Document Number 23056BIA-2

BASEMENT IMPACT ASSESSMENT

STRUCTURAL ENGINEERS

RM DMS

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London
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RM DMS
Design and Management Studios
Where innovation meets commercially minded structural engineering design
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SITE ADDRESS

BAP CULTURAL CENTRE 25 OLD GLOUCESTER STREET, WC1N

CLIENT

NILKANTH ESTATES

Pramukh Swami Road Neasden, London NW10 8HW

PROJECT NO:23056

31 August 2023

Extension of basement to accommodate additional cultural centre accommodation (use class F1 and F2), replacement of second floor at rear to accommodate offices (class E1) and conversion of front part of building at second and third floor levels to create 2 x studio dwellings.

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1.0 Project Description

Extension of basement to accommodate additional cultural centre accommodation (use class F1 and F2), replacement of second floor at rear to accommodate offices (class E1) and conversion of front part of building at second and third floor levels to create 2 x studio dwellings.

1.1 It is proposed to redevelop the existing building at 25 Old Gloucester Street. The site to be redeveloped is mainly occupied by a Grade II listed school, built in 1877-78. A single storey extension has been constructed to the rear of the building. The building is generally three-storeys in height, with a five-storey section at the front of the site. There is an existing single level basement below the main building. The proposal will involve the demolition of the existing extension and 2 storey commercial use building plus a single storey basement, all within the proposed building footprint. As the existing extension does not have a basement, the proposal will involve the excavation of a new single storey basement.

1.2 The site is/was last occupied as a community centre.

2.0 Brief

2.1 Amendments to the proposed redevelopment of the above-mentioned property has necessitated an additional planning application thus a reworking of the Basement Impact Assessment is required.

2.2 RM-DMS have been appointed as structural engineers on the redesign and thus have been instructed to update the Basement Impact Assessment prepared by Consulting Civil and Structural Engineers for the previous application. This document has used some of the external reports used within the original assessment.

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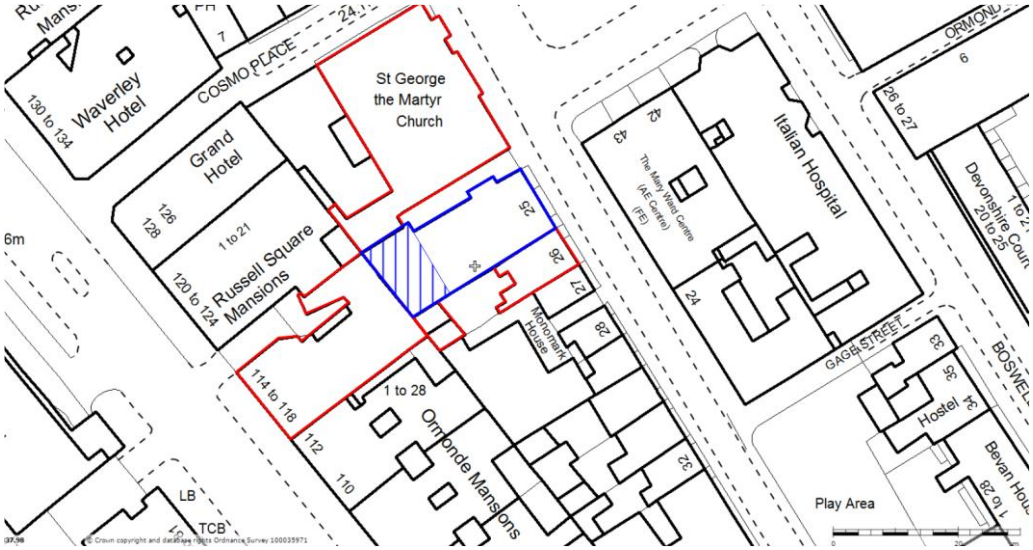
3.0 Property Description

3.1 The property is situated on the South Western side of Old Gloucester Street, its orientation being running perpendicular to the road toward the South West.



3.1.1 Site Location Plan

3.2 The property is a period building with 5 stories to the front of the property and 3 to the rear. The construction of the existing building is different between these two sections; to the front of the building load-bearing masonry walls are surmounted by a slate clad timber cut roof, the floors in this area are of timber construction.

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north east elevation

3.2.1 Front Elevation

3.3 To the rear the building the construction is of a steel framed structure with regular columns supporting steel floor beams encased in concrete, between the beams are timber joists covered with a screed. Again, the wall is formed using masonry and a flat roof of similar construction to the floors:

3.3.1 Internal View of Rear Section.

3.4 The existing basement extends over the majority of the footprint of the site with variable depth of approximately 3 to 3.25m from Ground Floor Level which is slightly raised from street level.

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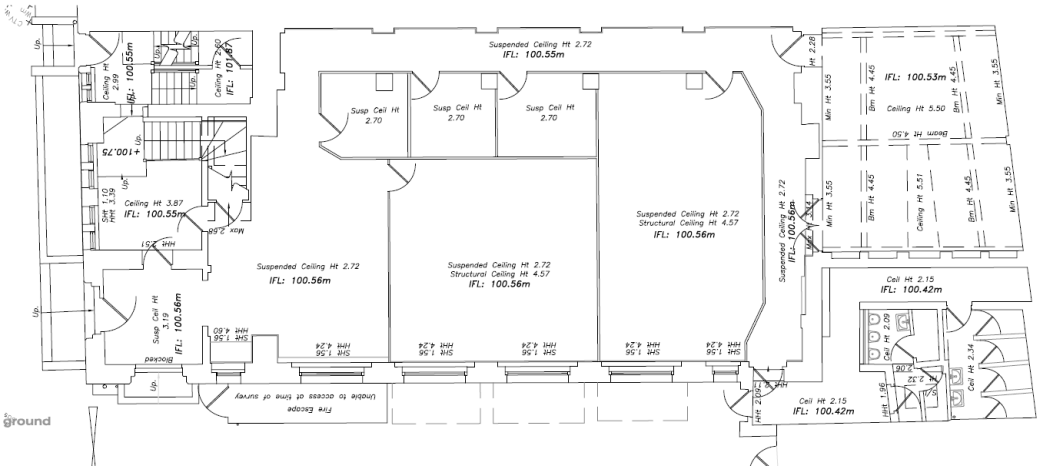
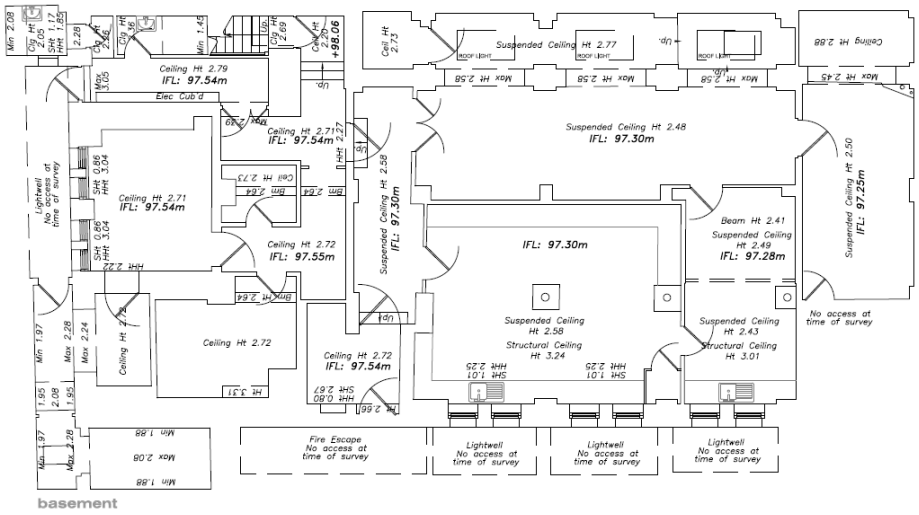


3.4.1 Existing Ground Floor Plan



3.4.2 Existing Basement Floor Plan.

3.5 Historic evidence has been sourced demonstrating the front section of the building has been as late as 1863 and the rear section 1893.

4.0 Site Geology Contamination and Ground Water

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4.1 A soil investigation report has been produced by GEA Ltd a copy of which is appended to this report, the report was produced following a desk top study, 3 trial pits and 2 boreholes the summery of their findings are as follows:

Description	Constituents	Depth (m)	Thickness (m)
Made Ground	brown silty clayey sand with gravel, brick, ash and concrete fragments.	Ground Level to 3.00	3.00
Lynch Hill Gravel	dense orange-brown slightly silty slightly clayey sandy fine to coarse sub-angular to sub-rounded gravel.	3.00 to 6.50	3.50
London Clay	initially stiff fissured brown silty clay, underlain by stiff fissured bluish grey slightly silty slightly sandy clay.	6.50 to 18.00	11.50+

Stratum	Bulk Density (kg/m^3)	Effective Cohesion ($c' - kN/m^2$)	Effective Friction Angle (Φ' – degrees)
Made Ground	1700	Zero	20
Lynch Hill Gravel	1900	Zero	32
London Clay	1950	Zero	23

4.2 Most contaminates within the samples were found to be within normal guideline limits, during testing however 4 samples were found to contain elevated concentrations of lead, these were identified within made ground and were not found in soluble form and thus are unlikely to pose a risk to groundwater or adjacent sites.

4.3 According to the trial hole logs contained within the Geological report water entered the excavation at a depth 1.8m below the existing basement level. It is unlikely the ground water levels would change to such a degree as for ground water to be experienced during the formation of the new basement areas although monitoring will continue.

5.0 Hydrology and Hydrogeology

5.1 The site hydrogeology is outlined in detail within the GEA report and can be summarised as follows:

5.2 The Environment Agency Maps shows the site is outside of the Environment Agencies Source Protection

5.3 Zone (SPZ). 2. The permeability of the Lynch Hill Gravel is expected to range between about 1 x 10-6 m/s and 1 x 10-4 m/s, whereas in contrast, any groundwater flow within the London Clay will be at a very slow rate, due to its negligible permeability. Published data for the permeability of the London Clay indicates the horizontal permeability to generally range between 1 x 10-10 m/s and 1 x 10-8 m/s, with an even lower vertical

5.4 permeability. The London Clay cannot therefore support groundwater flow and as such does not support

5.5 a "water table" or continuous piezometric surface.

5.6 3. Surface water features such as canals and ponds are not present in the locality.

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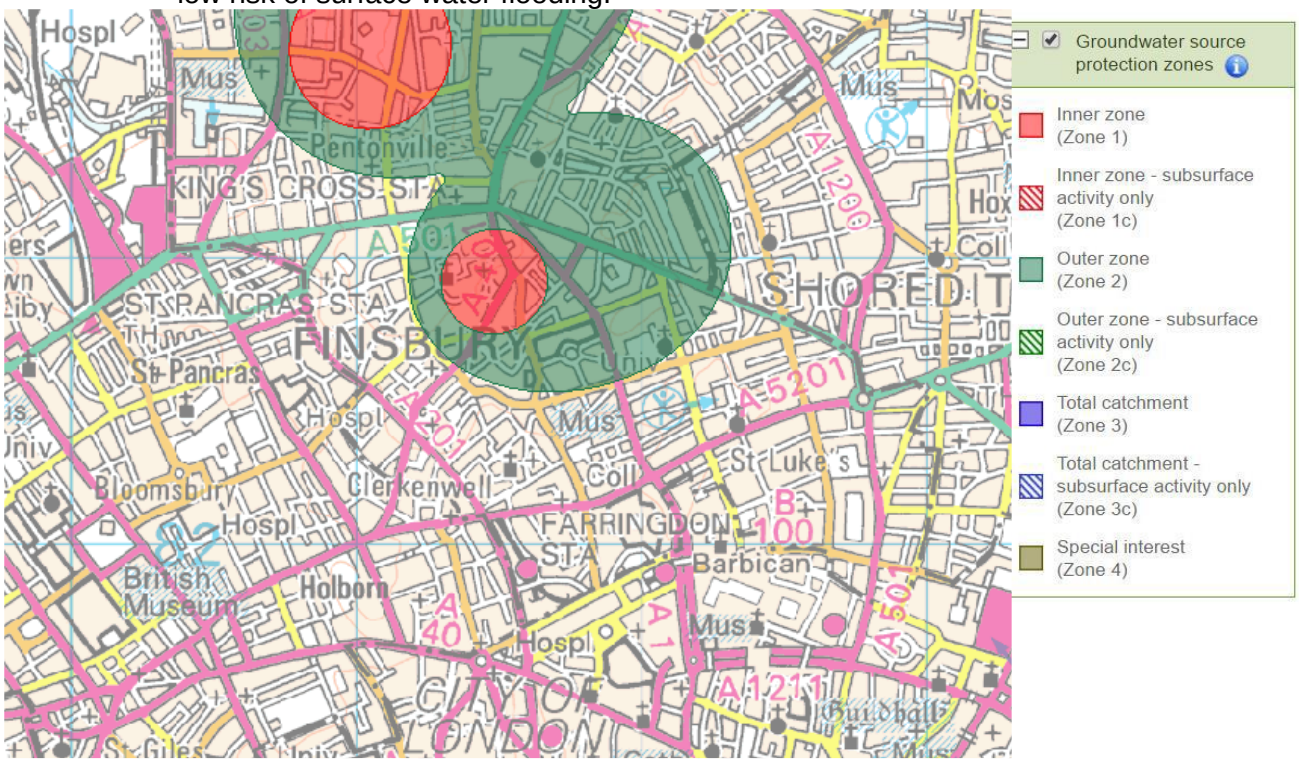
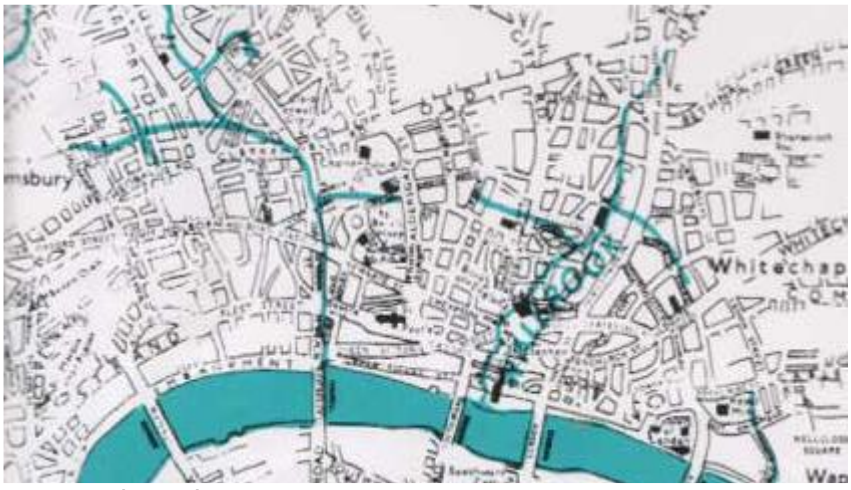
5.7 The route of river fleet has which has been shown to have historically run along Euston Road in an easterly direction, approximately 200 m to the north of the site has been assessed, the report notes "The direction of groundwater flow beneath the site is likely to be in a south-easterly direction, downslope towards the river Thames. Any surface water runoff that infiltrates the shallow made ground and Lynch Hill Gravel above the London Clay is likely to flow southwards along the surface of the London Clay towards the River Thames which is located roughly 1.2 km to the south."

5.8 The site is not located in an area at risk of flooding from rivers or sea or surface water, as defined by the EA, although a section of Old Gloucester Street is shown to be at low risk of surface water flooding.



5.8.1 SPZ Zones within Camden



5.8.2 River Fleet

6.0 Proposed Development

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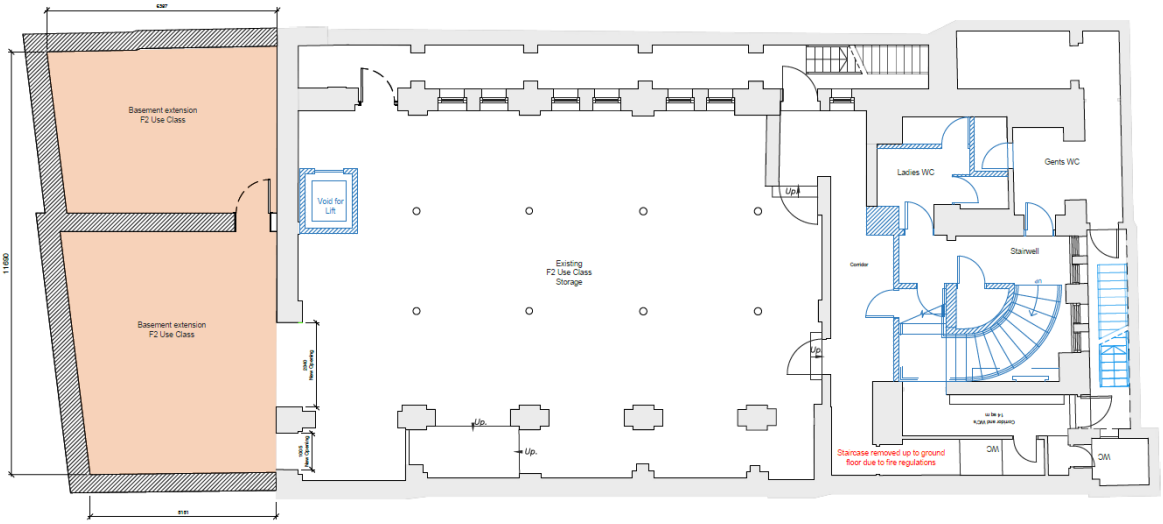
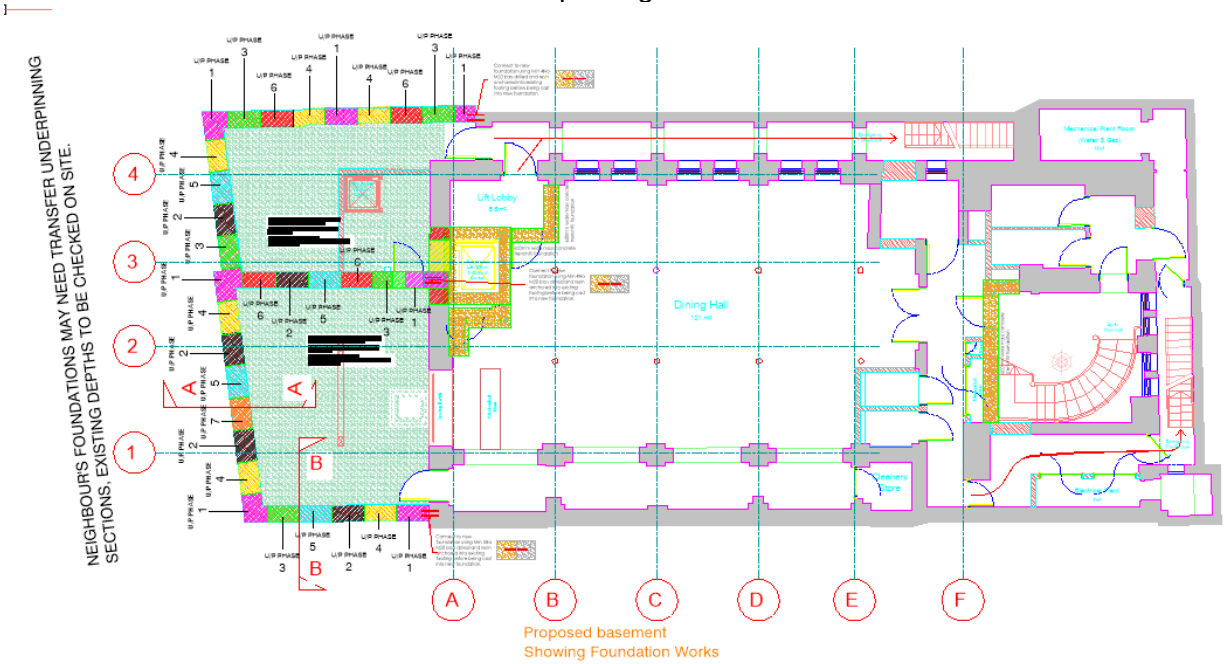
6.1 The proposed development as well as various modifications to the existing superstructure involves the extension to the existing Basement area:



Basement Floor Plan

6.1.1 Proposed Basement plan highlighting extension

6.2 The new basement area will be formed using a phased underpinning process of the Party wall Lines the extract from the proposed design below offers a proposal of the order and nature of the underpinning:



Proposed basement
Showing Foundation Works

6.2.1 Proposed Underpinning Phasing Plan.

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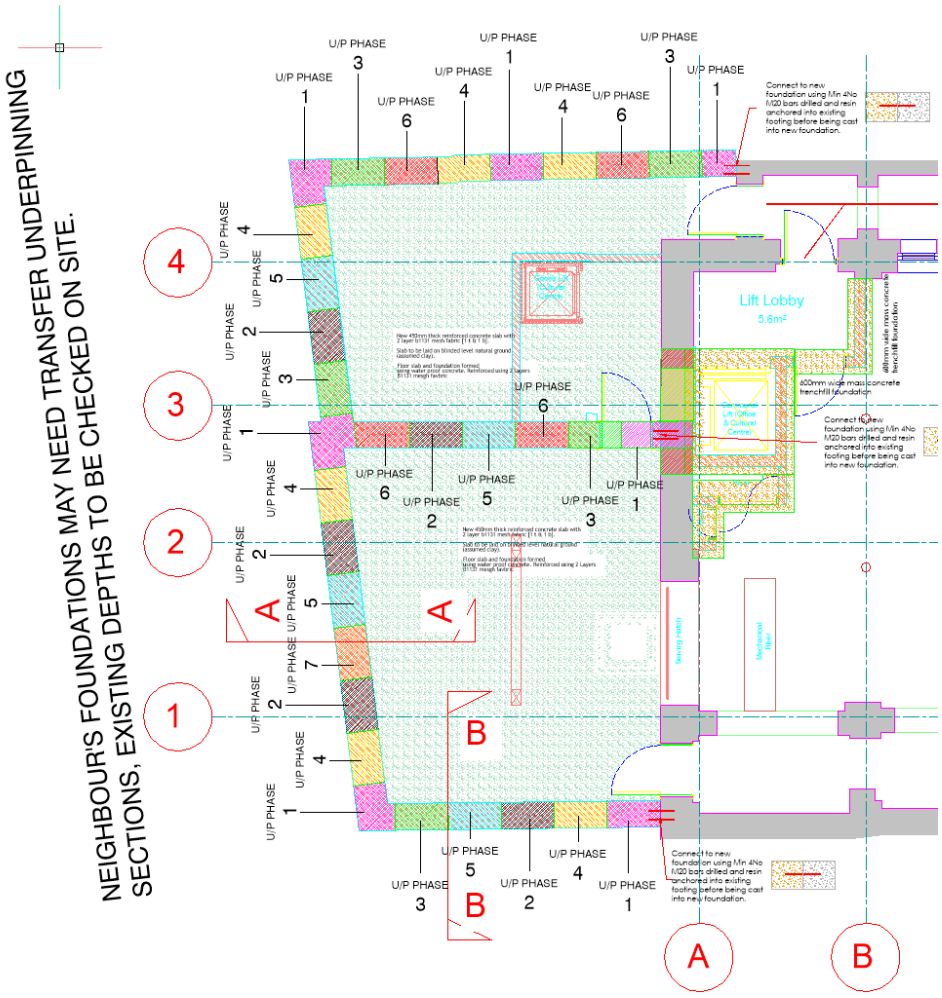
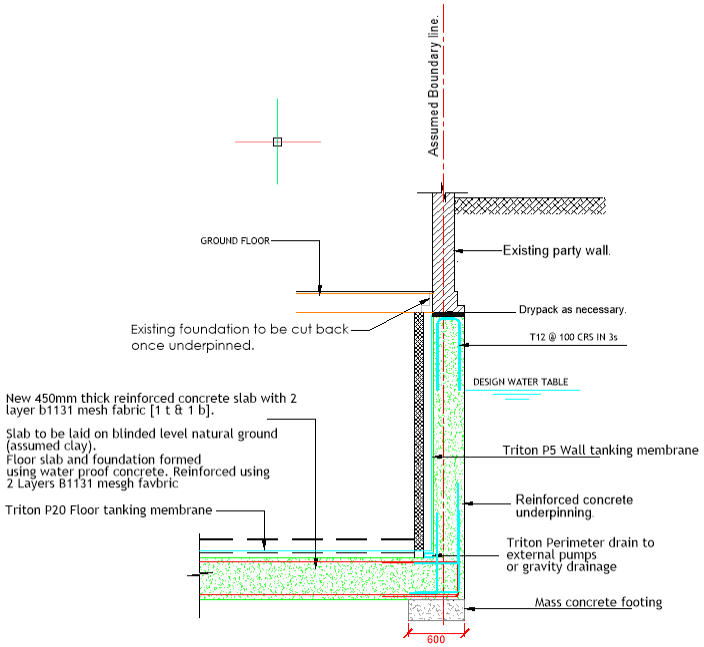


6.2.2 Enlarged Phasing plan.



6.2.3 Proposed Section through Underpinning Section

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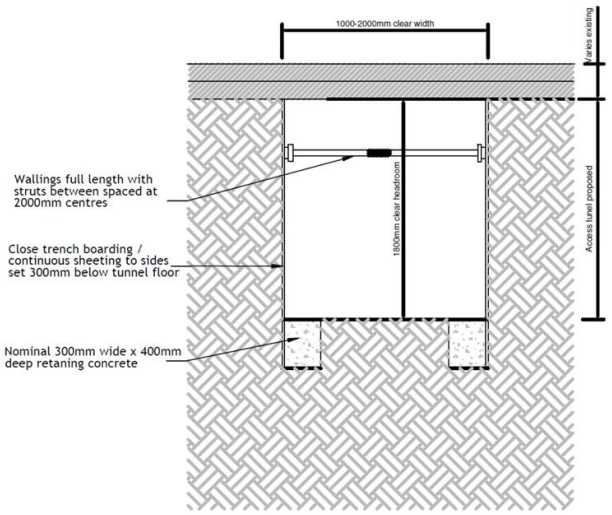
6.3 The methodology for the underpinning operation will be follows as per the below (this operation may be modified by the Contractor to suit site conditions but be undertaken in such a manner as to mitigate ground movement and fabric damage to the building and those buildings adjacent the excavation):

6.3.1 Vertical excavation adjacent the existing wall will extend down to formation level; it is assumed from the trial hole results that the ground condition should be clay and stable however in the event of the ground being found to be unstable temporary works propping may be necessary:

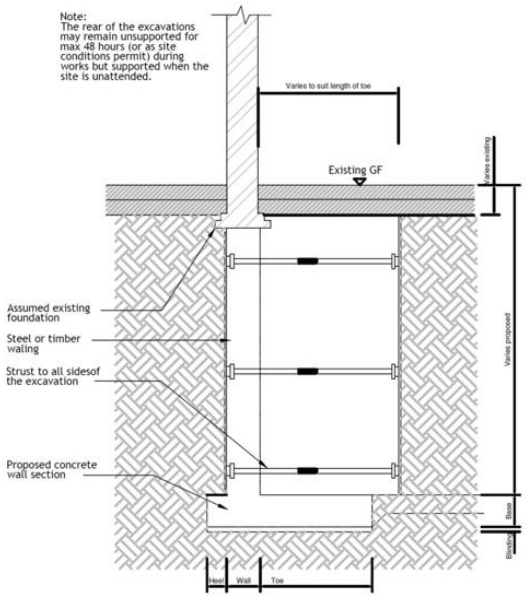


SECTION THROUGH UNDERPINNING EXCAVATION MAIN AND BRANCH ACCESS TUNNEL

Sequence
1. Excavate main access tunnel beneath ground floor
2. Install trench shoring and struts as work progresses

STAGE 1

6.3.2 The excavation will then extend out under the wall to be underpinned, again propping may be required to ensure the stability the Party-wall.



SECTION UNDERPINNING - EXCAVATION

Sequence
1. Excavate away from tunnel
2. Install trench shoring as work progresses
3. Reduce excavation down to level of wall base
4. Install trench shoring

STAGE 1

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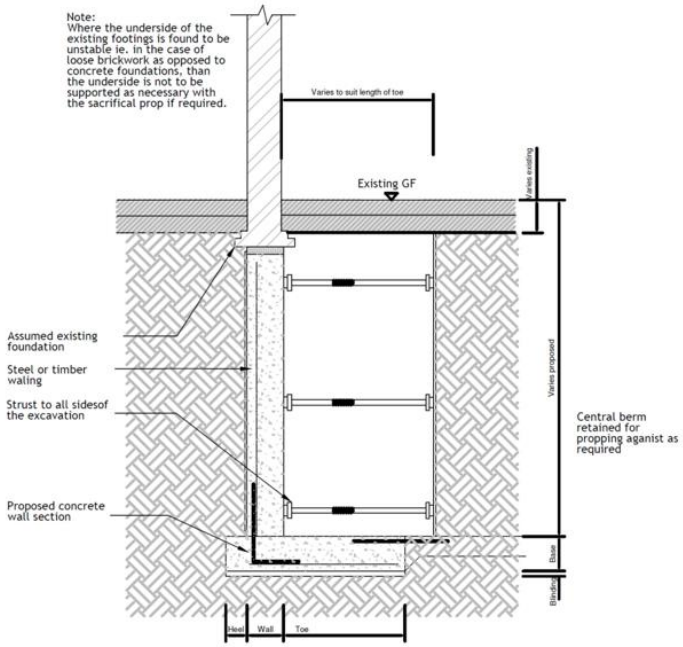
6.3.3 A Toe section of the base of the retaining wall will be poured along with the mass concrete footing will be poured initially with starter bars for the wall section which will follow.



SECTION UNDERPINNING - WALL CONSTRUCTED

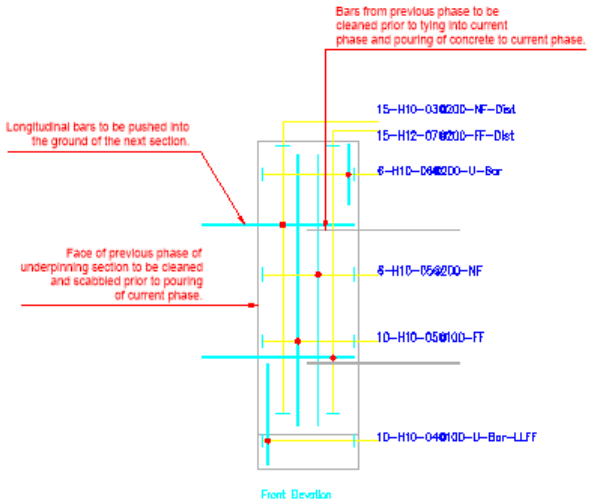
Sequence

1. Concrete base and wall
2. Maintain trench / shoring as work progresses

STAGE 2

6.3.4 Bars will be installed to the side of each pin for connection and tying between the individual pins.

Once the full pin is completed and cured drypak will be installed to ensure the continuity of the support to the existing wall.



ELEVATION ON TYPICAL UNDERPINNING SECTION SHOWINGCONNECTIVITY BETWEEN PINS.

PERMINENT CONDITION UNDERPINNING

SCALE 1:50

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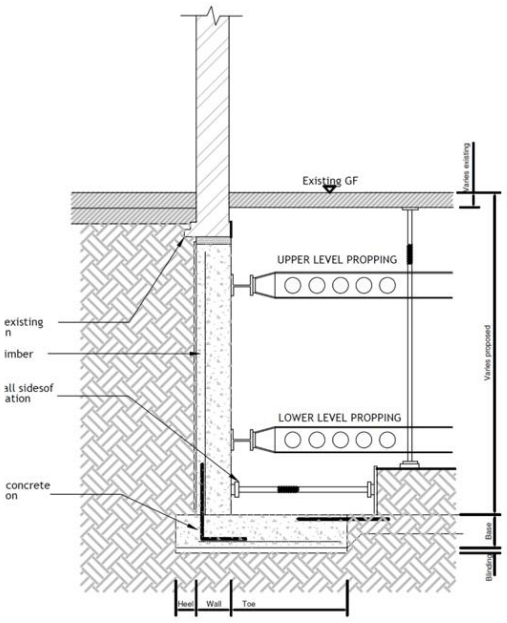
6.4 Once the section is poured propping may be employed to ensure the lateral stability of the wall until the whole structure is complete and all lateral forces are restrained in the permanent condition.



SECTION UNDERPINNING - TEMPORARY PROPPING
Sequence
1. Reduce central area / bern down to allow for upper level propping
2. Maintain vertical propping to existing floor as necessary
3. Install waling and full width props

STAGE 4

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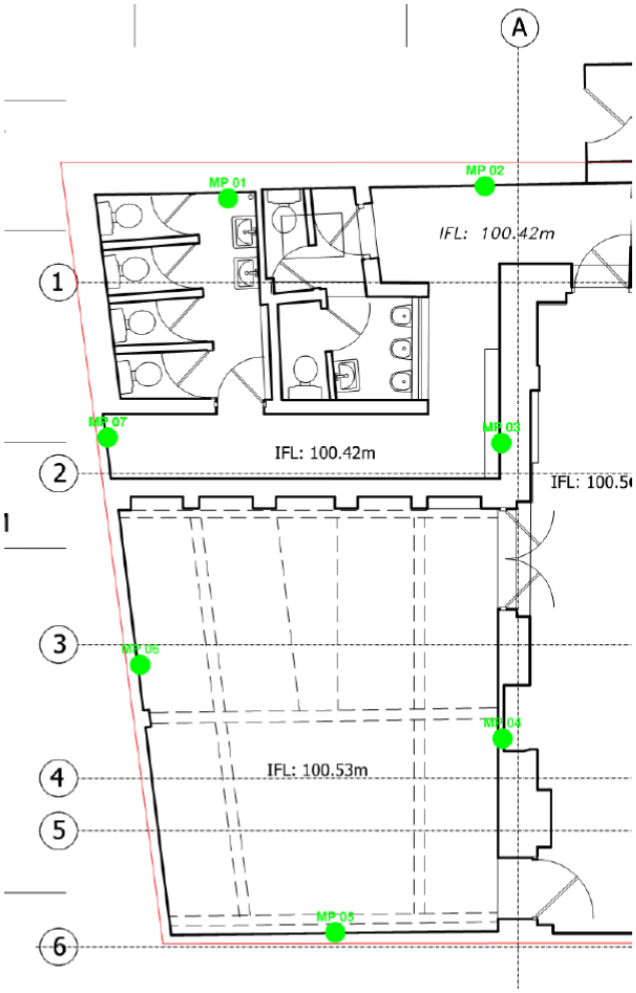
7.0 Ground Movement

7.1 Some mild ground movement may be experienced during excavation and the installation of the underpinning, if the mitigating measures outlined in the method statement above are employed previous analysis has demonstrated that the movement will be within category 1 (very Slight 0 to 1mm) on the Burland Scale.

7.2 Prior to works being undertaken the stability and condition of all surrounding structures will be undertaken, any necessary propping and repairs will be negotiated with the neighbour's and undertaken to ensure the stability of these structure as well as the well-being of their occupants.

7.3 As a precaution and as a method of ensuring this during construction monitoring is proposed, trigger action limits will be employed to force remedial action prior to damage occurring. An example of possible locations of such monitors are demonstrated below:



Proposed monitoring locations

7.4 Repairs to the Party-wall will be undertaken as necessary on completion of the works.

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8.0 CONCLUSION

8.1 The proposed works are able to be undertaken to extend the existing Basement without any adverse determent to the existing structure nor the surrounding properties.

8.2 Ground water is unlikely to be experienced during construction and contamination of the neighbour's property nor the water course is considered likely.