown in Fig 4.9.

The superficial geology is designated as a Secondary A Aquifer with a potential for groundwater flooding owing to its close proximity with the River Thames.

4.3.2 Groundwater Level

Indications from the available boreholes suggests that the water table is generally 5m below ground level (0.00m AOD). A few boreholes show higher water which could be a result of some rain water retained in a less permeable made ground layer.

This information will be confirmed in subsequent stages further to ground investigations.

4.3.3 Source Protection Zone

The EA have defined Source Protection Zones (SPZ's) for groundwater sources such as wells, boreholes and springs used for public drinking water supply. The zones are defined by the EA as outline below:

- The Inner Protection Zone is the distance travelled by groundwater from any point below the water table to the abstraction in 50 days for a particular area. It has a minimum radius of 50m.
- The Outer Protection Zone is the distance travelled by groundwater from any point below the water table to the abstraction in 400 days for a particular area. It has a minimum radius of 250m.
- The Total Catchment Zone is the area around the abstraction within which all groundwater recharge is presumed to be discharged to the source.

The SPZ Map from Envirocheck indicates that the Site is not located within a Protection Zone. It is likely that the ground water abstractions are from the Chalk Aquifer. This means that there is no risk of pollutants or contaminants from the Site making their way into a source of drinking water.

4.4 Construction within Archaeological Remains

Due to the location and previous history of the Site and surrounding area, it is believed that there is a low potential for archaeological remains to be present at the Site. However, if archaeological remains were to be found, the presence of the existing building on the Site means that they are likely to have been partially truncated by basement, foundation or service trench excavations. If archaeological remains are to be found, there are engineering principles to reduce the impact of construction on the archaeological heritage:

- Minimise the extent of excavation required for the construction
- Minimise the number of vertical penetrations
- Minimise the extent of excavation required for the foundations

Activities such as level reduction, new basement and foundation construction, new service trenches or demolition works for example will raise archaeological issues.

4.5 Risks Associated with Geology

Unknown geology is often one of the biggest risks facing a project due to the difficulty in knowing the exact profile of the soil across the entire Site.

The existing piled structure and the extensive works carried out in the area as part of the Jubilee line extension would suggest that the risk is low. However, issues to be aware of include:

Inclusions of weak or strong layers which can affect capacity of piles and ability to bore

- Perched water tables
- Local fissures
- Variable properties
- Existing Thames Water Sewer

Whilst this list is not exhaustive it gives a background to elements that might be encountered.

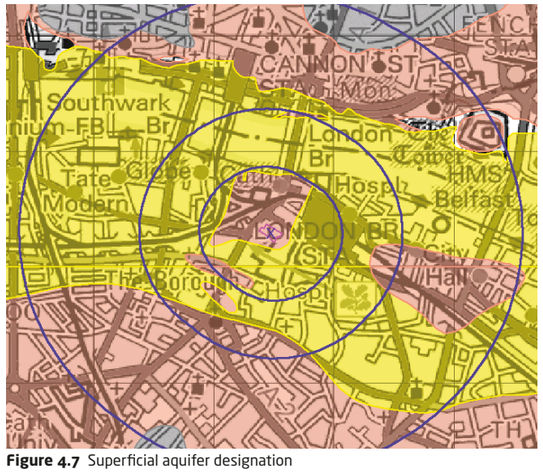


Figure 4.7 Superficial aquifer designation

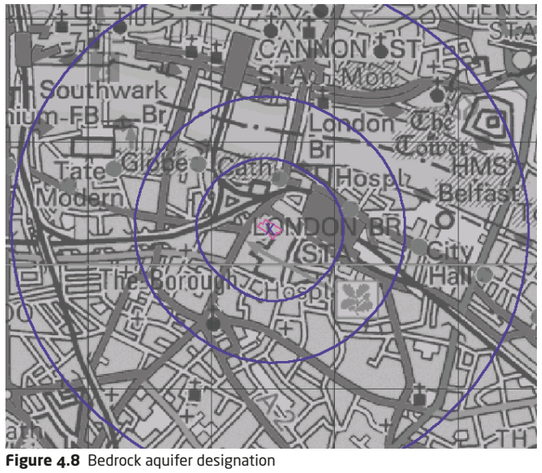


Figure 4.8 Bedrock aquifer designation

Strata	Hydrogeological significance	Classification (Environment Agency)
Alluvium	Has potential to transmit relatively small quantities of water. The site is located in close vicinity of the River Thames, so it is likely to contain significant quantities of groundwater.	Secondary (U)
Terrace Gravel	Has potential to transmit significant quantities of water. The site is located in close vicinity of the River Thames and the Terrace Gravel is underlain by relatively impermeable Clay, so it is likely to contain significant quantities of groundwater.	Secondary (A)
London Clay	The London Clay is an aquitard and therefore will not contain significantly large quantities of groundwater.	Unproductive Stratum
Lambeth Group	The Lambeth Group is unlikely to contain significantly large quantities of groundwater, however the lower part of the stratum where the material has less clay content may be in hydraulic continuity with the lower layers.	Unproductive Stratum
Thanet sands	This strata is highly permeable and is often in hydraulic continuity with the underlying Chalk.	Principal Aquifer

Figure 4.9 Summary of Environmental Agency aquifer classification of the anticipated geology

5 Environmental Assessment

The information presented in this chapter has been extracted from the desk study report and is based on the information received from the Envirocheck report and maps for the Site.

Reference should be made to the independent Site specific Environmental Statement reports included in the relevant submittal for further information on which all of the items listed in this chapter are addressed and mitigated.

5.1 Introduction

The aim of this part of the report is to provide an initial assessment of the environmental conditions of the Site as well as the potential contamination of the Site.

Additionally, the objective is to characterise the contaminants, their pathways and potential receptors for the purpose of a risk assessment. This aims to provide relevant information to protect the health and safety of future Site users and construction workers and protection to the environment.

Information on the potential contaminants that could be present within the ground can come from many sources (historical maps, Environment Agency, Envirocheck Report, previous contamination tests, etc.).

Contamination may arise from a wide range of activities on the Site or off-Site. This may include:

- Heavy industry
- Electric substations, power stations, gas works, etc.
- Chemical plants
- Landfill sites, recycling or disposal sites
- Railway sidings
- Works including finishing processes (plating, painting, etc.)
- Fuel storage facilities, garages, etc.
- Former mining sites
- Ministry of Defence sites
- Timber treatment works
- Sewer farms or sewage treatment plants

We note an Envirocheck site sensitivity search showed a registered radioactive site present, however on investigating this it was found that Guy's & St. Thomas' NHS Foundation Trust contract procurement department was previously located on the 2nd floor of the New City Court Office building. Therefore, this meant it was a registered address for the contract of radio pharmaceuticals and radioactive materials and no radioactive substances would be found in the ground.

During a site walkover, suspect soils usually are identified by sight and olfactory observations. Some obvious signs of contamination include, but are not limited to:

- Soil discolouration
- Unusual or different soil texture
- Unusual odour
- Standing water or trench with hydrocarbon sheen
- Abandoned industrial waste such as drums or asbestos sheeting

5.2 Statutory Information

AKT II instructed Envirocheck to carry out a search of their records and report on the following aspects:

Water:

- Abstractions and discharge consents
- Red list discharge consents
- Pollution incidents and prosecutions relating to controlled water
- Groundwater vulnerability and river quality

Waste:

- Landfill sites (historical and current)
- Waste water treatment or disposal and transfer sites
- IPC registered waste sites

Statutory controls:

- Integrated pollution and air pollution controls
- Prosecutions relating to authorised processes
- Enforcement and probation notices
- Planning hazardous substance consents and enforcements
- COMAH, NIHHS and explosive sites

The following is a factual summary of the information obtained from the Envirocheck search.

Contaminant	Level
Chromium	Moderate
Lead	Moderate
Nickel	Moderate
Arsenic	Low
Cadmium	Low

5.3 Preliminary Contamination Assessment

Potential Site specific contamination risks are assessed and presented below. A conceptual model includes possible sources, pathways and receptors, which are defined below.

A source is a substance which is in, on or under the land and which has the potential to cause harm or to cause pollution of controlled waters.

A pathway is a route or means by which a receptor can be exposed to or affected by a contaminant.

A receptor is something that could be adversely affected by a contaminant. It can be a living organism, group of organisms, an ecological system or human controlled waters. It can also be a property which is in a listed category or could be harmed by a contaminant.

5.3.1 Potential Contamination Sources

Potential contamination may arise from the different sources on Site. Presence of boilers and associated fuel leakages may be responsible for hydrocarbon presence within the ground. Electricity plant rooms may be responsible for PCB (Polychlorinated biphenyl) pollution.

Historical uses of the Site or surrounding area may provide contamination sources. Typical historical use of the Site and surrounding area which may cause contamination issues include railway lines, gasworks, industrial use, breweries and chemical works.

Many bombs that were dropped during the Second World War blitz did not explode on impact. Bomb detonators don't deteriorate, and the explosives do not become inert with time. The Ministry of Defence has published maps indicating the extent of damage to buildings during the raids and the possible locations of Unexploded Ordnance (UXO) in Central London. A detailed UXO risk assessment was undertaken by 1st Line Defence (DA3587-00) and there is no evidence to suggest that UXO's are present at the site but if present they would consequently present a health and safety risk and a contamination risk, as described as follows:

- Heavy metal (Copper, Zinc etc.) Contamination from the bomb's casing.
- Organic aromatics (Toluene, Nitrosamine, daughter products etc.) Contamination from the degradation of the explosive charge.
- Heavy metal (Lead, Mercury) contamination from the degradation of the detonator charge.

Bombs during the wars were also responsible for heavy contamination as they broke several pipes and conduits when exploding. A Second World War bomb damage map indicates that the row of terraces along St Thomas Street suffered minor damage but that the row of buildings in King's Head Yard suffered slightly more damage, although not structural. The buildings along King's Head Yard were demolished and replaced by New City Court. The CCTV survey carried out in 2017 didn't evidence damages of the pipes and conduits in the Site.

The Site is not located within a radon affected area, as less than 1% of homes are above the action level. No radon protective measures are necessary for the proposed development.

Asbestos surveys have been completed by:

- John F. Hunt Associates for Contrakt Ltd on 2017/07/11 report no 140137. The survey included first to fourth floor of New City Court office building. The surveyed areas were assessed to be between Risk Rating E (No asbestos detected) and Risk Rating C (Low Risk Material). However there were areas which were not possible to be inspected and they should be considered to contain asbestos unless proven otherwise.
- Bureau Veritas UK Limited. The survey was carried out on 2010/01/27 for the lift shafts of New City Court. From the summary of the findings the report states 'All available areas of the lift shaft and pit were surveyed but there were material or voids encountered that could not be inspected. No Items were sampled or presumed.
- Bureau Veritas UK Limited on 2008/06/25 report no ZGAX712. In the marked up plans the survey shows the areas which were inspected and reveals where the asbestos was identified in the basement and on the 5th floor in the pipe flange gaskets.
- Quantum Compliance on the 2018/03/26. The survey, carried out in specific areas only, didn't identify any asbestos containing material.

5.3.2 Contamination Migration

If potentially polluting activities have taken place historically at a Site, the hazard to human and/or environmental receptors will be increased if significant pathways are or were historically present on or beneath the Site along which contaminants can preferentially migrate. Pathways can be anthropogenic (artificial) or natural.

Other sources of contamination are outlined by the results Envirocheck Search, contained in Section 5.2.

5.3.3 Receptors

The potential receptors identified could be one of the following categories:

Humans: Construction site workers, future Site users, visitors and maintenance staff.

Property : Foundations, basement structure and services

Controlled Waters:

- Principle Aquifer: Upper Chalk and Thanet Sands
- River Thames and Docks (located close to the Site)

5.3.4 Potential Natural Pathways

The Envirocheck Superficial Aquifer map in Figure 5.1 indicates that the Site is underlain by Secondary A Aquifer, which is likely to be associated with near surface river terrace deposits.

The potential for significant contamination migration through the terrace deposits is considered to be moderate. This may provide a possible pathway for contaminants to reach the River Thames.

The underlying London Clay and Lambeth Group should act as an impermeable barrier below the Site to prevent the deeper penetration of contaminants into the Chalk and Thanet Sands Aquifers.

Any waterproofed basements and the surrounding hard standing areas surrounding the development can be used to demonstrate a breakage in the pollutant linkages. This can limit contact with non-organic pollutants that do not readily volatise such as arsenic, lead, copper, nickel and some polycyclic aromatic hydrocarbons (PAH).

5.3.5 Potential Anthropogenic Pathways

Anthropogenic pathways for contaminant migration can be present in the form of soakaways, land drains, etc. Leaking surface water or foul drainage pipes and permeable backfill to the trenches containing services could also act as preferential pathways for potential contaminant migration.

Given the age of the existing building on Site and the drainage systems used at the time, it is unlikely that soakaways and other ground infiltration systems will be present at the Site. Also, the nature of the Site (comprising solely of buildings) and surrounding area (comprising of buildings or either tarmac or paved areas), also suggests ground infiltration systems are not present.

Surface water and foul water are carried from the Site in the public sewage and highway drainage systems. A CCTV was carried to survey in 2017 and includes all the sewers within the Site up to the public sewers.

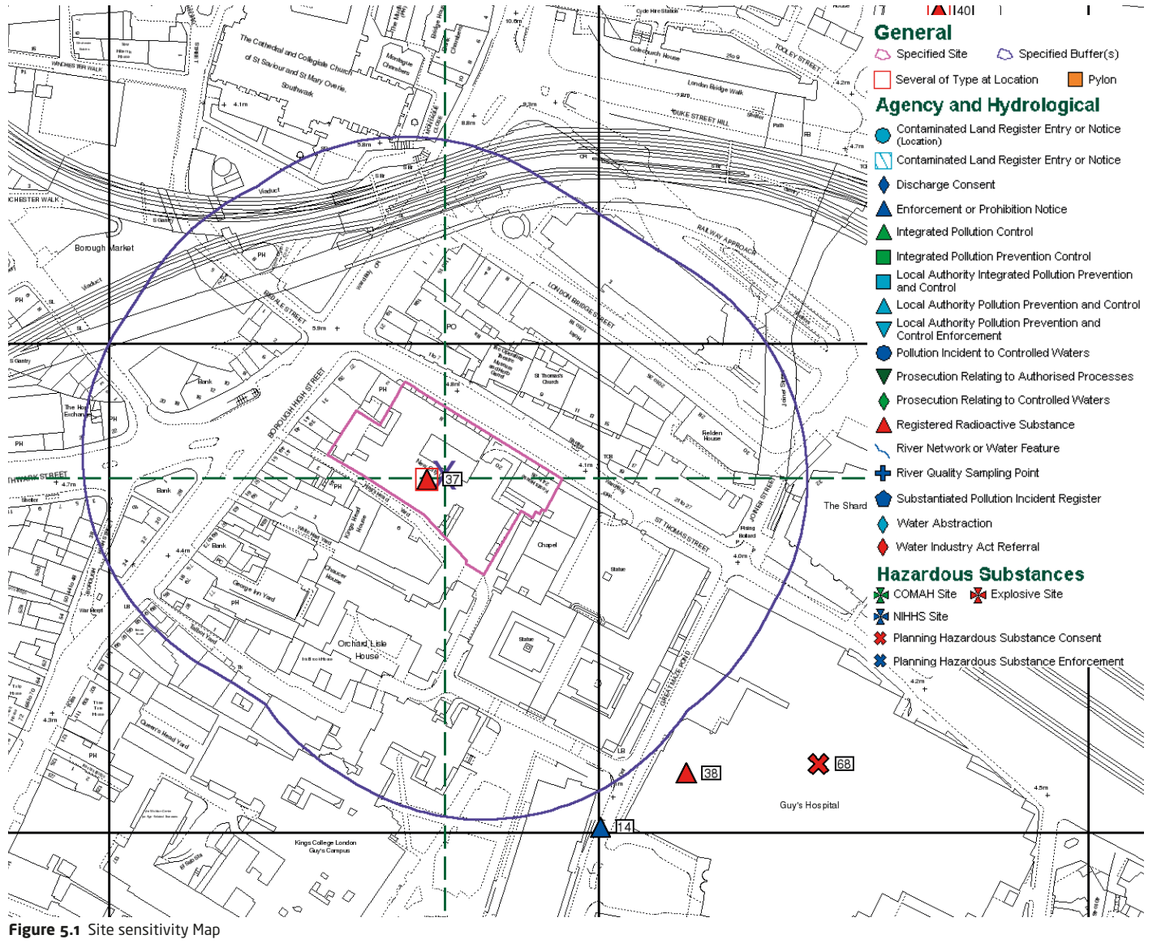


Figure 5.1 Site sensitivity Map

6 Site Constraints

6.1 Statutory Services Searches

Numerous services are known to be present on the Site and in the surrounding roads and pavements. The statutory services search was carried out as part of the desk study to locate potential underground obstructions and surrounding utility assets. Based on this information, a Site constraints drawing was produced and can be found in the relevant Appendix attached to the Basement Impact Assessment report. It is noted that the information provided by the relevant statutory bodies is approximate and more detailed investigations involving GPR targeted trial trenches may be undertaken prior to commencing ground works, to verify locations where critical.

6.2 Thames Water Assets

The Thames Water Asset Map in Fig. 6.1 shows the existing public sewers in the vicinity of the site. Running along King's Head Yard, on the southern boundary of the site, there is a sewer connecting to a combined Borough High Street sewer, which may lie in close proximity to the proposed development. On the northern boundary along St. Thomas Street there is a main public sewer believed to be in concrete. Finally, on the east side, running from south to north, under the existing basement of Keats House there is a 300mm cast iron sewer. The existing 250mm RC basement slab is suspended between pile caps, notched to allow for the sewer to run underneath. The sewer runs from a manhole located on the south side (manhole 39) underneath the building, goes through the manhole situated in the lightwell in front of the building on the north side and discharges into the sewer along St Thomas Street.

A CCTV survey has been carried out for all pipes running across the Site. The survey shows that the pipe underneath the basement is currently in use.

The east sewer is proposed to be diverted under a section 185 agreement from manhole 39 (upstream manhole) closer to Conybeare House, running along the party wall, and then will be reconnected to the existing manhole located in the lightwell. Please refer to the relevant Appendix attached to the Basement Impact Assessment report for the proposal of sewer diversion.

6.3 TfL Structures (LUL Tunnels and Station)

There are several TfL constraints below ground and around the Site, as noted below:

- Westbound Jubilee Line Tunnel and London Bridge Station
- Northbound Line Tunnel
- Compensation Grouting
- Ventilation shaft located at the entrance of the London Underground.

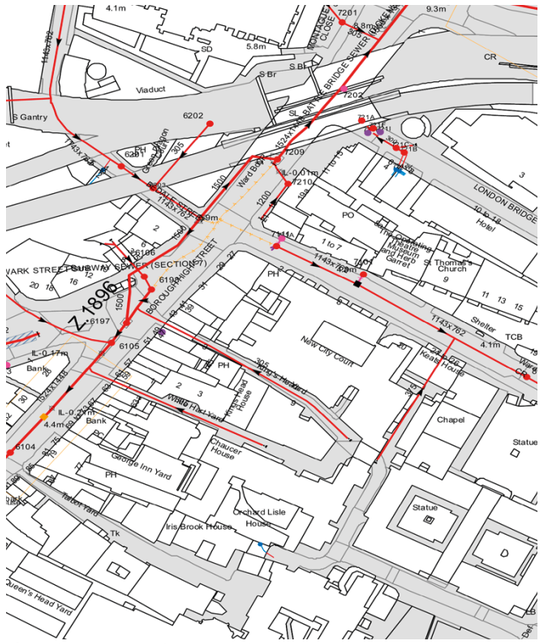


Figure 6.1 Thames Water sewer network

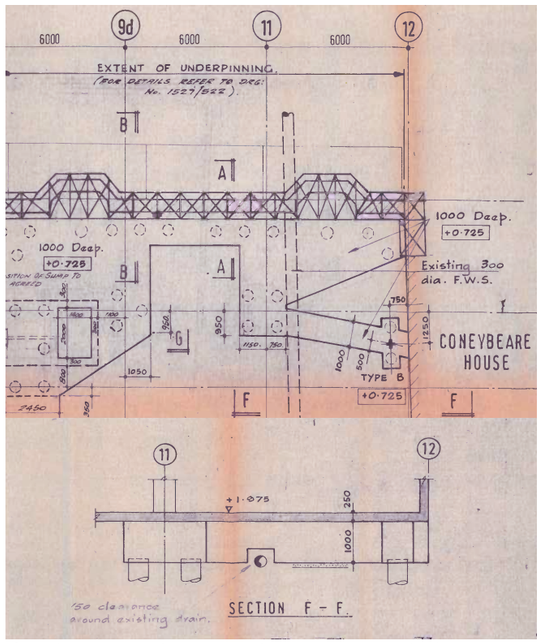


Figure 6.2 Sewer location below Keats House as shown on Engineer's plan section F-F

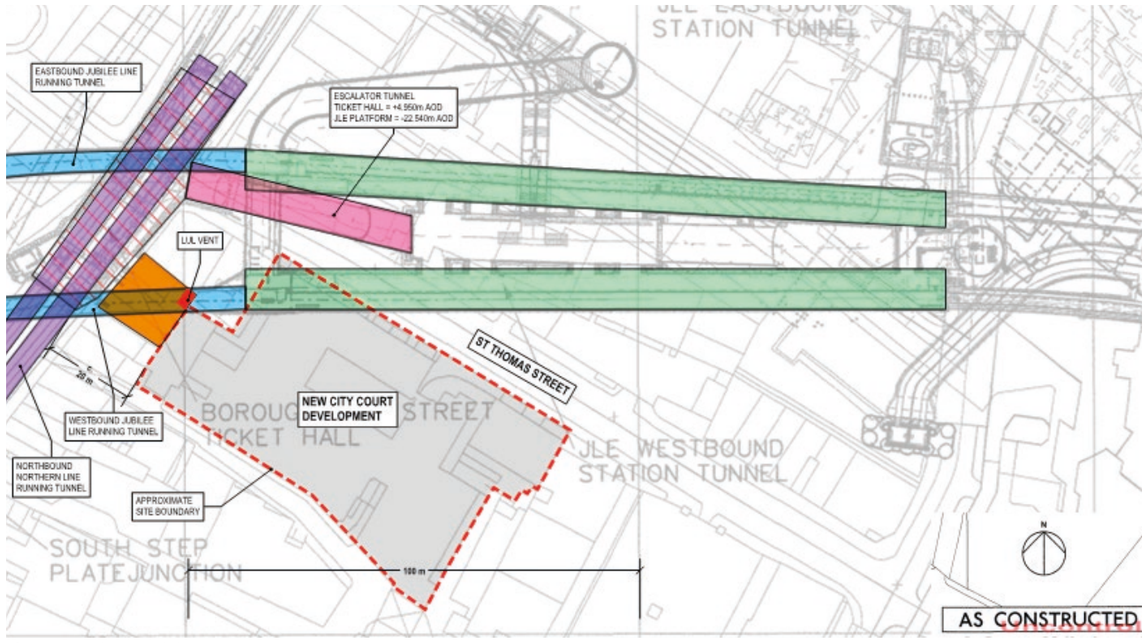


Figure 6.3 TfL assets information

Westbound Jubilee Line Tunnel and London Bridge Station

Passing underneath the Northwest corner of the Site is the westbound tunnel of the Jubilee Line. The diameter of the tunnel is approximately 8.7 m (outer diameter) and it sits 27 m below the surface of St Thomas Street (to centre of tunnel). The tunnel sits within the London clay layer.

The Jubilee Line Extension (JLE) was one of London's biggest engineering projects to date and cost over 3.5 billion, constructed in 1994. At London Bridge, the JLE underground station forms part of a complex transport interchange, which includes the existing Northern Line of the underground, the national/suburban rail network and local bus terminals. The station consists of the enlarged tunnel and includes numerous shafts and connecting adits. The tunnel extension created 6 new stations and 5 existing stations were enlarged or rebuilt. There are currently 63 7-car trains servicing the Jubilee line, with a capacity able to seat 100+ seated and standing. The maximum speed is 62mph (100Km/hr), with 630 vault electrification. The new tunnels were built with a diameter of 4.35m, whereas the existing tunnels were previously 3.85m.

The JLE joins central and east London and crosses the Thames river four times. It consists of a 16km extension including 12km of 4.5m diameter twin tunnels. The tunnel was bored using the New Austrian Tunnelling Method (NATM) as well as precast segmental linings in cast iron and concrete. The tunnel was constructed using a sprayed concrete lining (SCL) technique. As with excavation geometry, the thickness of the shotcrete temporary lining was dictated by the tunnel diameter. It varied between 150mm and 400mm. All shotcrete sections were reinforced with mesh reinforcement and lattice girder arches, comprising 12mm to 16mm reinforcing bars. A volume of approximately 100000m³ of ground was removed during tunnelling and innovative settlement prevention methods, such as compensation grouting, were specified for use in the conjunction with the tunnel excavation. The tunnel was bored around 1994 and completed in December 1999 in time for the millennium and associated celebrations.

A correlation survey was done by Plowman Craven to verify the location of the Westbound Jubilee line tunnel. The survey was included in the relevant drawings and analysis.

Northbound Northern Line Tunnel

Passing 20m away from the west boundary of the development is the Northbound Northern Line tunnel.

As per archive information the tunnel is believed to be in a segmental cast iron with an assumed external diameter of 4.0m, running at roughly 22m below ground.

Compensation Grouting

As part of the strategy to control ground movements below the surrounding buildings whilst the Jubilee Line tunnel was bored compensation grouting was installed and performance limits were specified for this when it was installed in the gravel and London clay layers during the extension.

A plan layout showing the extent of installation of Tube a Manchette (TAMs) is shown in Fig 6.5. The system basically consists of a length of pipe with small holes drilled around the circumference and at equal intervals along the length of the pipe.

The TAMs are located primarily below the terraces on St Thomas Street, therefore, they are unlikely to have any bearing on the foundations for the main development, however the effect of the TAMs on the local distribution of the Tower and settlements should be taken into consideration. The TAMs below New City Court were installed at a level of approximately 6m below the interface between terrace gravels and London clay.

When installing the TAMs at London Bridge station, disused tunnels were used to gain access to the desired elevation between the tunnels and the foundations of the overlying structures. The elevations of these existing tunnels determined the level of the grouting horizon and the TAMs were installed as deep as 7m below the top of the London clay, although the preferred elevation was 3-5m higher. The installation of TAMs from tunnels allowed parallel arrays and a constant spacing of 2m was adopted under major landmarks such as Big Ben. Along St. Thomas street a service tunnel below the road, lined with precast concrete bolted segments, was used to distribute a parallel array beneath the existing terrace houses approximately 50m long. The grouting to be implemented was decided on a day- to-day basis and uniform injection quantities and spacings were adopted. The JLE contract required real time monitoring of both the ground and structure movements in all areas where there was compensation grouting and electrolevels were used, however traditional survey methods were preferred which meant a high frequency of readings were recorded, every two hours at critical stages of the construction.

Over London Bridge station covering an area approximately 12100m², 163 TAMs were installed at a length of 4700m. One of the main areas of concern for settlements was the Chapter House chapel on the north side of St. Thomas street. Settlements in excess of 110mm were recorded in the middle of the chapel. the monitoring below the St. Thomas street terraces included precision levelling and crack monitoring. The compensation grouting protective measures controlled ground settlements such that the maximum building movements recorded were less than 35mm in this area.

The southern extent of the TAMs will need to be determined as they may affect the potential for piling in this area. The proposed Site does therefore highlight a potential risk that must be considered.

The proposed pile foundation suggests piling through the layers of grouting which are thought to be 200mm thick.

LUL Vent

On the West Site boundary there is a large vent which has been confirmed by LUL to be the back of the London Bridge Area managers office over the Borough High Street Entrance.

The louvres on the vent are the escalator extract outlets and inlet grilles to and from the Borough High Street ticket hall that had to be fire separated from the rest of the structure.

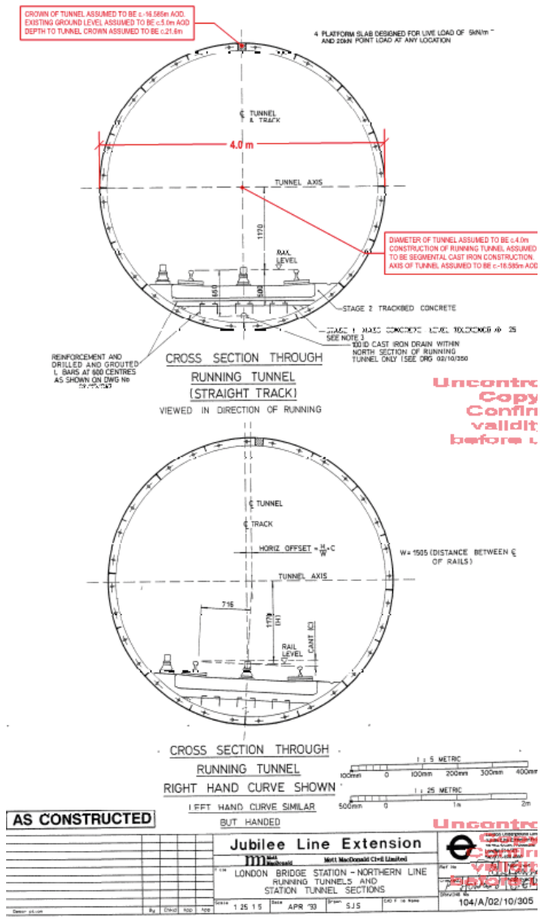


Figure 6.4 Northern Line Tunnel

Figure 6.6 LUL Vent

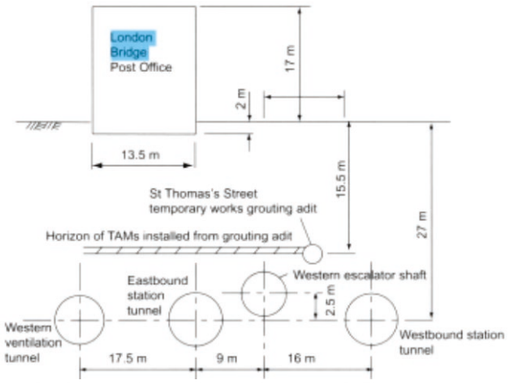


Figure 6.7 Compensation grouting - section through St. Thomas street

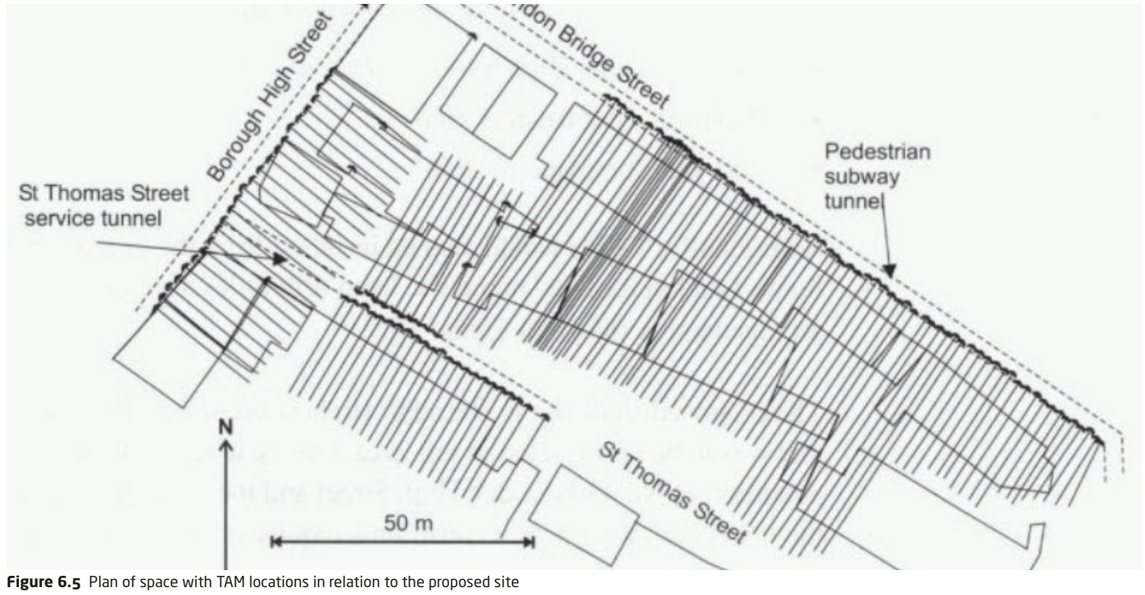


Figure 6.5 Plan of space with TAM locations in relation to the proposed site

6.4 Highways

The proximity of the proposed basement to the adjacent highways on the south side in the interface with King's Head Yard, will require an Approval in Principle (AIP) document for the permanent support of the highways in the following design stages. Please refer to the Basement Impact Assessment report for more information on this item.

6.5 Utilities

A utility report obtained from Landmark Envirocheck provides useful information concerning statutory utilities in and adjacent to the Site.

Given the previous and current Site uses, it is unlikely that there will be any major utilities crossing the Site, unless reported within this report.

An electrical substation is located in the south-west corner of the Site. This is positioned over two floors from basement to ground.

6.6 Underground Structures

Existing foundations and services are likely to be have been installed relating to the site's historical use, but it is likely that they have been removed during previous excavations of the existing basement.

It is necessary that previous and existing building plans are studied in detail to assess the extent of the existing buried foundations. From archival information it can be seen that the New City Court is founded on a series of pile caps with 450mm diameter piles each with a capacity of load of approximately 70 tonnes. From a preliminary design assessment the piles are approximately 15-20m deep and founded on the London clay.

The record drawings show that mass concrete was used in the temporary works strategy for the building built in the 1980's. Mass concrete pads was also used for the facade retention scheme and on visiting the vaults. Some of those pads could be found left inside the masonry vaults in front of Keats House. This would suggest that the mass concrete blocks, which are large in size, are likely to have been left in the ground and would need to be removed when excavating the proposed basement.

There is also a cellar along King's Head Yard belonging to 'The King's Head' public house which can be seen in the Site constraints drawing, in the relevant Appendix of the Basement Impact Assessment report.

6.7 Unexploded Bombs

London was heavily bombed during World War II and therefore the risk of finding unexploded bombs is relatively high. Extensive maps of London are available which highlight areas where bomb hits occurred. From the map indicated in Fig 6.9 the proposed Site for this development has not suffered any direct bomb strikes. This would appear to be corroborated by the historic maps which show no extensive new buildings post World War II and that there is currently an existing new building occupying the Site.

A detailed UXO Risk assessment Report; DA3587-00 highlights the Site to be at low risk, with a small area of medium risk in the western section of the Site area, which is adjacent to the St. Thomas Street buildings and the NCC courtyard.

6.8 Archaeology

London, as a Roman city, has a rich and illustrious archaeological history. The area falls within Southwark Council's designation of an archaeological priority zone suggesting that there are possibilities of archaeological finds in the area. During the Roman times the course of the Thames was markedly different from its current constrained channel. As the map shown in Figure 6.10 indicates, during Roman times the Site was actually on an islet, with the river running a course around this islet. The map indicates that during this time, the west end of the Site was approximately 1 m above ordnance datum and the east end of the Site was just 0.5 m above ordnance datum.

In 1982-3, an archaeological 'rescue' excavation took place on the Site prior to construction of the existing New City Court building after which the area was machined down to formation level for the construction of the existing basement. Significant multi-period remains were recorded including pits with Iron Age pottery, and evidence of at least seven Roman buildings. A possible medieval chapel likely to have been associated with St Thomas' Hospital was recorded, along with post-medieval buildings, and human remains associated with the burial ground of the Hospital which extended across 30-40% of the south-east of the Site. The burials were removed – without archaeological recording – by a graveyard clearance contractor, although it is possible that occasional disarticulated bone is still present, especially around the south-eastern edges of the Site. However, given the depth of the basement, except for beneath the terrace of listed buildings and the facade of Keats House, is it unlikely that there is any surviving archaeology in the Site other than very deeply cut features such as timber piles or wells.

It is recommended that any geotechnical pits that are excavated for engineering purposes should be closely monitored by a competent archaeological organisation. This will likely involve exploratory works during the geotechnical investigations. Based on the findings, further investigation may be required during the initial phases of construction.

Reference should be made to the independent site specific archaeological documentation included in the relevant submittal for further information.

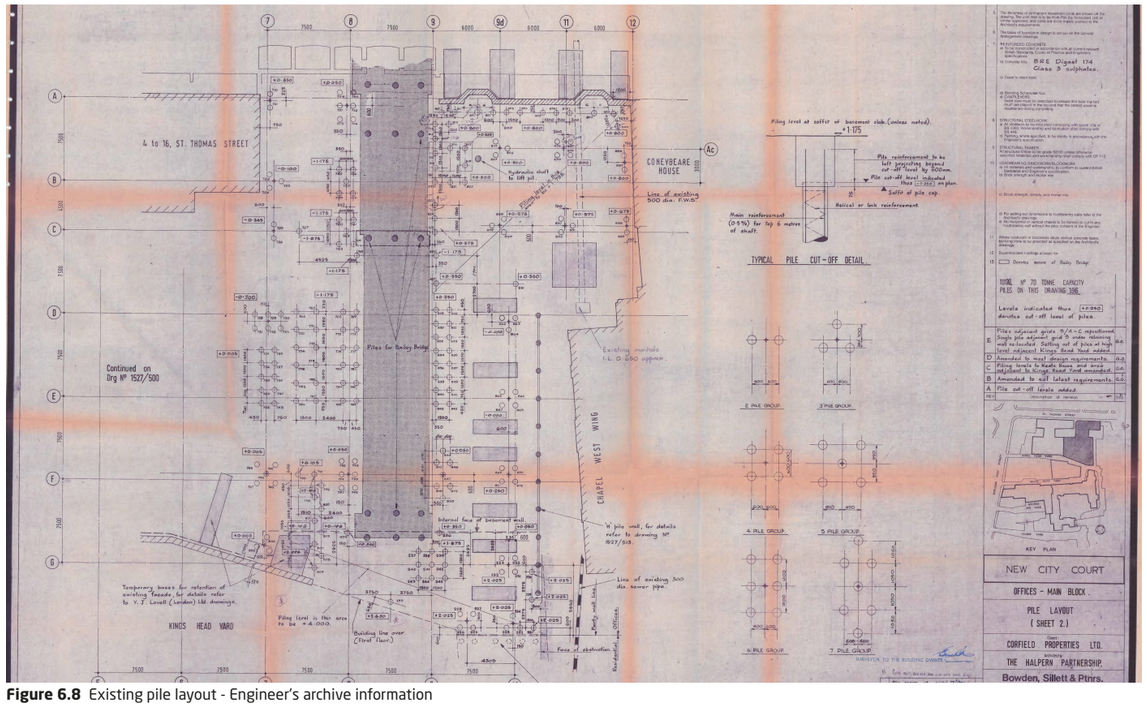


Figure 6.8 Existing pile layout - Engineer's archive information

Figure 6.9 Unexploded ordnance bombs

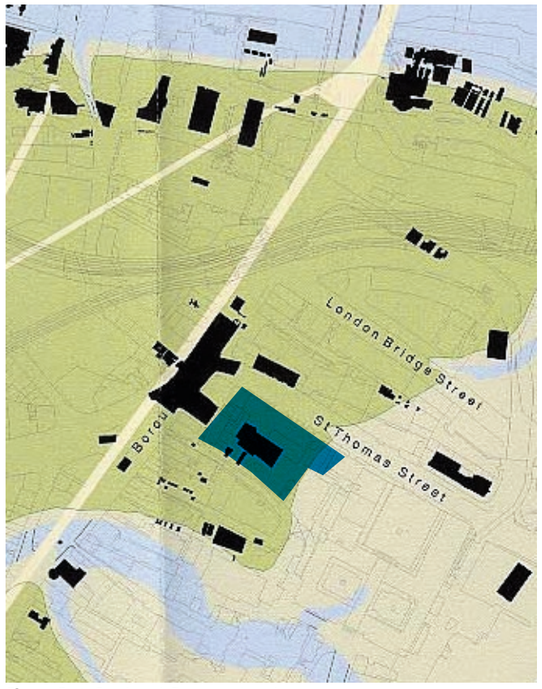


Figure 6.10 Southwark Roman archaeology map

7 Form and Condition of the Existing Structure

7.1 Introduction

The following section is based on the available recorded information and has been corroborated where possible by Site inspections and limited fabric survey. As the building is still operational, it has not been possible to gain access to all areas during Site visits.

The Site is occupied by different buildings constructed during different periods and now all connected to form one larger building mass (Fig 7.1). The northern part of the Site includes the Georgian Terrace buildings (Grade II listed) numbers 4-16 St Thomas street. To the northeast is Keats House and at number 20 St Thomas Street is the existing New City Court office building, which extends behind 4-16 St Thomas Street to the southern extent of the Site. Much of the information presented focuses around the construction of the office building in around 1984. As part of this work, a new structural frame was placed within Keats House with the existing facade retained. The facade facing King's Head Yard was partially retained but most of it was rebuilt with some alterations. Along the St. Thomas Street boundary there are underlying masonry constructed vaults beneath the pavement.

Figure 7.1 Aerial view of the Site showing designation of the buildings

7.2 Georgian Terrace Buildings (4-16 St Thomas Street)

Georgian Terrace buildings numbers 4-16 St Thomas Street are a row of 4-storey masonry brick terraces. Built in early the 19th century as housing, they have since been converted to offices as part of the redevelopment of the adjacent New City Court office building. The buildings and attached railings located on the pavement secluding the lower ground floor access are Grade II listed. For this reason these are to be retained as part of the new development. The current buildings are approximately 12m in height, 42m long by 10m wide.

Since the early 19th Century, the buildings have experienced several alterations, except for the front facade to St. Thomas street which has remained almost unchanged. These alterations were mainly done in the 1980's together with the construction of NCC office building, and comprised of new floor joists and a basement slab, an extension of the back face towards NCC from level B1 to level 2, installation of steel and RC lintels to allow for openings in spine walls and the construction of a new 200mm blockwork wall with brick facade to the rear of these terraces, as well as other minor alterations. Previously, 2 storeys were added to no. 16 and, in the 1930's the gap between no. 8 and 10 was filled in.

Superstructure

From historic records and archive information from the Architects, 'The Halpern Partnership', it can be determined that the existing facade consists of loadbearing yellow brick masonry and stone. The internal structure of the main walls are also mainly load bearing masonry, supporting the 4 storey upper floors. The floors consist of timber on joists supported off the main wall supports. There are areas of the terraces which during the 1980's were demolished and re-constructed with new masonry/ blockwork walls. Existing drawings show the rear facade/supporting wall of the terraces to have been re-built, which included new internal partitions and possibly new floors.

Figure 7.2 St. Thomas Street Facade - 1930's gap infilled between no. 8 and 10

Foundations

Drawings available from the time of the office construction from the Engineers, 'Bowden, Sillet & Partners', indicate the foundations to be corbelled brickwork strip footings. The rear footings were underpinned using various combinations of brickwork and mass concrete. The depth could not be determined from the existing drawings and a survey will be required to obtain this information.

Strengthening of the foundations was performed during the construction of the office building, as noted in the archive structural drawings.

Vaults

The vaults within the terrace house section appear to be made of masonry bricks which are vaulted beneath the pavement, extending approximately 1.6m in front of No. 4 St. Thomas Street and 2.6m infront of no.s 6-16. This could perhaps suggest there was an obstruction or sewer within the road limiting the depth in this location. However there is no recorded evidence to support this.

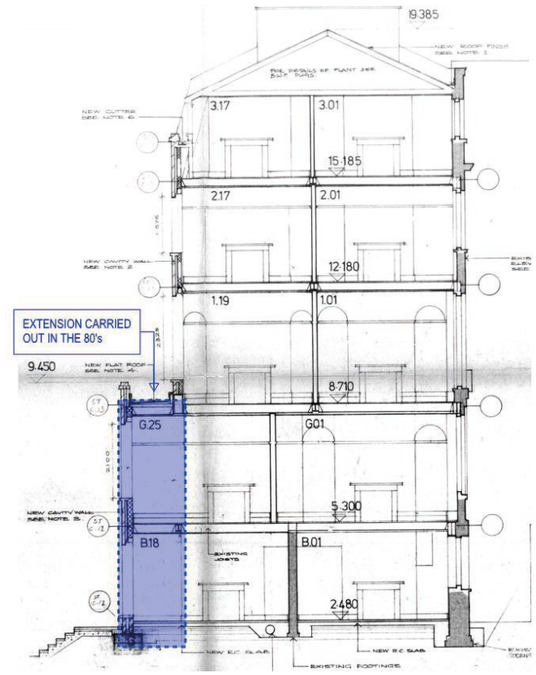


Figure 7.3 St Thomas street section

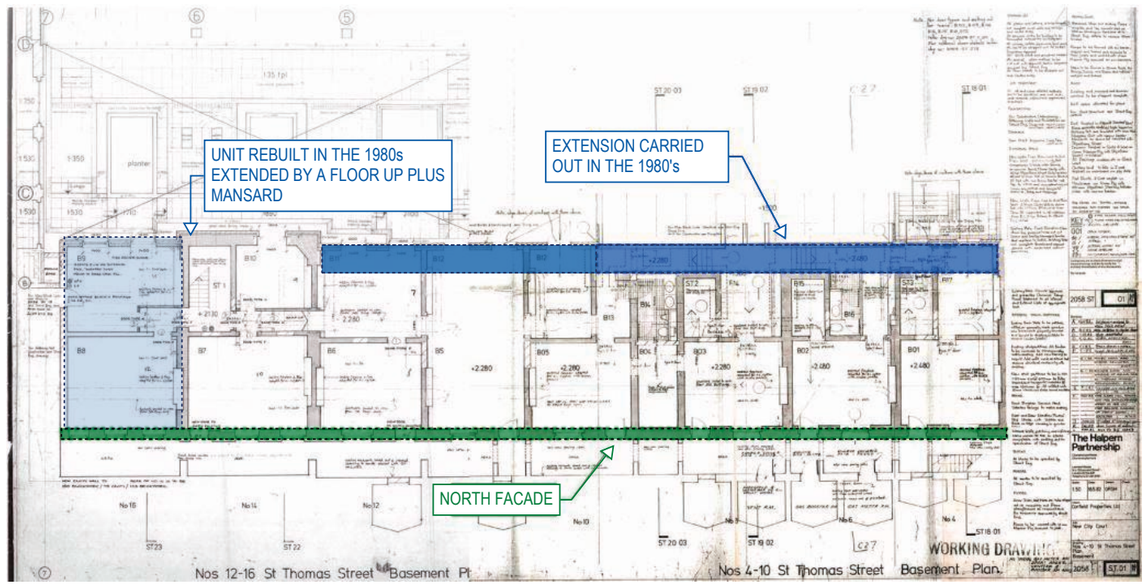


Figure 7.4 St. Thomas street building existing archive drawing

7.3 Keats House

Keats House is located to the east of 4-16 St Thomas Street. The imposing 4-storey red brick building, built in 1863 at the request of Guy's Hospital, has no listed status. The building is named after the late poet John Keats, who although did not live there, lodged for a short while at 8 St Thomas Street where a commemorative London Heritage blue plaque is located.

Facade Strategy

The existing facade is deemed a positive contribution to the Borough High Street Conservation Area and will therefore be relocated by approximately 6m to the West and kept as part of the new development. The project structural engineers (AKT II) and a specialist on conservation have reviewed the options for relocation and long term preservation/restoration. Today, all that is left of the original building is the retained facade behind which sits a reinforced concrete frame constructed as part of the existing New City Court (NCC) office building development. Due to the existing stonework and construction of the facade it is believed to be load bearing at basement level.

Superstructure

The building has 4-storeys and 1 level of basement/ lowered ground accessed from the street level and internally.

The main frame is reinforced concrete constructed as part of the existing NCC office building. The superstructure consists of 500mm square reinforced concrete columns supporting 250mm flat RC slabs. The eastern party wall of Keats House is also shown to be constructed from reinforced concrete.

Vaults

There are 6 vaults believed to be located in front of Keats House. The central smaller vault has access to it, however the larger vaults had been previously closed up with a masonry skin and they were only able to be inspected through a small vent opening. On visiting it was found that 4 of the 6 vaults contained large entities of mass concrete. These are believed to have been used as part of the 1980's facade retention scheme when the office building was previously built and have been left there and closed within the vaults.

Foundations

The foundations to the main superstructure are approximately 450mm diameter piles as part of the main existing development. The facade foundations appear to have been underpinned as noted on the architectural archive drawing 1527-503 (Fig 7.6). Drawing 1527-522 is not available however on drawing 1527-501, it is shown that 4 large mass concrete blocks as mentioned in vaults above have been used to underpin the facade retention in the 1980's.

7.4 Existing NCC Office Building

The existing development is a reinforced concrete frame building completed in the 1980s. The building is 4-storeys above ground including the additional middle part of the building that is higher. There is also a partial single storey basement. The architects of the project were The Halpern Partnership, now known as Formation Architects. The consulting engineer was James R. Briggs and Associates, who appear to have been renamed in 1994 as DIS Industrial Consultants Limited.

Superstructure

The archive structural and architectural drawings available show that the building is constructed from reinforced concrete columns and flat slabs. The columns are generally 500 mm x 500 mm square and flat slabs 250 mm thick concrete and finished with 75 mm of screed. Structural walls are shown to be 200 mm thick. Whilst the grid varies it is generally between 7-8m. There appears to be RC upstands of 130mm thick x 950mm high approximately surrounding the perimeter.

Retained Facades

The portion of the building facing King's Head Yard includes two different retained facades. Most of the retained facade is made of stone extending along King's Head Yard. The remaining retained facade is made of brick and is located in the southeast corner, adjacent to Guy's Hospital masonry arch entrance. The new framing for the 1980s New City Court development is installed adjacent to the retained facades. The retained facade extending along King's Head Yard is supported by corbels projecting out of the basement wall. The remaining retained facade is on pad foundations below ground floor on the southeast corner where there is no existing basement.In addition to the complete retention of the terraces along St Thomas Street, two facades were retained as part of the office development: Keats House (section 7.3) and along the boundary of New City Court to King's Head Yard on the south of the Site. This also shows that there were existing lightwells along Kings Head Yard previously, which are now filled in.

Foundations

The building sits on a series of piles and pile caps. The pile caps vary from 900mm to 1200mm thick with 450mm diameter piles located in groups of six below the columns and 16 approximately below the Core walls. From preliminary calculations the piles are approximately 15-20m deep, extending into the London clay, terminating about 3m above the crown of the westbound station tunnel of the Jubilee line. There are mass concrete blocks differing in length and size along the Kings Head Yard perimeter, as part of the facade retention strategy. However, the depth of these are unknown at this stage.

Figure 7.5 Keats House facade (existing)

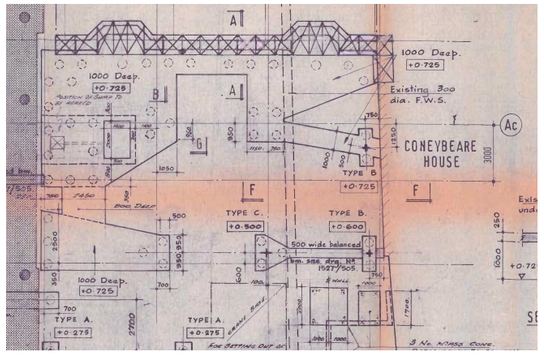


Figure 7.6 Record drawing showing existing foundations (existing)

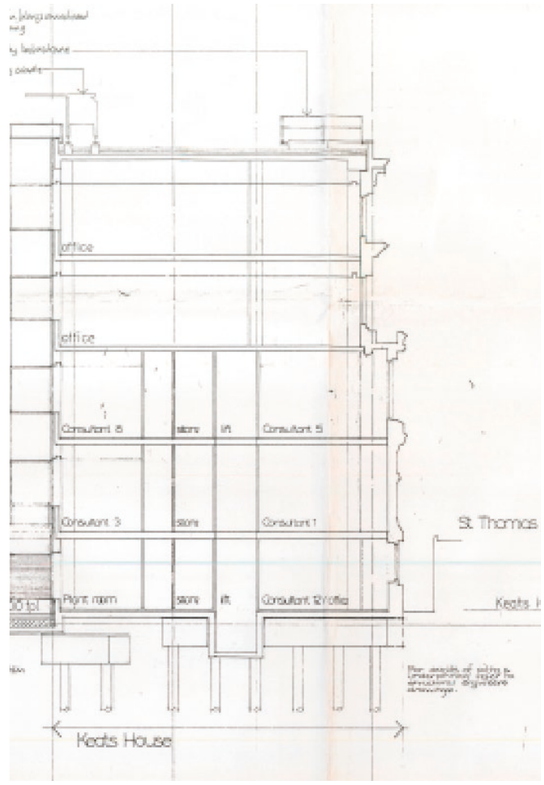


Figure 7.7 Keats House section (existing)

Figure 7.8 New City Court facade to St. Thomas street (existing)

8 Proposed Super-Structure

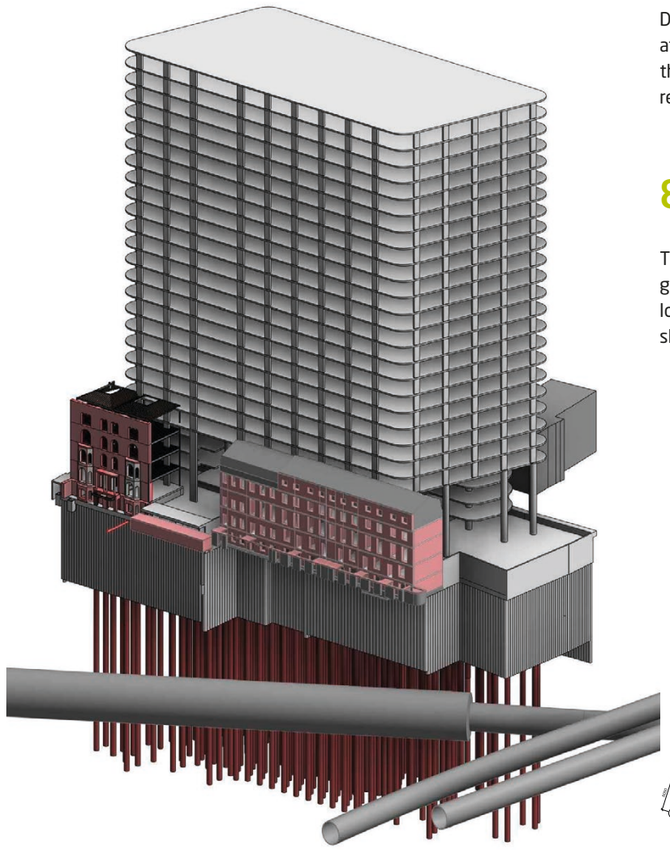


Figure 8.1 New City Court proposed scheme (transfers & balconies structure not shown for clarity)

8.1 New City Court

This is the main building of the proposed development. It is a 26-storey building (with mezzanine and two basement levels), extending to 108m AOD.

The proposed structural solution for the tower is a reinforced concrete frame with PT slabs typically 275mm thick.

The typical office floor layout starts from Level 04 and goes up to Level 24. The core layout/footprint changes slightly along the height of the building (Level 16 to roof).

Level 24 is where the main terrace is located and one more storey above this level is extending with a smaller footprint to host a restaurant, mechanical plants, cooling towers and a BMU.

The main stability system which provides resistance to the lateral loads i.e. wind loads for the tower is the reinforced concrete core which runs from the B2 Level to roof and is split into three parts namely; the Western part, the Central part and the Eastern part.

Different structural frame options have been also considered at this stage such as steel frame with metal deck however the preferred option at the time of authoring this report is the reinforced concrete frame with PT slabs.

8.1.1 Typical Floors

The internal columns are typically located at a 9.50m x 10.50m grid and have a circular shape, while the perimeter columns are located at 6m distance along the facade and have a rectangular shape.

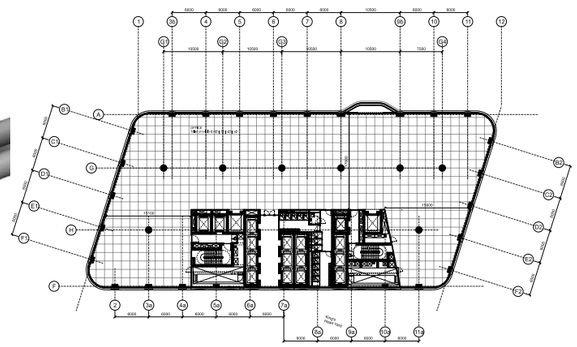


Figure 8.2 Typical PT floor layout (Levels 10-13)

8.1.2 Lower Floors

From the Ground Floor Level up to Level 02, the floor plate area is reduced and a different perimeter columns' arrangement has been proposed/examined closer to the Georgian Terraces which ensures not only a minimum impact to the existing buildings but also meets the criteria for the gallery space.

The slabs from Level 0M to Level 02 are supported by using either the facade mullions or hangers from Level 03.

Additional studies for maximising the office floor area at the lower levels in the South-Eastern part of the development have been made. This was achieved by rationalising the column grid and by using transfer beams wherever it is possible have been covered and analysed respectively. The transfer beam solutions that were provided had to respect the tight clear headroom criterion.

NORTH ELEVATION TRANSFERS

To achieve the modified columns' arrangement mentioned in the previous paragraph a number of steel transfer beams have been proposed at Level 03 which pick up the loads from the facade columns above and transfer them to the columns below. These transfers are located at the northern side of the proposed development close to the Georgian Terraces interface.

LOADING BAY TRANSFERS

Two different transfer trusses have been also proposed at Level 01-0M to avoid having columns in the loading bay area which is located at the north-eastern and south-eastern parts of the Ground Floor Level.

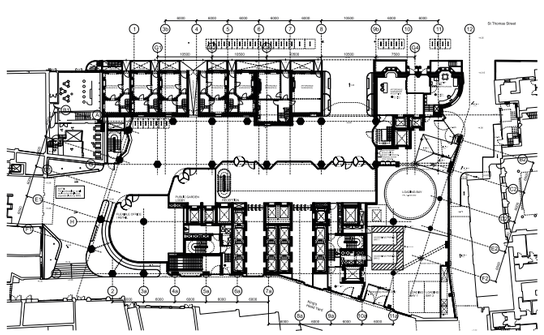


Figure 8.3 Typical lower level plan (Ground Floor)

8.1.3 Levels 24, 25 and 26

Level 24 is where the public terrace and the main restaurant area are located. The remaining floor plate is occupied by mechanical plants and cooling towers.

The slab at this level is expected to be circa 450mm thick RC slab with the potential of adding column-heads within the build-up zone, to the internal columns that are supporting the landscape area due to the defflections and the magnitude of the punchng shear forces.

Level 25 hosts the mezzanine level of the restaurant and is occupied for the remaining area mainly by mechanical plants and the BMU. Slabs at this level are expected to vary between 300mm and 350mm.

Please note that a steel frame structure will be also installed on top of the slab to support the metal decking roof on top (solar panels' areas).

Level 26 is the top roof of the structure and it is occupied by the private tenant terrace on the northern side and by solar panels in the remaining area. The slab supporting a tenant terrace is expected to be circa 300mm thick RC slab, while the remaining roof is assumed to be supported by a steel frame and metal decking.

8.1.4 Balconies

Balconies are a key feature of the proposed building. The balconies are located at the northern face of the New City Court tower and are starting from Level 03 up to Level 23 (included). Different structural frame options have been also considered at this stage such as steel frame with metal deck however the preferred option at the time of authoring this report is steel frame solution with timber deck.

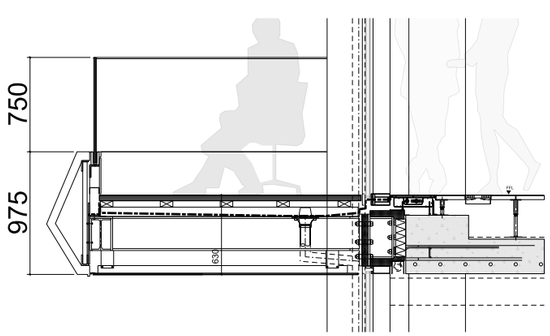


Figure 8.4 Balcony Strategy

8.1.5 Core and Stability

The core is located on the south side of the building to maximise the office area. Its layout has gone under a detailed iteration process to achieve optimal vertical transportation. The current design allows for low and high-rise lifts, separate public lifts, two goods lifts and cycle lifts from B1 Level to reception.

The configuration/layout of the core slightly changes at Level 16 and at Level 24 again as some of the central lift shafts stop.

The core other than supporting the vertical loads is designed to provide stability to the whole structure against the lateral forces i.e. wind loading.

The core is subjected to moments and shear forces due to:

- Wind loads
- Equivalent horizontal loads
- Eccentricity of the vertical loads

At this stage the core has been designed as a cantilever with full fixity at B2 Level and with no restraints considered at B1 level.

The critical axis of the core is the North-South due to the smaller inertia, higher loads due the wind and the effects of the eccentricity due to vertical loads.

The core is therefore under permanent and temporary deflections. The shafts of the core have been oversized to allow for those movements.

The latter deflections are due to the wind and are limited to avoid high peak accelerations which would lead to discomfort. In addition to that, the interstorey drift for the facade/slab interface has also been taken into account accordingly.

At this stage a preliminary analysis with a simplified stability model has taken place to demonstrate the capacity of the stability system considered against the lateral and vertical loads and the satisfaction of the criteria set for movement for both the core and the slabs.

A detailed 3D finite element model will be developed at the following stage which will allow for further refinement in terms of core layout, core thickness along the height and performance criteria.

An alternative design study could be considered in the next stage where the core could be designed as a propped cantilever.

Through this approach the basement box formed by the two slabs (B1 and B2) will be under push and pull effects due to the overturning moments and will act as diaphragms to dissipate the horizontal loads. To allow for such a structural behaviour the B1 slab will need to be designed to transmit the force to the secant piles along the west and east side restrained by the skin friction with the soil. and B2 Level will then spread the horizontal loads to the bearing piles which should then also be designed for the shear force coming from the overturning moments.

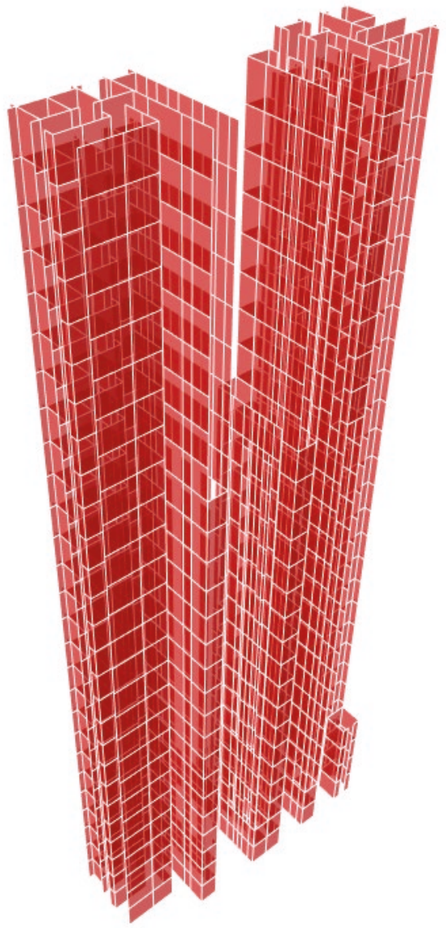


Figure 8.5 Fimite Element model of the core

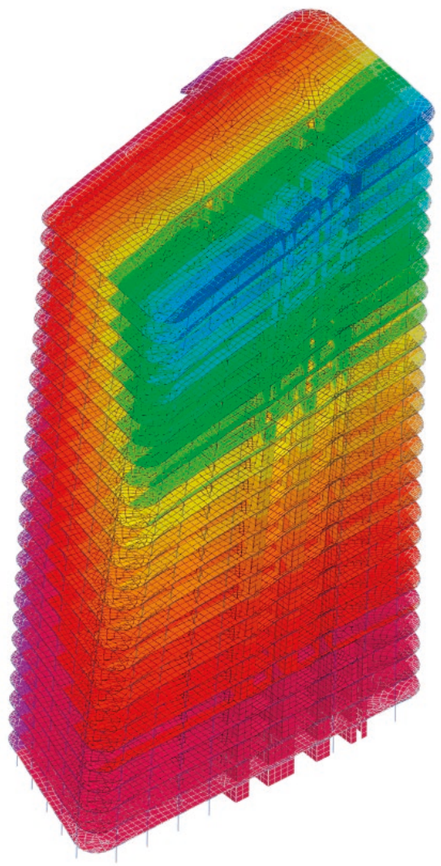
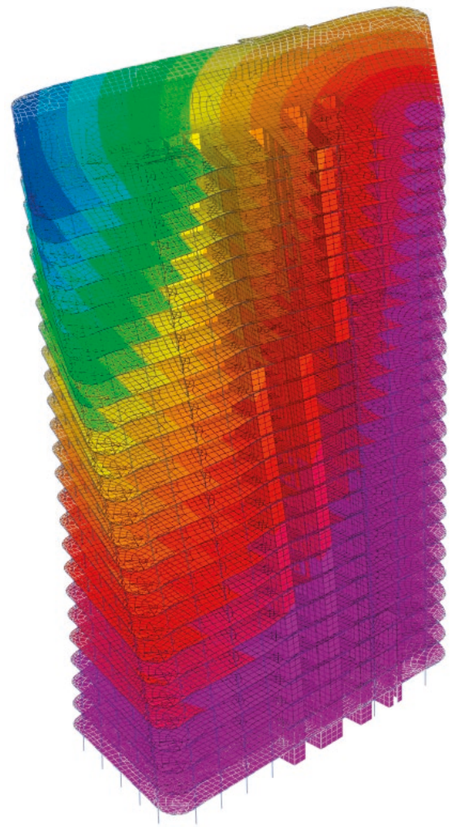


Figure 8.6 Deflected shapes of the New City Court tower (East - Wind Direction and North Wid Direction)



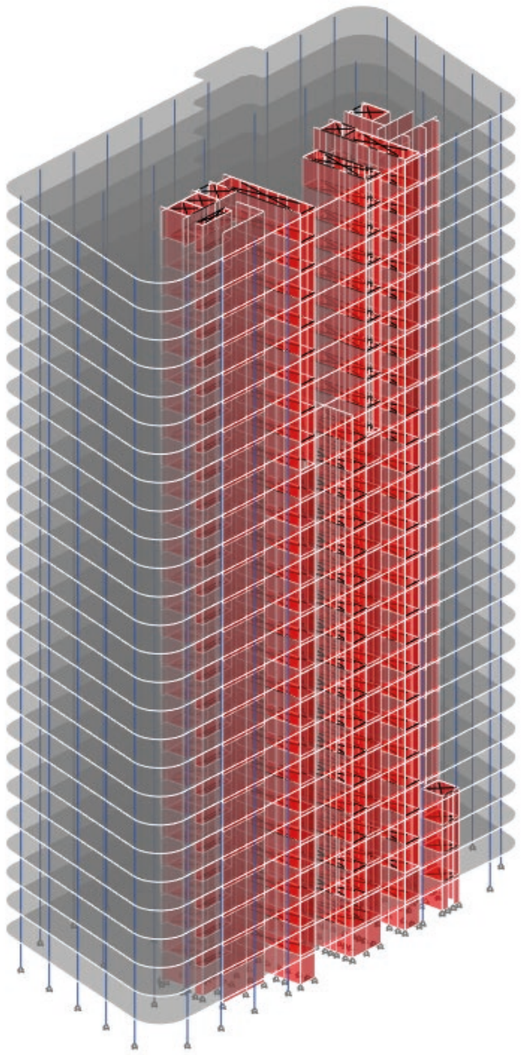


Figure 8.7 Finite Element model of the New City tower (3D perspective)

8.2 Keats House

A number of options for the new Keats House frame have been explored. The preferred structural framing option at the time of authoring this report are reinforced concrete columns which will support the reinforced concrete floors (flat slabs) as shown in the figure below.

The stability of Keats House against lateral forces is provided/ resolved by the two lift-cores which are running all the way from the basement level to Level 04 of Keats House/New City Court interface.

The facade at this stage has been assumed to be a load bearing facade and will be laterally restrained by connecting it to the reinforced concrete slabs at each level.

Another feature of the Keats House is the roof above Level 03. Different structural typologies have been studied at the time of authoring this report.

The preferred solution is a timber frame solution with timber joists, timber and steel beams along the top and bottom part of the roof respectively supported on reinforced concrete columns.

Diaphragmatic action and engagement is achieved through the top skin (plywood surface) which is placed on top of the timber joists.

8.3 Georgian Terrace Buildings (4-16 St Thomas Street)

The main structural alterations are related to the back of the building. The proposal is to bring the building back to the original extension and therefore demolish the extension carried out in the 1980's.

The southern part of the Georgian Terrace No. 16 will also need to be aligned with original extension of the Georgian Terraces Buildings; No. 4, No. 6, No. 8, No. 10 and No. 12 which will require some modifications (demolishing part of the slab and trimming it to receive new facade in line with other townhouses). These changes to Georgian Terrace No. 16 slab will take place on all levels (including LG/B1 and roof).

The southern facade will then need to go through alterations works to match the northern elevation. The proposal aims in most of the cases to replace the outer skin except between 6 and 10 where the facade will be fully new, due to the current wall being an internal partition wall from the 1980's. In this way a consistent outer line will be achieved between 4 and 12 St Thomas Street and from 14 to 16 St Thomas Street.

A passage connecting north to south will be formed at ground floor between 8 and 10 of St Thomas Street.

At roof level of 14 and 16 St Thomas Street the structure currently finishes with a flat top, which will be modified to match the monopitch roofs of the other terraced houses.

The foundations facing New City Court site will need RC underpinning to allow for the construction of the basement for the new development (assuming piling from the proposed B1 level; an alternative option to avoid underpinning is to assume piling from the existing B1 level, note that these items will need further development which will take place at the next stage).

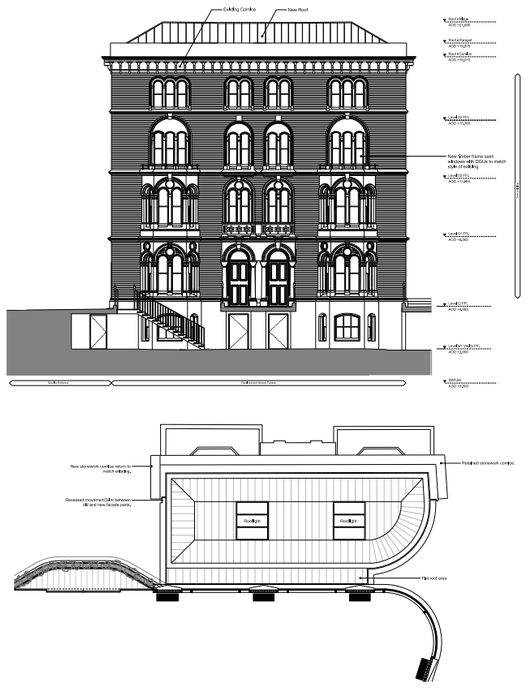


Figure 8.9 Keats House elevation and roof layout (AHMM Keats House drawings, April 2021)

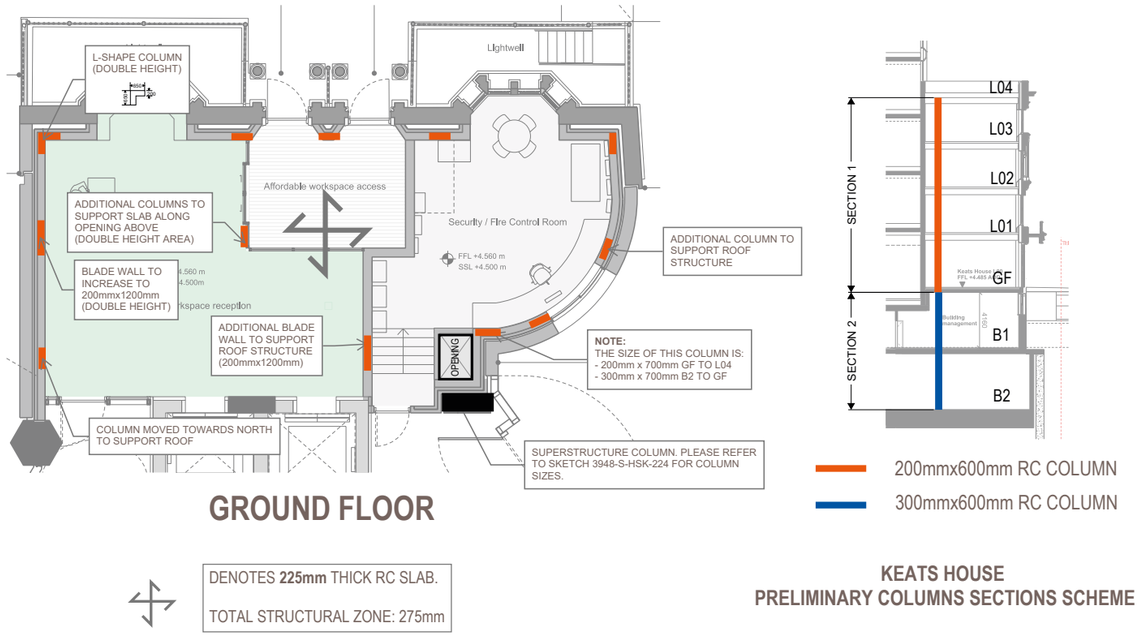


Figure 8.8 Keats House ground floor, preliminary structural layout

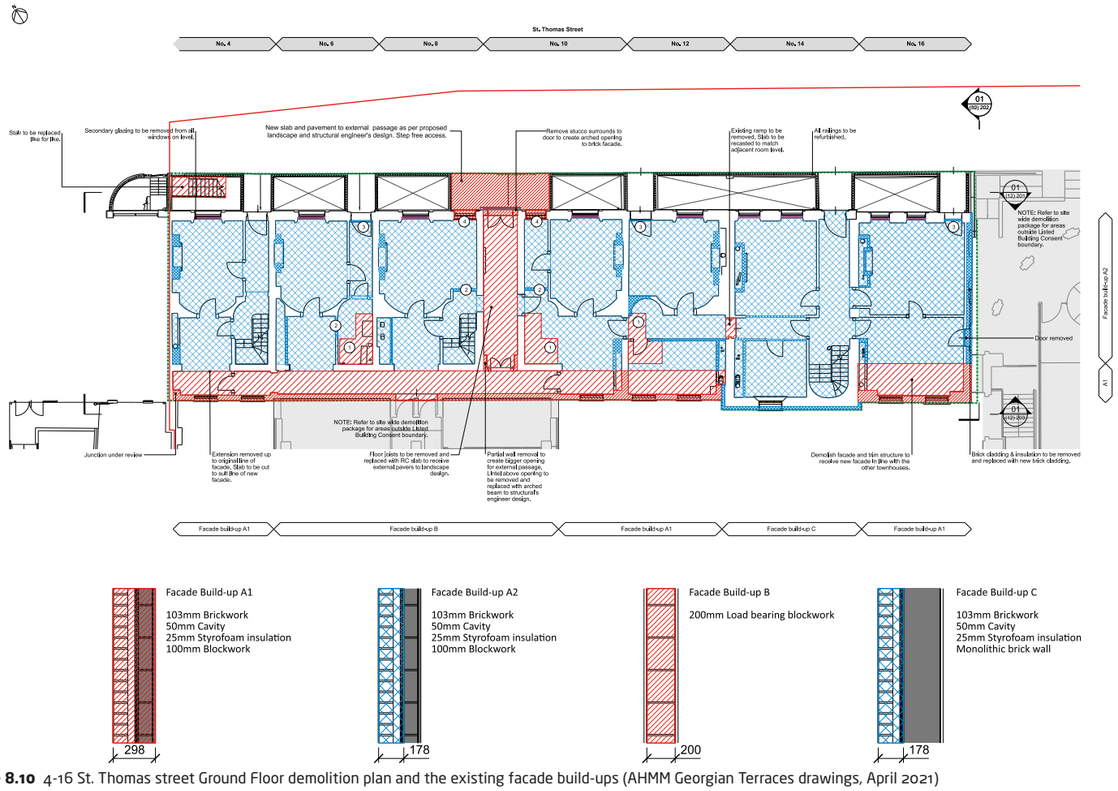


Figure 8.10 4-16 St. Thomas street Ground Floor demolition plan and the existing facade build-ups (AHMM Georgian Terraces drawings, April 2021)

9 Proposed Substructure

9.1 Basement Overview

The proposed basement is two storeys deep confined by a secant piled retaining wall. It occupies all the footprint of the development with the exception of the Georgian Terraces.

Beneath Keats House there is currently a sewer crossing the footprint of the building from south to north. The current proposal consists of diverting the sewer closer to Conybeare House on the east side mainly to maximise the basement area at B2, but also to avoid damaging the existing sewer in the demolition works.

All surrounding buildings seem to have at least one level of basement, albeit with different heights/levels, that allows the outline of the first level of basement to generally be pushed up against the site boundary.

However, when the construction methodology of the new basement walls is also considered, their location on plan is generally driven by the existing foundations: where possible piling is proposed to be done from the existing B1 level, thus using the existing walls as part of the temporary works. However, the existing 1980's foundations seem to have been installed from the existing B1 level, inside the masonry retaining walls from the previous building, and for that reason the first row of existing piles is set 1.00-1.50m inside the existing basement volume. This means that along the south and east perimeters of the basement, where there is a greater density of existing piles, in order not reduce significantly the basement area by going inside these, it has been assumed that the piling of the secant wall will be from ground level.

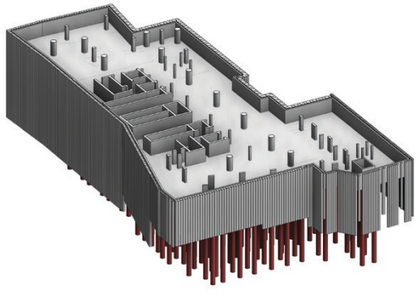


Figure 9.1 Proposed basement 3D view

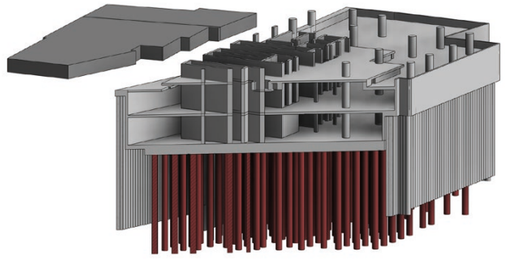


Figure 9.2 Porposed basement section

9.2 Foundations

Given the magnitude of the vertical loads applied, together with the anticipated ground conditions, the most cost-effective solution appears to be a piled raft right below the main tower. The raft will have to be thick enough to be able to spread the loads onto the pile foundations which will then transfer the vertical loads into the soil. Different cases will be examined at the next design stage with regards to the piles diameter and depths which will be based on the findings/results of the Geotechnical Investigations that will take place.

For the remaining area outside the tower footprint the main option is a suspended slab between pile caps that support either the basement or Keats House columns.

The current proposed foundation will be subject to confirmation in the next stages after review of the ground investigation results.

It should be noted that, as referred in chapter 6, there are several existing reinforced concrete (RC) piles (450mm diameter) across the Site and further to additional surveys on Site to confirm the actual position of these existing piles (taken as per archive drawings to date), it is expected that some of the proposed piles will need to be relocated to avoid clashes.

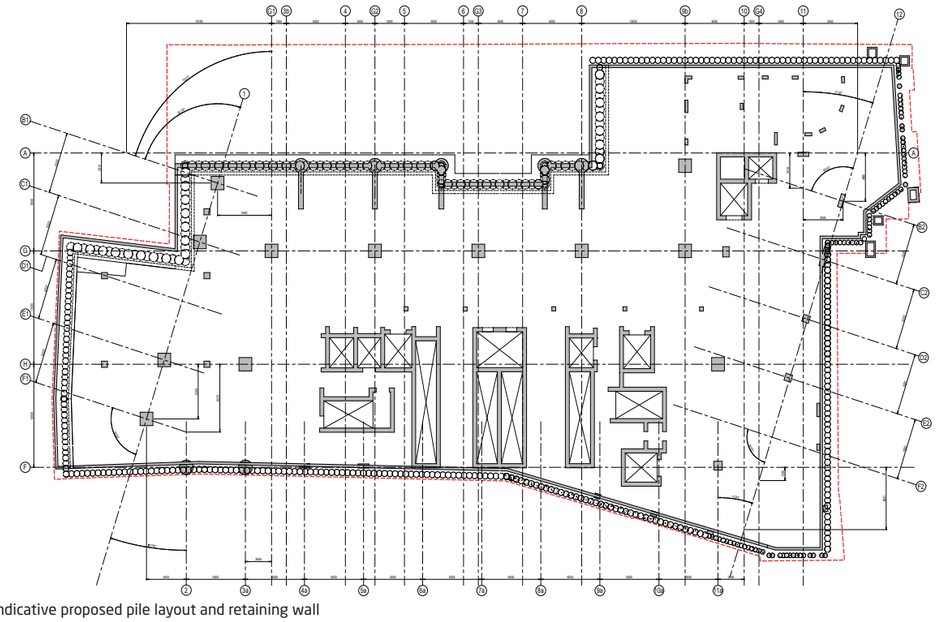


Figure 9.3 Indicative proposed pile layout and retaining wall

9.3 Retaining Wall

The formation of the new basement will be achieved with the use of a secant piled wall which is the most suitable solution in terms of cost/effective width, construction sequence, adjacent buildings and other Site constraints, as well as programme.

This secant piled wall is an inherent stiff construction, conducive to a robust temporary works scheme. The interlocking construction provides resistance to the penetration of water into the excavation during the temporary condition and limits the risk of washing fines from under the adjacent structures. The piling line is set such that adequate clearance to the adjacent structures is maintained with typical minimum clearance of 1200mm from the centre line of the pile to the adjacent high-level obstruction.

In the north-west corner the pile are shorter to avoid the exclusion zone around the platform tunnel as highlighted in drawing 3948-AKT-XX-XX-DR-S-00410 included in the relevant Appendix attached to this report.

The secant piled wall proposed to date will be designed to support the surcharge load from the adjacent buildings and/or roads, soil surcharge and water pressure.

Generally, a uniform secant pile wall diameter has been considered along the perimeter of the proposed location. In some areas where the secant pile will need to pick up vertical loads in addition to the lateral earth pressures a larger pile diameter will need to be used.

There are also some localised areas, on the east side of Keats House and on the southeast corner, where the proposed retaining wall diameter could be reduced. At this location the use of mini-pile contiguous wall to interlock with existing 450mm diameter piles located in the perimeter has been envisaged/proposed.

Please note that all information shared above is subject to further changes, analysis/design and review which will take place at the next stage.

10 Design Standards

Since March 2010 Eurocodes and their associated National Annexes (providing country-specific design parameters), have superseded British Standards as the principle design codes for structural elements in the United Kingdom. Reference will be made to British Standards and other technical guidance where topics are not adequately addressed in the Eurocodes. It is of note that while no longer current, the superseded British Standards generally remain cited within UK Building Regulations.

The following codes and design guides will be used principally in preparing the structural design for the project. For the sake of brevity National Annexes are not listed:

Eurocode 0: Basis of structural design

BS EN 1990:2002

Eurocode 1: Actions on structures

BS EN 1991-1-1:2002, BS EN 1991-1-2:2002, BS EN 1991-1-3:2003, BS EN 1991-1-4:2005, BS EN 1991-1-5:2003, BS EN 1991-1-6:2005 and BS EN 1991-1-7:2006, (BS EN 1991-3:2006)

Eurocode 2: Design of concrete structures

BS EN 1992-1-1:2004 and BS EN 1992-1-2:2004, (BS EN 1992-3:2006)

Eurocode 3: Design of steel structures

BS EN 1993-1-1:2005, BS EN 1993-1-3:2006, BS EN 1993-1-4:2006, BS EN 1993-1-5:2006, BS EN 1993-1-7:2007, BS EN 1993-1-8:2005, BS EN 1993-1-10:2005, BS EN 1993-1-11:2006, BS EN 1993-5:2007 and BS EN 1993-6:2007

Eurocode 7: Geotechnical design

BS EN 1997-1:2004, BS EN 1997-2:2007

BS8102 2009 Protection of below ground structures against water from the ground

SCI P354 Design of floors for vibration: A new approach

BS6472-1:2008 Evaluation of human exposure to vibration in buildings

The Concrete Centre: A design guide for footfall induced vibration of structures

CIRIA C580 Embedded retaining walls – guidance for economic design

CIRIA C760 Guidance on embedded retaining wall design

Building Regulations: all relevant sections, including Approved documents A & B concerning structure and fire safety

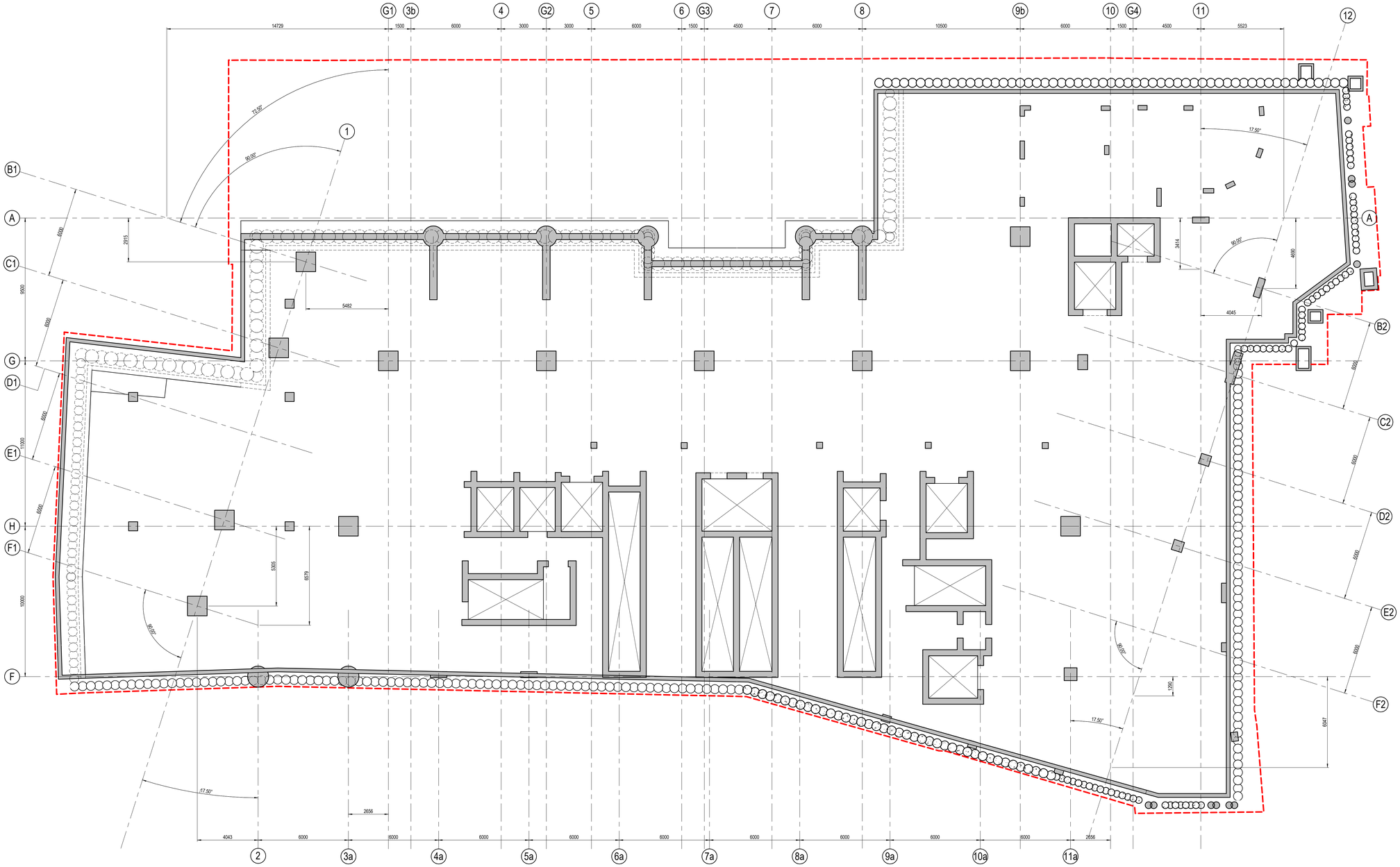
The assessment of existing structures shall generally follow the principles outlined in the iStructE publication entitled "The Appraisal of Existing Structures".

Appendix 1

Proposed Drawings - Tower & Keats House

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN METRES.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.



P1 15.04.21 ISSUED FOR PLANNING IW NC

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GREAT PORTLAND ESTATES PLC

CLIENT

NEW CITY COURT

PROJECT

PROPOSED PLAN
LEVEL B1

TITLE

IW	FEB 2021	NC	A0
DRAWN BY	DRAWN DATE	CHECKED BY	SHEET SIZE
3948	PLANNING		1:100
PROJECT No.	PROJECT STAGE	SUITABILITY CODE	SCALE

PLANNING

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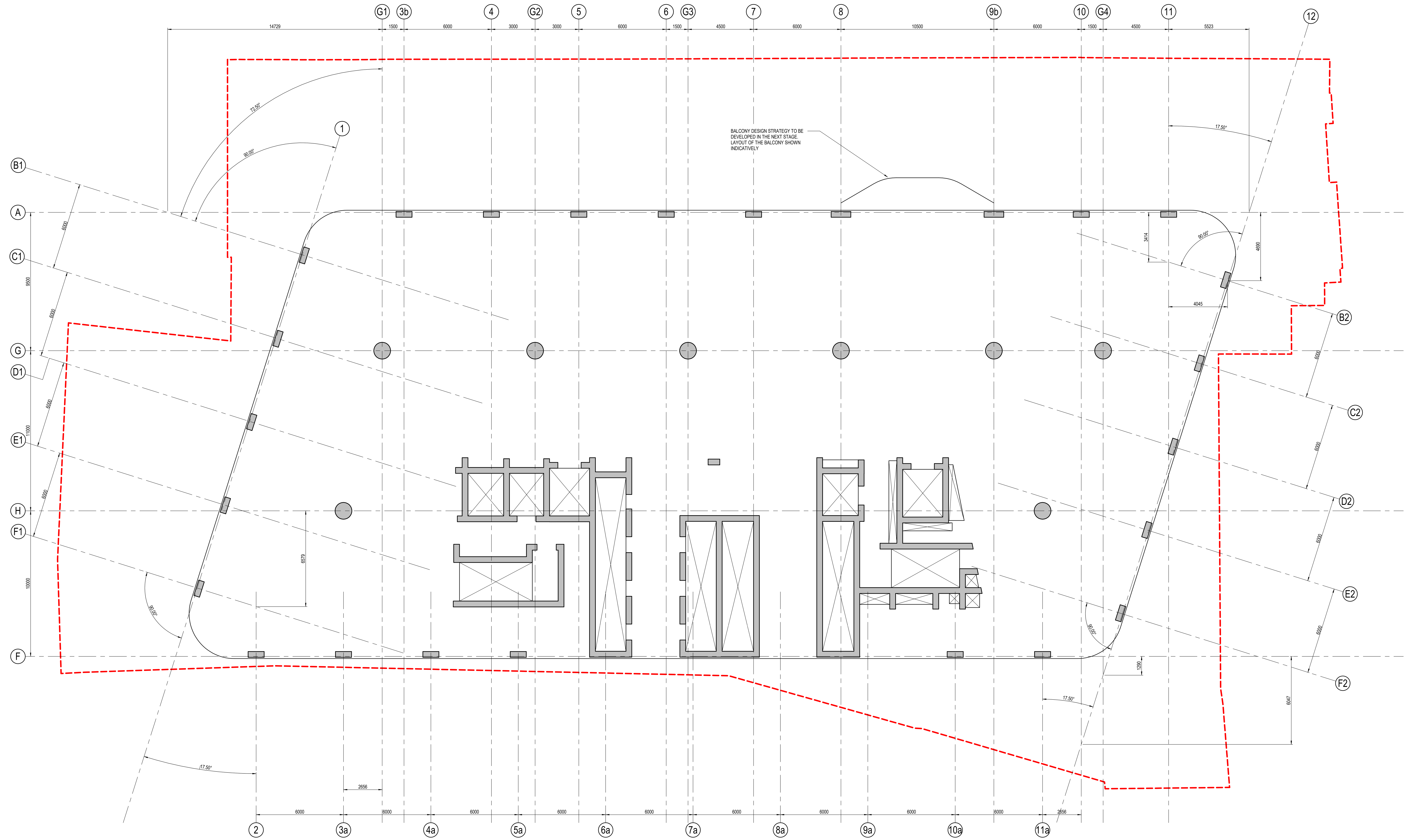

NOTES

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REV	DATE	DESCRIPTION	BY	CHECKED
P1	15.04.21	ISSUED FOR PLANNING	IW	NC

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GREAT PORTLAND ESTATES PLC

CLIENT

NEW CITY COURT

PROJECT

PROPOSED PLAN
LEVEL 06

TITLE

DRAWN BY	DRAWN DATE	CHECKED BY	SHEET SIZE
IW	FEB' 2021	NC	A0

PROJECT No.	PROJECT STAGE	SUITABILITY CODE	SCALE
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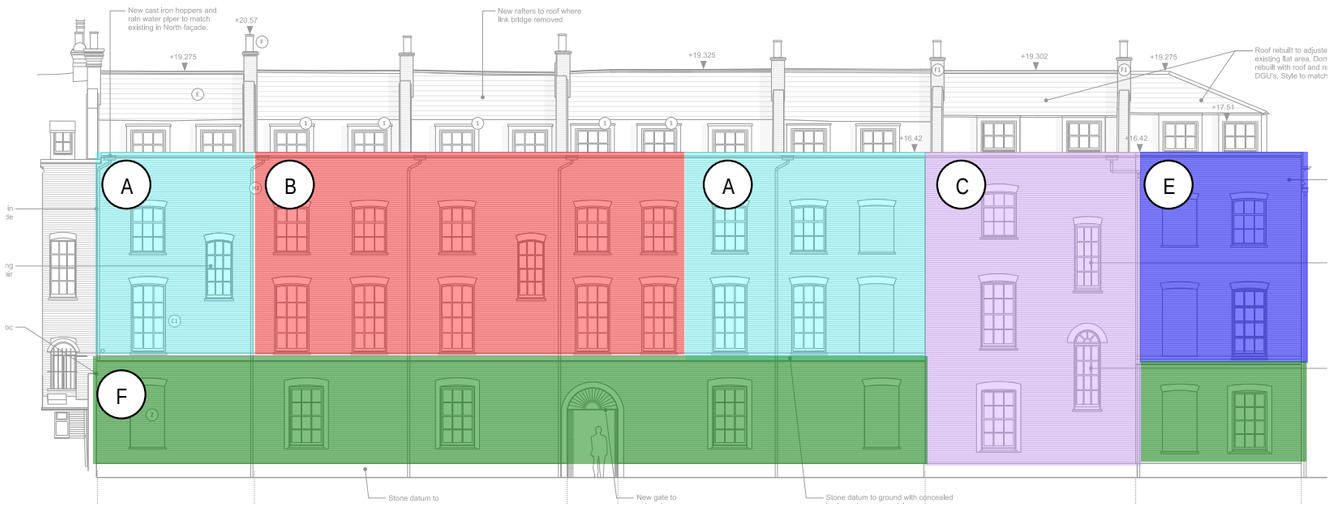
PLANNING

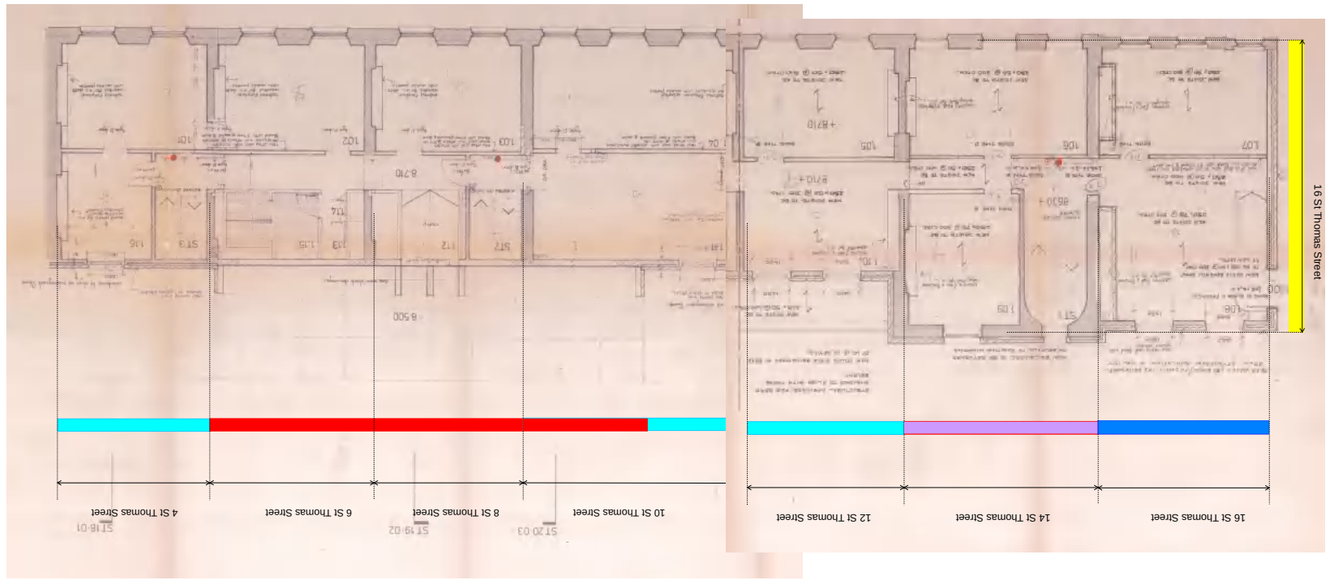
PROJECT ID	ORIGINATOR	ZONE	LEVEL	TYPE	ROLE	DRAWING No.	REVISION
3948	AKT	XX	06	DR	S	21600	P1

Appendix 2

Proposed Sketches - 4-16 St. Thomas Street

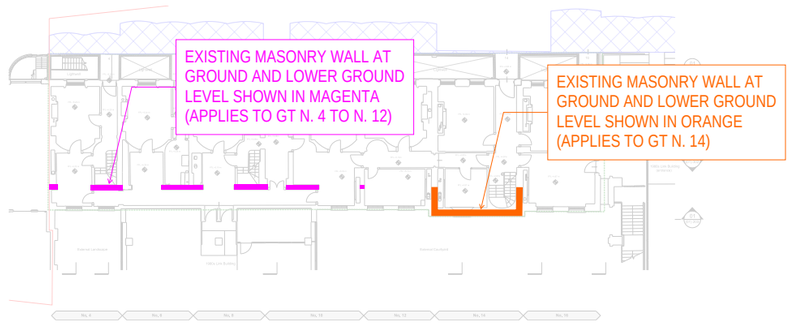
NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO SOUTH AND EAST FACADE





LEGEND

COLOUR CODE	FACADE TYPE	EXISTING	PROPOSAL (FROM ARCHITECT)
	FACADE TYPE A	Build-up: 100 mm brickwork 50 mm cavity 75 mm rigid foam insulation 100 mm blockwork 20 mm assumed wall finish. Total 246 mm.	Facade Build-up B2: 100mm Existing blockwork retained; 130mm New cavity filled with rockwool insulation; 215mm New facing brick to match north facade; Existing retained
	FACADE TYPE B	Load Bearing Internal Wall (assumed as 1960s building): 200 mm load bearing blockwork; 20 mm assumed wall finish on either side. 240 mm Total	Facade Build-up B3: 100mm New blockwork; 130mm New cavity filled with rockwool insulation; 215mm New facing brick to match north facade
	FACADE TYPE C	102mm Brickwork; 50mm Cavity; 75mm Rigid foam insulation; Monolithic brick wall	Facade Build-up B4: 260mm Existing monolithic brick facade retained; 75mm New cavity filled with rockwool insulation; 102.5mm New facing brick to match north facade; Existing retained
	FACADE TYPE D	Build-up: 100 mm brickwork; 50 mm cavity; 25 mm styrofoam insulation; 100 mm blockwork	Facade Build-up B5: 100-150mm Existing blockwork retained; 75mm New cavity filled with rockwool insulation; 102.5mm New facing brick to match north facade; Existing retained
	FACADE TYPE E	Build-up: 100 mm brickwork; 50 mm cavity; 25 mm styrofoam insulation; 100 mm blockwork	Facade Build-up B3: 100mm New blockwork; 130mm New cavity filled with rockwool insulation; 215mm New facing brick to match north facade
	FACADE TYPE F	SEE PLAN BELOW	Facade Build-up B1: Existing brick mansonry wall or new blockwork to existing brick mansonry wall; 75mm New cavity filled with rockwool insulation; 102.5mm New facing brick to match north facade



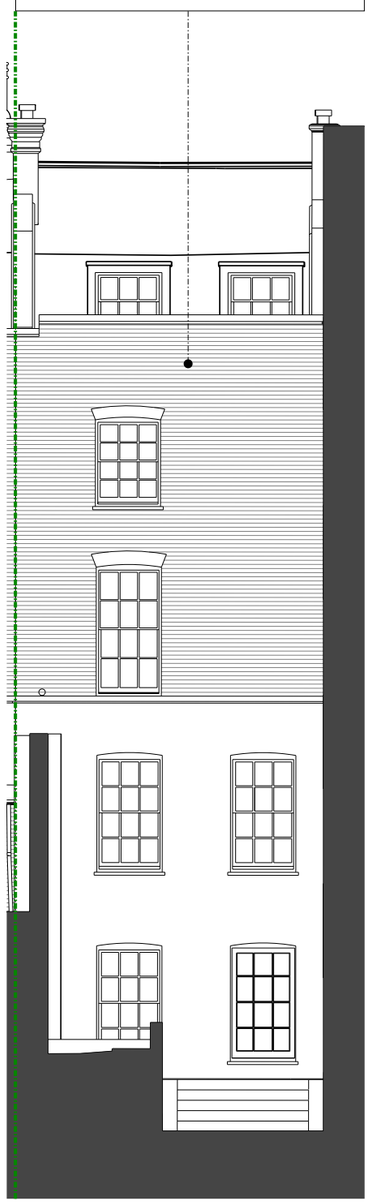
GEORGIAN TERRACES EXISTING GROUND FLOOR PLAN

REV	DATE	DESCRIPTION	BY	CHECKED
P1	15.04.2021	DISCUSSION	MG	IK

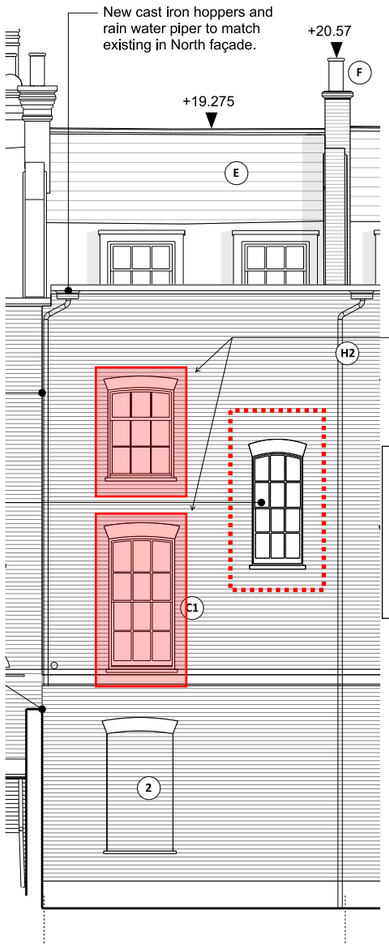
PROJECT: NEW CITY COURT		TITLE: NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO SOUTH AND EAST FACADE	
DATE: 15/04/2021	SCALE: NTS	CAD FILENAME: -	STATUS: DISCUSSION
DRAWN: MG	CHECKED: IK	PROJECT No.: 3948	DRAWING No.: 3948-SK-199
REV: P1			

NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO SOUTH AND EAST FACADE

EXISTING



PROPOSED

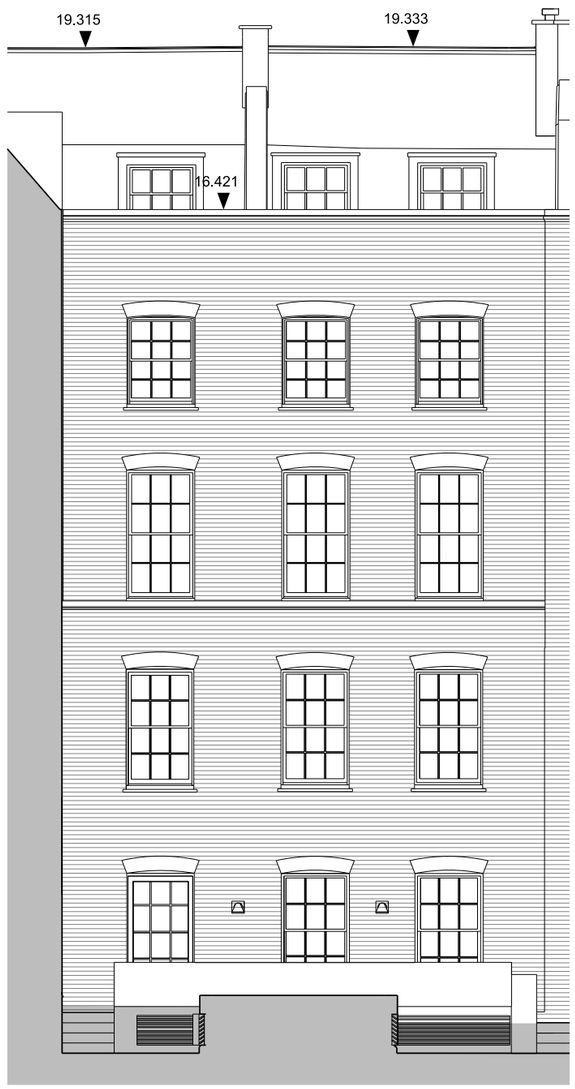


LINTELS TO BE STRENGTHENED

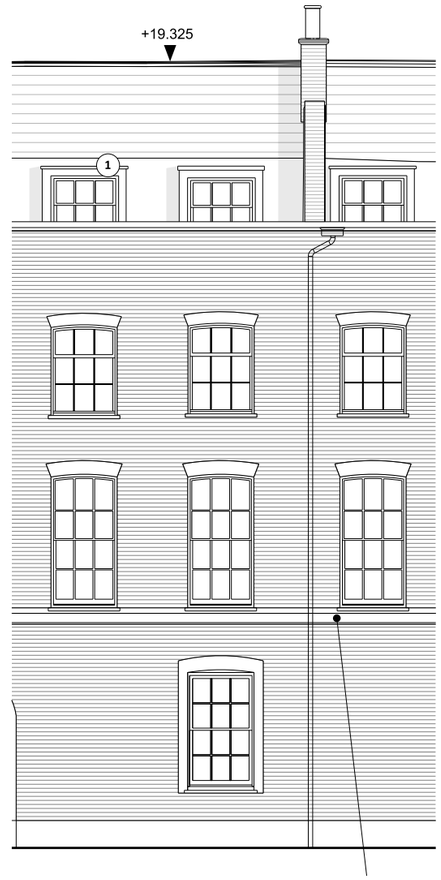
ADDITIONAL WINDOW ARCH LINTEL TO BE INSTALLED TO ALLOW FOR NEW OPENING

no 4 SOUTH FACADE

EXISTING



PROPOSED



no 10 SOUTH FACADE

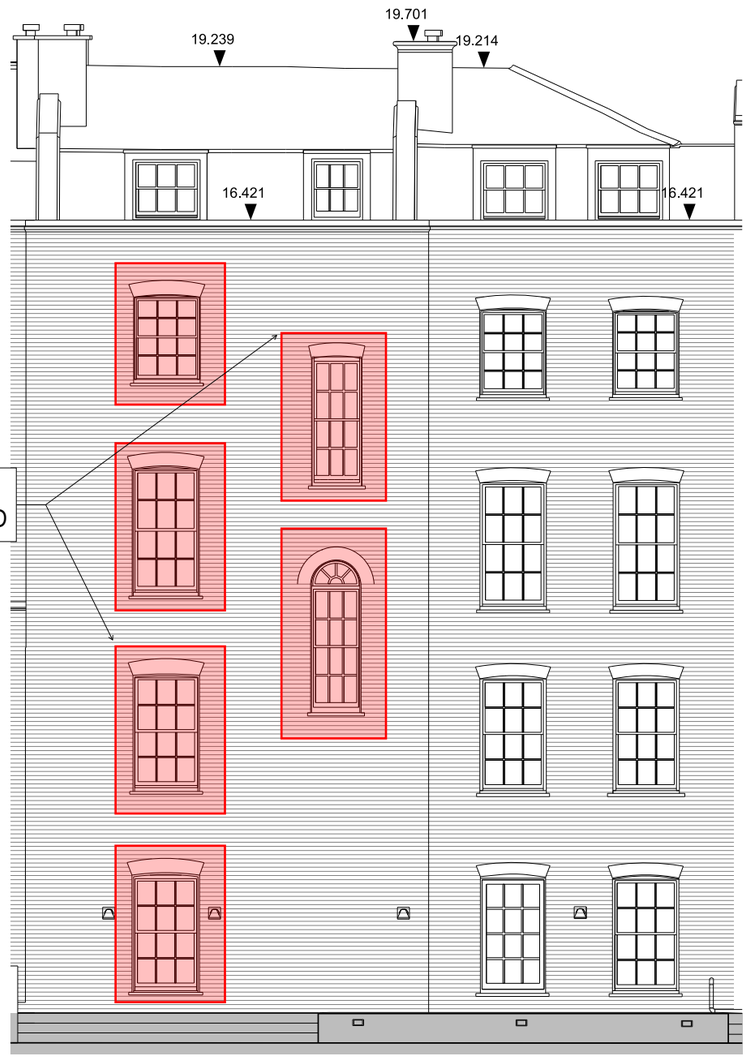
REV	DATE	DESCRIPTION	BY	CHECKED
P1	15.04.2021	DISCUSSION	MG	IK

akt II

PROJECT NEW CITY COURT		TITLE NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO SOUTH AND EAST FACADE	
DATE 15/04/2021	SCALE NTS	CAD FILENAME -	STATUS DISCUSSION
DRAWN MG / CHECKED IK	PROJECT No. 3948	DRAWING No. 3948-SK-199	REV P1

NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO SOUTH AND EAST FACADE

EXISTING



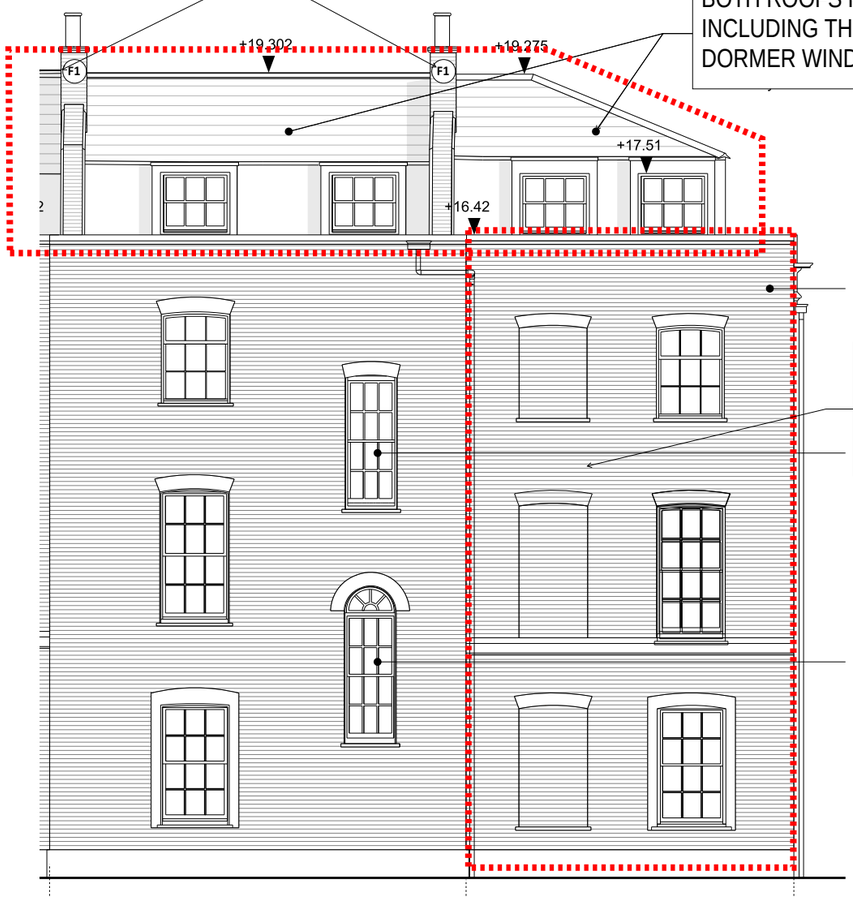
LINTELS TO BE STRENGTHENED

PROPOSED

CHIMNEY STACKS REBUILT

BOTH ROOFS REBUILT INCLUDING THE DORMER WINDOWS

NEW FACADE STRUCTURE DUE TO TRIMMING BACK THE UNIT



no 14 and 16 SOUTH FACADE

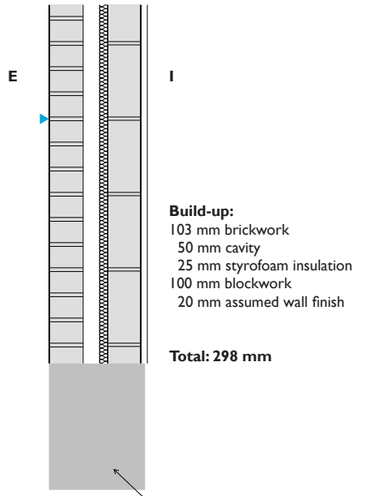
REV	DATE	DESCRIPTION	BY	CHECKED
P1	15.04.2021	DISCUSSION	MG	IK

PROJECT NEW CITY COURT		TITLE NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO SOUTH AND EAST FACADE	
DATE 15/04/2021	SCALE NTS	CAD FILENAME -	STATUS DISCUSSION
DRAWN MG / CHECKED IK	PROJECT No. 3948	DRAWING No. 3948-SK-199	REV P1

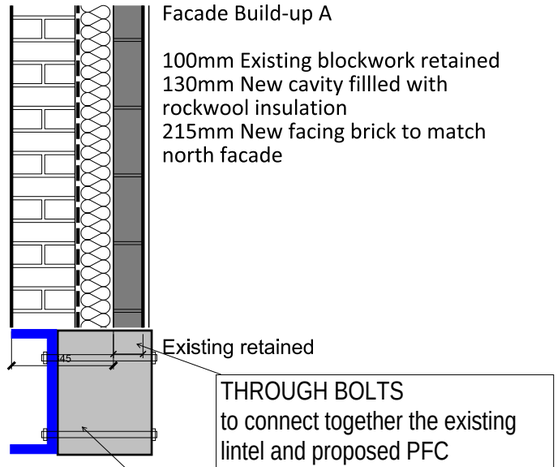
NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO LINTELS

FACADE TYPE A

EXISTING

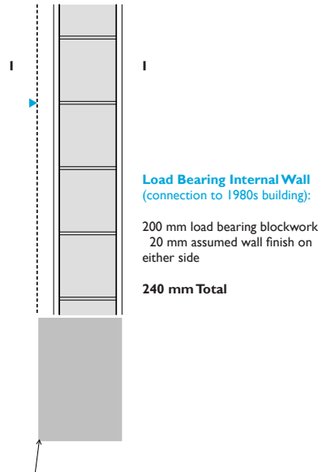


PROPOSAL

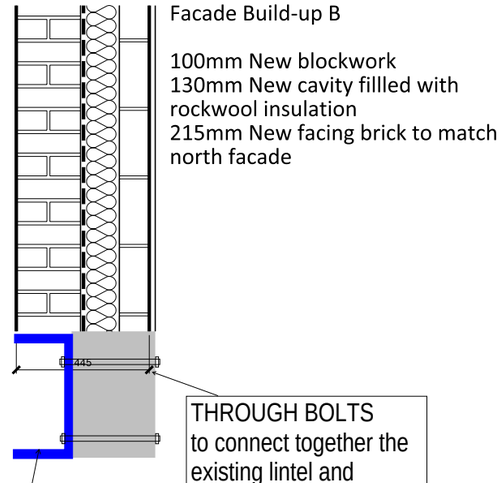


FACADE TYPE B

EXISTING

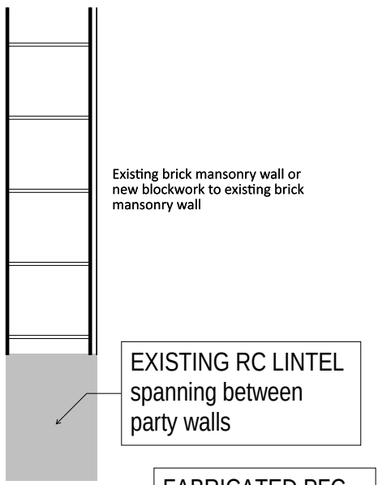


PROPOSAL

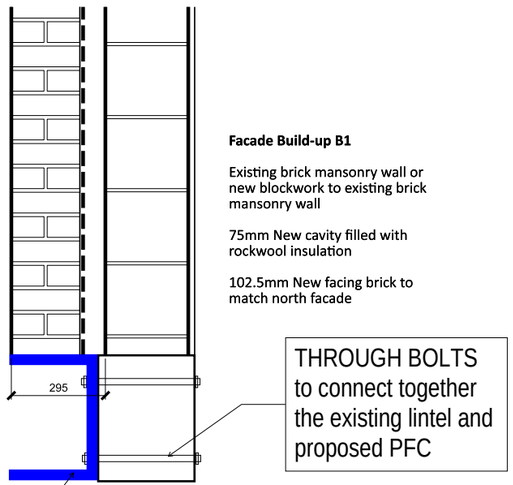


FACADE TYPE F

EXISTING



PROPOSED



REV	DATE	DESCRIPTION	BY	CHECKED
P1	15.04.2021	DISCUSSION	MG	IK

akt II

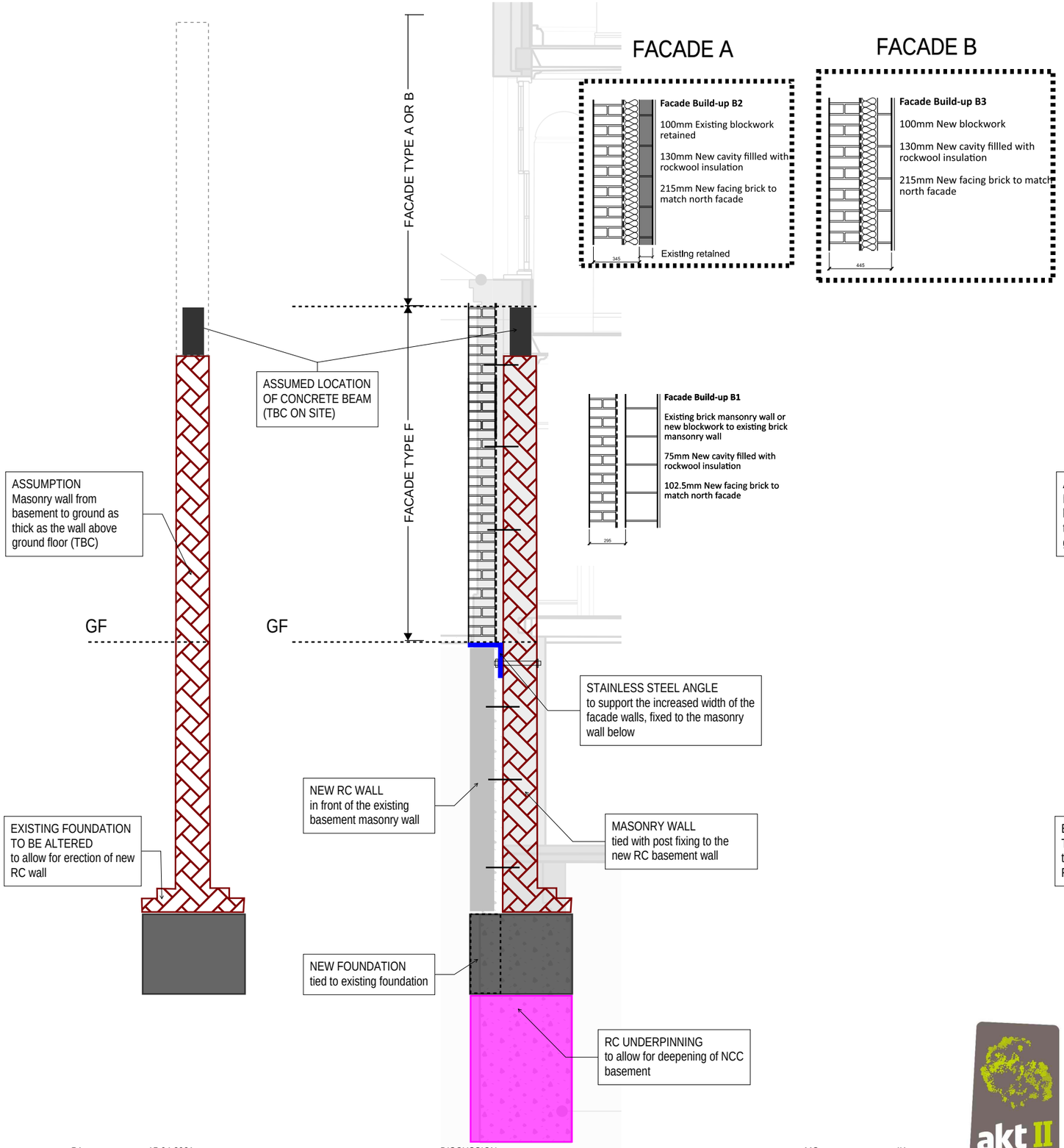
PROJECT NEW CITY COURT		TITLE NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO SOUTH AND EAST FACADE	
DATE 15/04/2021	SCALE NTS	CAD FILENAME -	STATUS DISCUSSION
DRAWN MG / CHECKED IK	PROJECT No. 3948	DRAWING No. 3948-SK-199	REV P1

NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO SOUTH AND EAST FACADE

FACADE A & B

EXISTING

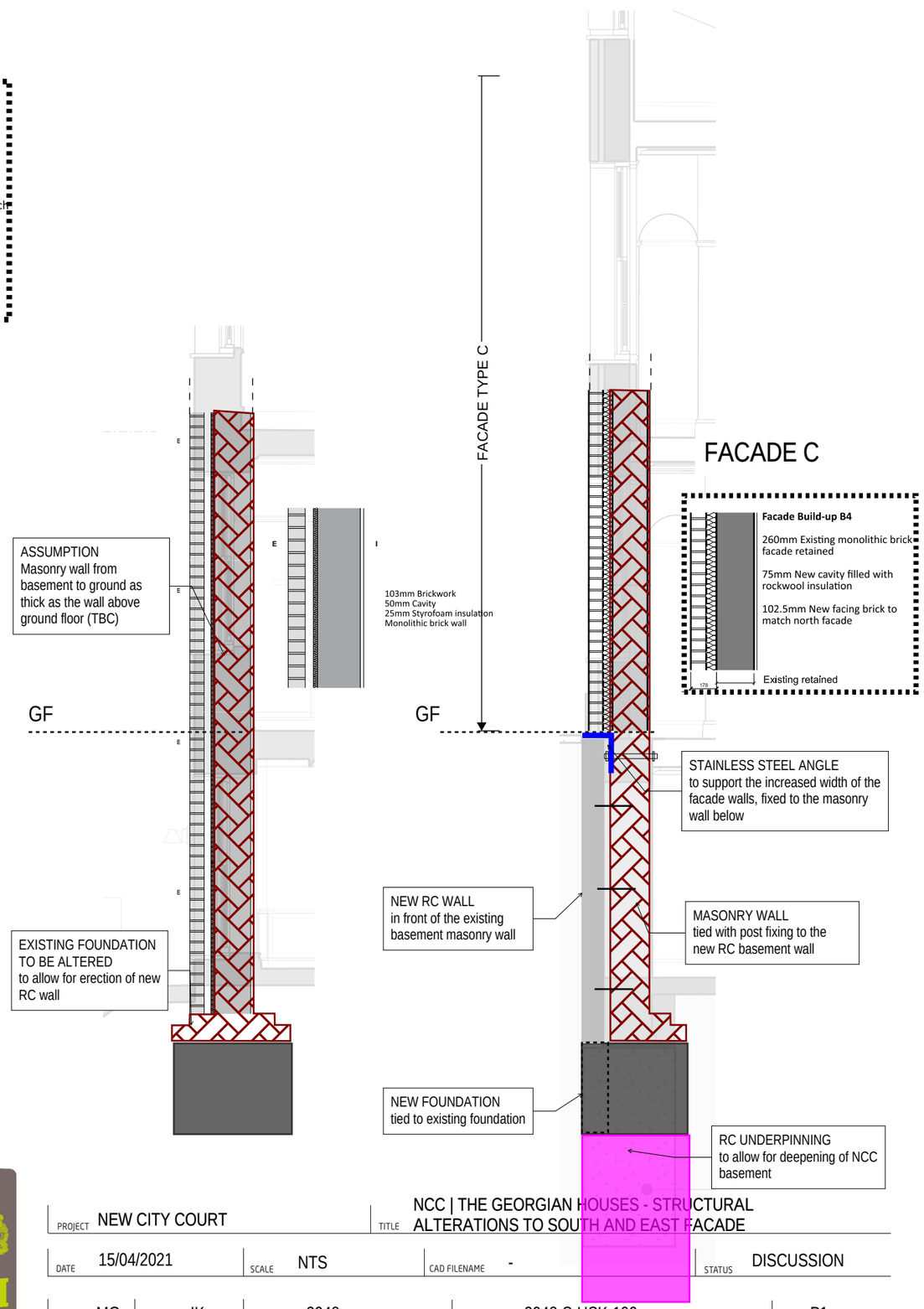
PROPOSED



FACADE C (N.14)

EXISTING

PROPOSED



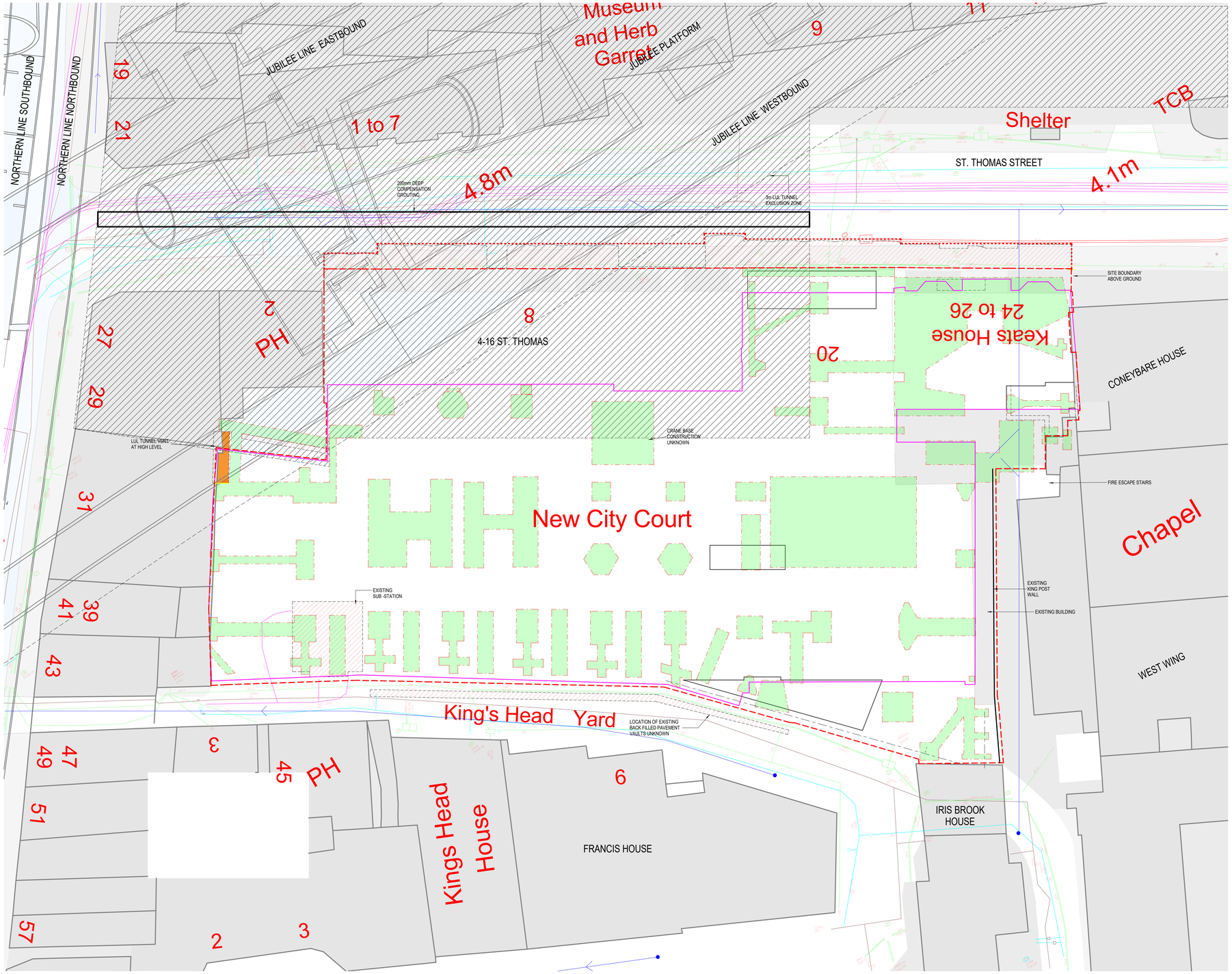
REV	DATE	DESCRIPTION	BY	CHECKED
P1	15.04.2021	DISCUSSION	MG	IK

akt II

PROJECT	NEW CITY COURT	TITLE	NCC | THE GEORGIAN HOUSES - STRUCTURAL ALTERATIONS TO SOUTH AND EAST FACADE
DATE	15/04/2021	SCALE	NTS
CAD FILENAME	-	STATUS	DISCUSSION
DRAWN	MG	CHECKED	IK
PROJECT No.	3948	DRAWING No.	3948-S-HSK-199
REV	P1		

Appendix 3

Site Constraints



SITE CONSTRAINS PLAN
1 : 150

0 2 4 6 8 10 m
SCALE 1:200

INFORMATION TRACKER			
SITE & SURROUNDING AREA			
FILE NAME :-	35722T-01A PROV4 (FULL) LU		
ORIGIN :-	PCA SURVEY	ISSUED DATE :-	12.10.2016
TITLE :-	TOPO SURVEY		
EXISTING STRUCTURE			
FILE NAME :-	VARIOUS		
ORIGIN :-	THE HALPERN PARTNERSHIP	ISSUED DATE :-	23.05.2016
TITLE :-	VARIOUS		
UTILITIES & SERVICES			
FILE NAME :-	35722T-01A (FULL) OS		
ORIGIN :-	AHMM	ISSUED DATE :-	21.07.2017
TITLE :-	35722T-01A (FULL) OS		
LUL LONDON BRIDGE STATION			
FILE NAME :-	14032_LULSTATIONBOX_LU AND OS_PLANS_1st FLOOR LEVEL		
ORIGIN :-	AHMM	ISSUED DATE :-	28.17.2017
TITLE :-	14032_LULSTATIONBOX_LU AND OS_PLANS_1st FLOOR LEVEL		
FILE NAME :-	14032_LULSTATIONBOX_LU AND OS_PLANS_GROUND LEVEL		
ORIGIN :-	AHMM	ISSUED DATE :-	28.17.2017
TITLE :-	14032_LULSTATIONBOX_LU AND OS_PLANS_GROUND LEVEL		
FILE NAME :-	14032_LULSTATIONBOX_LU AND OS_PLANS_TICKET HALL LEVEL		
ORIGIN :-	AHMM	ISSUED DATE :-	28.17.2017
TITLE :-	14032_LULSTATIONBOX_LU AND OS_PLANS_TICKET HALL LEVEL		
LUL JUBILEE LINE TUNNEL			
FILE NAME :-	35722T-01A (FULL) OS		
ORIGIN :-	AHMM	ISSUED DATE :-	21.07.2017
TITLE :-	35722T-01A (FULL) OS		
LUL NORTHERN LINE TUNNEL			
FILE NAME :-	LONDON BRIDGE LUL STATION		
ORIGIN :-	LUL	ISSUED DATE :-	22.07.2017
TITLE :-	LONDON BRIDGE LUL STATION		

EXISTING BUILDING PLANS ARE TAKEN FROM 'PLOWMAN CRAVEN' SURVEY DRAWINGS ISSUED 24.07.2017.

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS & ENGINEERS DRAWINGS & THE SPECIFICATIONS.
2. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.
3. NORTHERN LINE RUNNING TUNNEL PLAN POSITION TAKEN FROM XXX DRAWING DATED XXX. DIAMETER AND DEPTH EXTRAPOLATED FROM ARCHIVE DRAWING WESTON WILLIAMSON 104/A/02/40/207 REV C DATED 1995.
4. LOCATION OF COMPENSATION GROUTING TAKEN FROM CIRIA BUILDING RESPONSE TO TUNNELLING VOLUME 2 DATED 2001, FIGURE 32.4 & DEPTH FROM FIGURE 32.3 5.
5. SITE BOUNDARY POSITION TAKEN FROM XXX-XXX. SURVEY INFORMATION TAKEN FROM XXX-XXX.

- REFER TO ARCHIVE DRAWING FOR INFO ABOUT THE EXISTING BUILDING IN THE DEMISE
- REFER TO SKETCHES 3948-SK-114 TITLE BUILDING IN INTERFACES FOR INTERFACES WITH OF ADJACENT BUILDING HIGHWAYS AND RED ROUTES.
- 3948-SK-196 TITLE NEIGHBOURING BUILDINGS FOR FURTHER INFORMATION ABOUT ADJACENT BUILDING

EXISTING STRUCTURE NOTE

EXISTING STRUCTURE ARE SHOWN INDICATIVELY AND ARE DRAWN ON THE BASIS OF EXISTING AND AVAILABLE RECORD INFORMATION, THE CONTRACTOR REMAINS RESPONSIBLE FOR CONFIRMING ALL THE DETAILS AND EXTENT OF THE EXISTING STRUCTURE AS REQUIRED TO CONSTRUCT THE PROPOSED BUILDING OR WHERE INDICATED TO ALLOW DESIGN OF THE PERMANENT WORKS TO BE COMPLETED IT SHOULD BE NOTED THAT SETTING OUT WHERE RELIANT ON THE CONFIRMED POSITION OR LEVEL OF THE EXISTING STRUCTURE MAY BE SUBJECT TO CHANGE REFER TO ARCHITECTS GRID DRAWINGS FOR FURTHER DETAILS.

LEGEND

- DENOTES SITE BOUNDARY BELOW GROUND FLOOR T.B.C.
- DENOTES SITE BOUNDARY ABOVE GROUND FLOOR T.B.C.
- VERIZON
- TELECOMMUNICATIONS
- THAMES WATER - SEWER
- THAMES WATER - ABANDONED SEWER
- THAMES WATER - MAIN WATER
- GAS MAIN
- UKPN (EXTRA HIGH VOLTAGE CABLES)
- 3m EXCLUSION ZONE
- LUL TUNNEL BELOW
- EXISTING VAULTS UNDER PAVEMENT
- DENOTES LARGE VENT
- EXISTING CONCRETE BASE
- DENOTES INDICATIVE EXTENTS OF TAMs (COMPENSATION GROUTING)
- EXISTING PILES

REV	DATE	DESCRIPTION	BY	CHECKED
P1	15.04.21	ISSUED FOR PLANNING	RR	NC

Consulting Structural and Civil Engineers
White Collar Factory,
1 Old Street Yard,
LONDON
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F +44 (0)20 7250 5555
E info@akt-uk.com
W www.akt-uk.com

GREAT PORTLAND ESTATES PLC
CLIENT

NEW CITY COURT
PROJECT

SITE CONSTRAINTS PLAN
TITLE

DM	APR 2021	NC	A0
DRAWN BY	DRAWN DATE	CHECKED BY	SHEET SIZE
3948	PLANNING		
PROJECT No.	PROJECT STAGE	SUITABILITY CODE	SCALE

PLANNING

3948 AKT XX XX DR S 00400 P1
PROJECT NO. ORIGINATOR ZONE LEVEL TYPE ROLE NUMBER No. REVISION

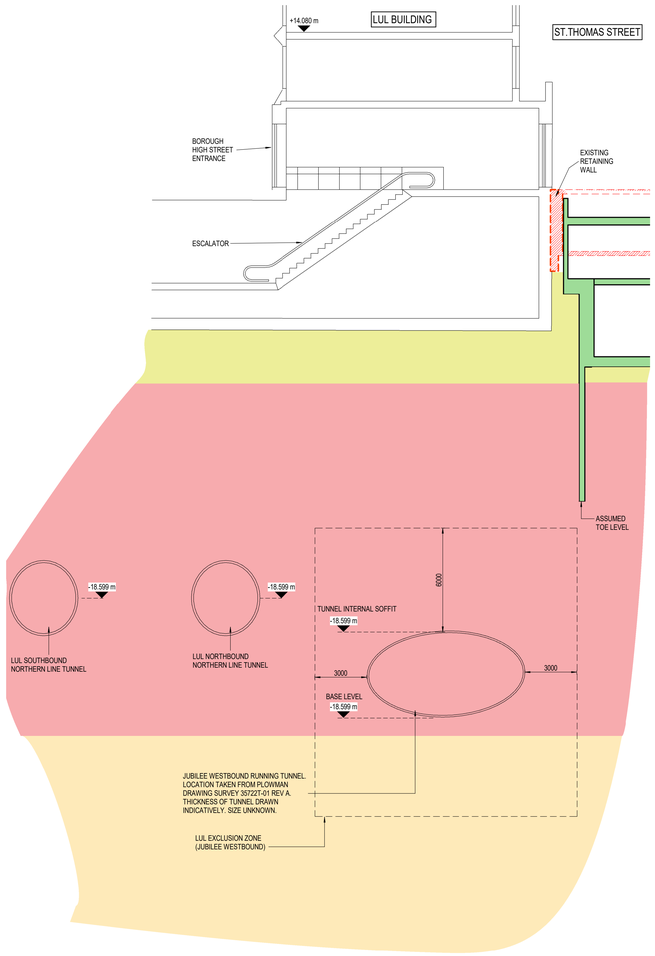
NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS & ENGINEERS DRAWINGS & THE SPECIFICATIONS.
2. NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.
3. NORTHERN LINE RUNNING TUNNEL PLAN POSITION TAKEN FROM XXX DRAWING DATED XXX. DIAMETER AND DEPTH EXTRAPOLATED FROM ARCHIVE DRAWING WESTON WILLIAMSON 104/A/02/40/207 REV C DATED 1995.
4. LOCATION OF COMPENSATION GROUTING TAKEN FROM CIRIA BUILDING RESPONSE TO TUNNELLING VOLUME 2 DATED 2001, FIGURE 32.4 & DEPTH FROM FIGURE 32.3 S.
5. SITE BOUNDARY POSITION TAKEN FROM XXX-XXX. SURVEY INFORMATION TAKEN FROM XXX-XXX.

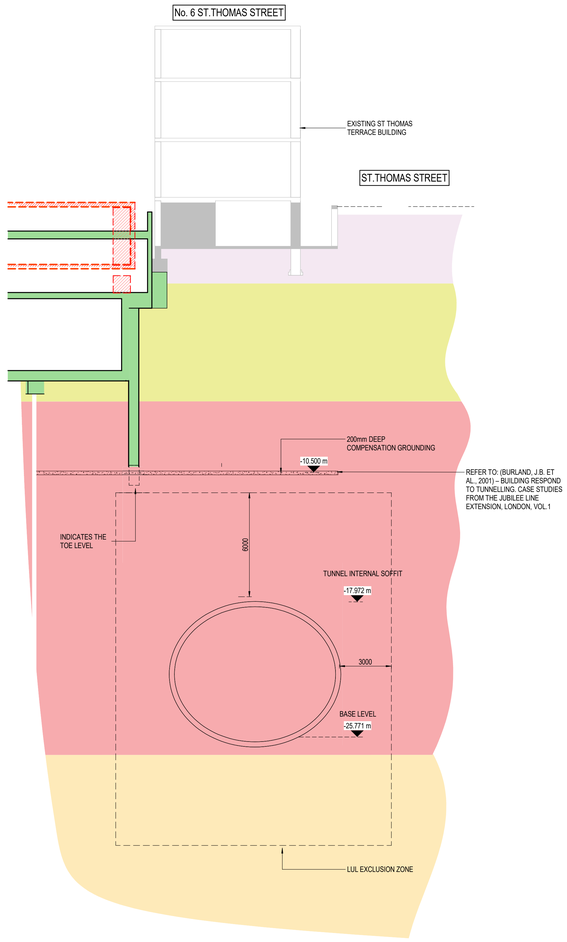
LEGEND

- MADE GROUND
- TERRACE GRAVEL
- CLAY
- LAMBETH GROUP
- DENOTES EXISTING STRUCTURE

SOIL PROFILE INDICATIVE BASED ON DRAWING 3948-AKT-XX-XX-DR-S-00480 TO BE CONFIRMED BY GEOTECHNICAL INVESTIGATION.



SECTION A-A
1 : 125



SECTION B-B
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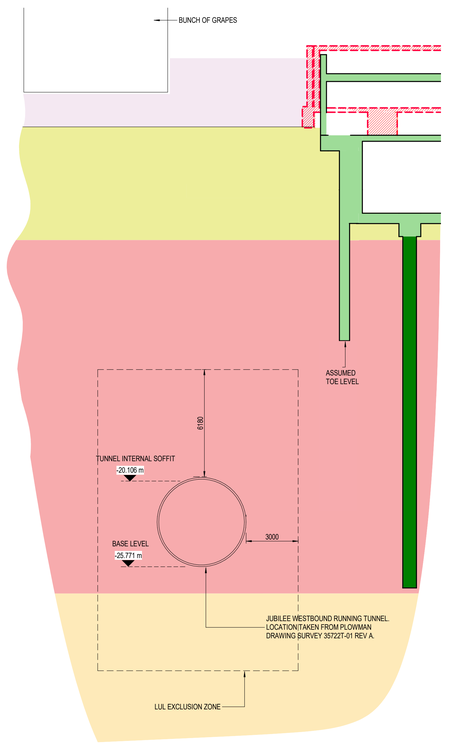
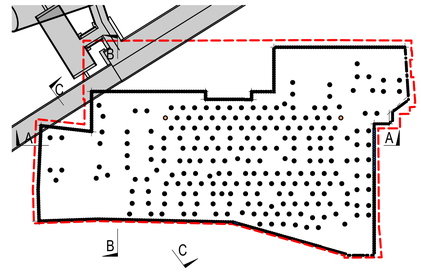


SECTION C-C
1 : 125



KEY PLAN
1 : 500

0 1000 2000 3000 4000 5000 mm
SCALE 1:100

REV	DATE	DESCRIPTION	BY	CHECKED
P1	15.04.21	ISSUED FOR PLANNING	SW	NC

Consulting Structural and Civil Engineers
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E info@akt-uk.com
W www.akt-uk.com

CLIENT: GREAT PORTLAND ESTATES PLC

PROJECT: NEW CITY COURT

TITLE: SITE CONSTRAINTS SECTIONS

SB	APR 2021	NC	A0
DRAWN BY	DRAWN DATE	CHECKED BY	SHEET SIZE
3948	PLANNING		
PROJECT No.	PROJECT STAGE	SUITABILITY CODE	SCALE

PLANNING

3948	AKT	XX	XX	DR	S	00410	P1
PROJECT ID	ORIGINATOR	ZONE	LEVEL	TYPE	ROLE	DRAWING No.	REVISION