STRUCTURAL ENGINEER REPORT

This report is issued for the property as below:

5A PARKHILL ROAD
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LONDON

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Job title	**5A PARKHILL ROAD – LONDON NW3 2YH**			Job number	
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Document title	STRUCTURAL ENGINEER REPORT			File reference	
Client	Mr Stefan Vogel				
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			Prepared by	Checked by	Approved by
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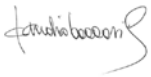
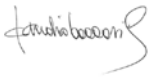
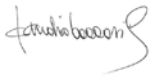
		Signature			

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This repost is baaed on the condition of the property at the time of our inspection and no liability can be accepted for any deterioration in its conditions after this date.

Contents

1. PRELIMINARY

1.1 Instruction

Rebus Engineering Services was appointed by Mr Stefan Vogel, to prepare a Building Structural Report of the property at 5A Parkhill Road, London NW3; following the requirements of Camden Planning Office Unless specifically stated, this document does not include any structural calculation assessment of the existing building structure, neither any intrusive investigation was carried out as out of scope.

Fig. 1 – 3D model of property

1.2 Scope of Work

The Camden Council specifically requested a structural report as part of a documentation package needed to clarify how the proposed renovation works at the considered property could impact the neighbor's property.

The scope for this report was to describe the designed structure in accordance to the proposed architectural design.

2. PROPERTY DESCRIPTION

5a Parkhill Road is in the Camden area, in North West London as shown on the Google map below.

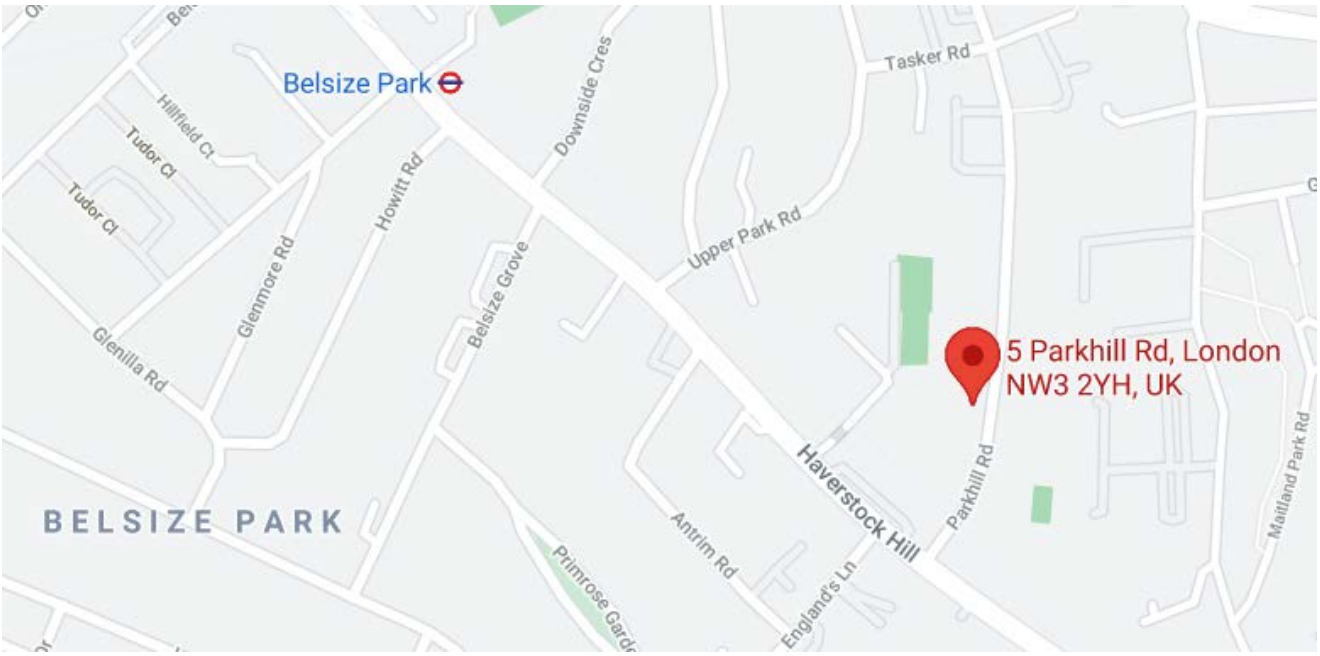

Fig. 2 – Map and Location (Google maps)

The building was erected around mid-19th Century and it consisted of a lower ground floor, a raised ground floor and 2 additional floors for a total of 4 floors. As part of the client's property, a garage was located adjacent to the main building, an annex was built as part of the same development.

The annex is only part on the lower and raised ground floor, as shown on the fig. 3 below.

The main load-bearing structure is a masonry structure with solid walls located primarily at the edge of the building with internal load-bearing walls built in brickwork at the lower ground level and in timber stud walls from the ground floor to the roof.

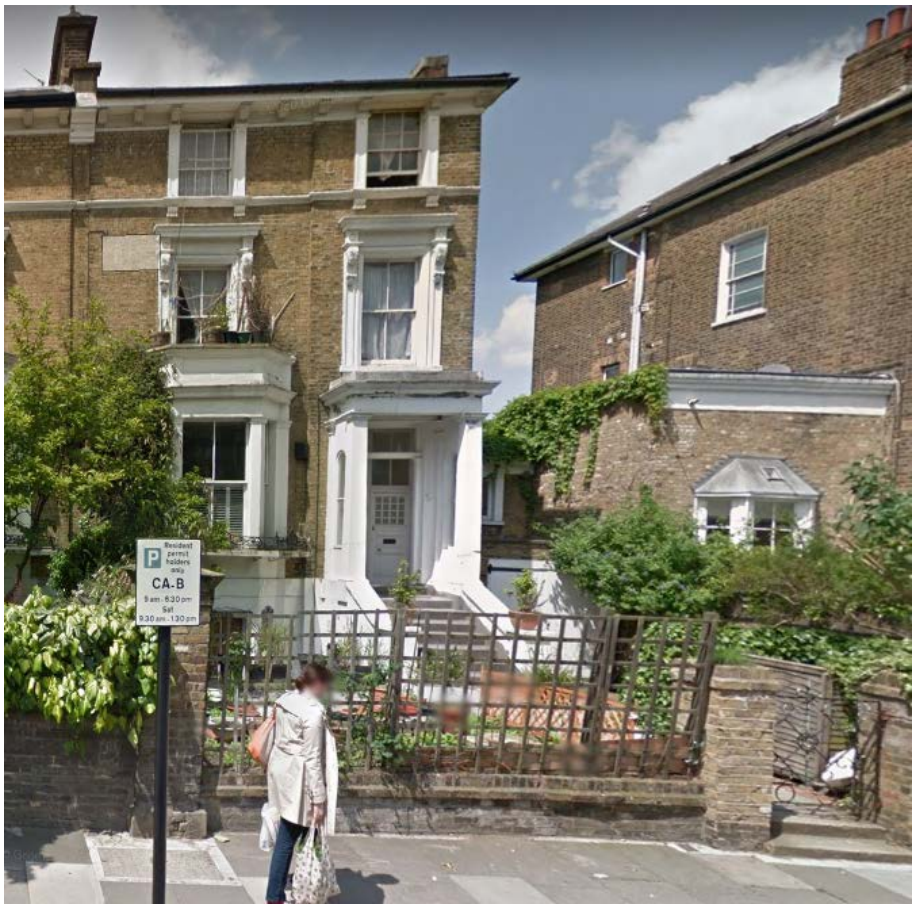

Fig. 3 – Main Building and Annex

This report will include a series of pictures and drawings details to show the proposed structural solution.

3. PROJECT DESCRIPTION

The Client asked for a complete redevelopment of the main house and the annex building including the creation of a music room in the lower ground floor of the annex and a proposed vertical extension to be erected on the top of the existing annex structure.

3.1 Existing Layout

As illustrated on the fig. 4, on the existing lower ground floor plan, the annex garage was completely detached from the main building. Also, the garage was connected to the street level with a ramp.

The back of the garage, there was a bedroom with an ensuite fully connected to the kitchen and the living area through a series a corridors and staircase.

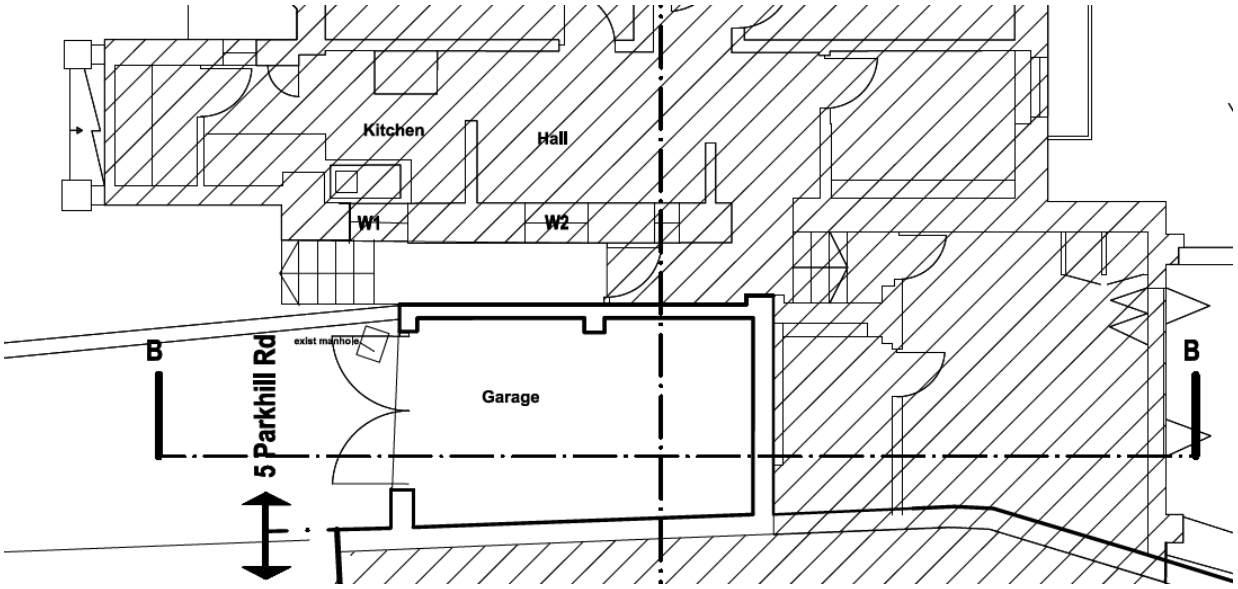

Fig. 4 – Lower Ground Floor Plan

At the ground floor level of the annex, there was a roof above the garage area and additional bedrooms, bathroom and storage rooms.

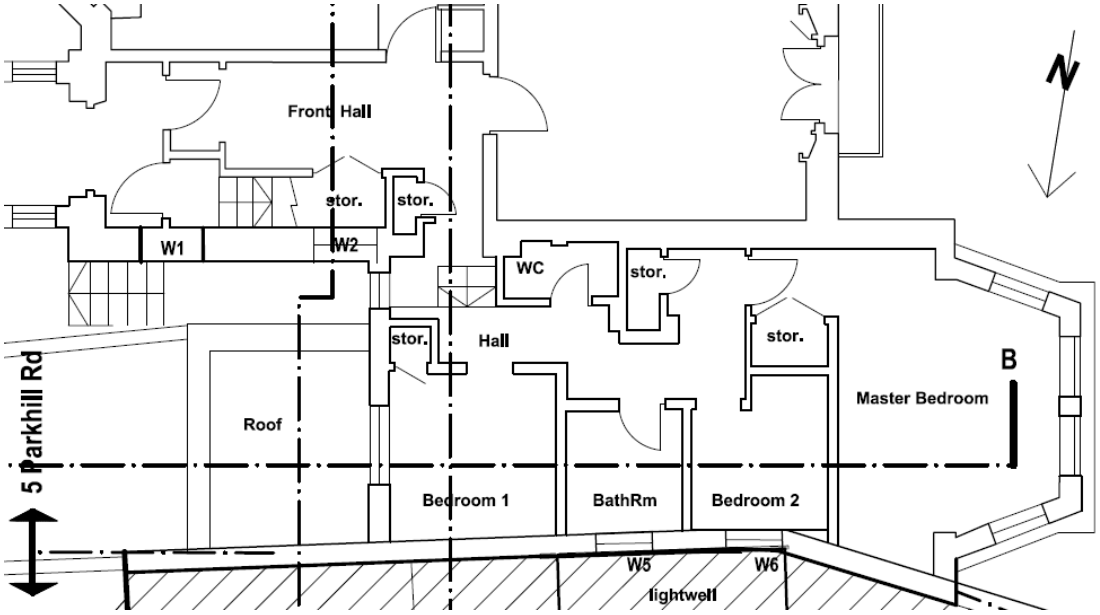

Fig. 5 – Existing Ground Floor Plan

The section B-B, on fig. 6 below, was taken through the annex building and showed clearly the structure of the building and rooms on each floor.

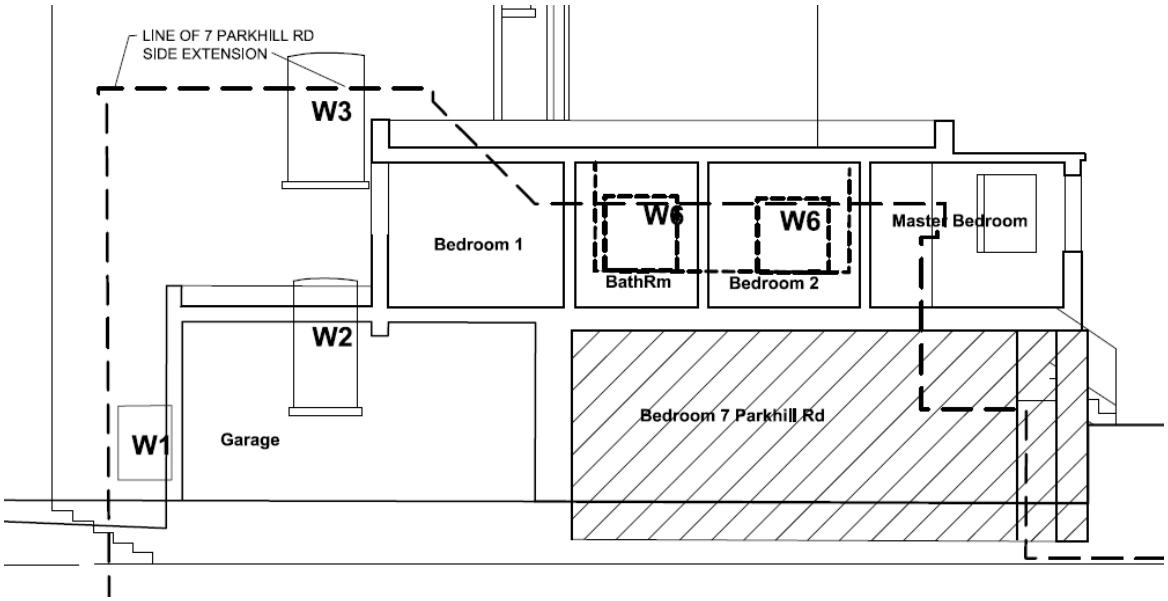

Fig.6 – Section B-B through the Annex

Proposed Layout

The new proposed layout changed completely the annex building creating the following areas:

- Music Room at the Lower Ground Floor
- Master Bedroom, Bathroom and children's bedroom at the Ground Floor

To achieve this new design, the level of the lower ground floor was lowered by about 1500mm exposing the party wall foundation on its entire depth, as indicated on fig. 7 below

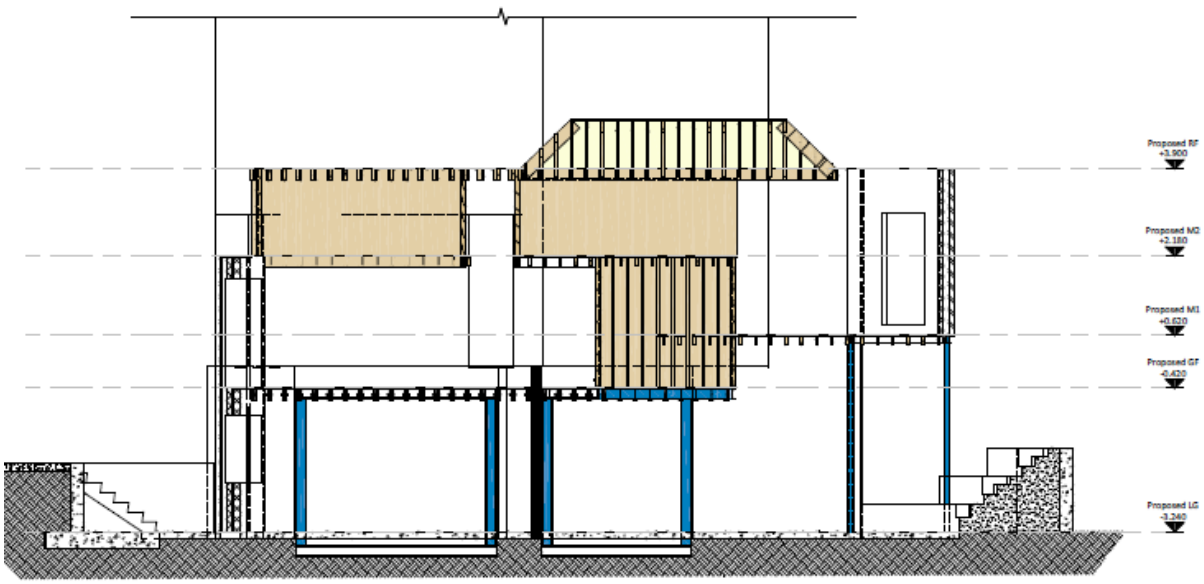

Fig. 7 – Proposed Section

During the party wall agreement, our initial proposal was to underpin the existing foundation but it was suggested to excavate up to the bottom of the existing trench foundation. This level became the construction level for the proposed ground bearing slab as shown on detail at fig. 8 below.

This solution was adopted to avoid the underpinning system underneath the existing trench foundation.

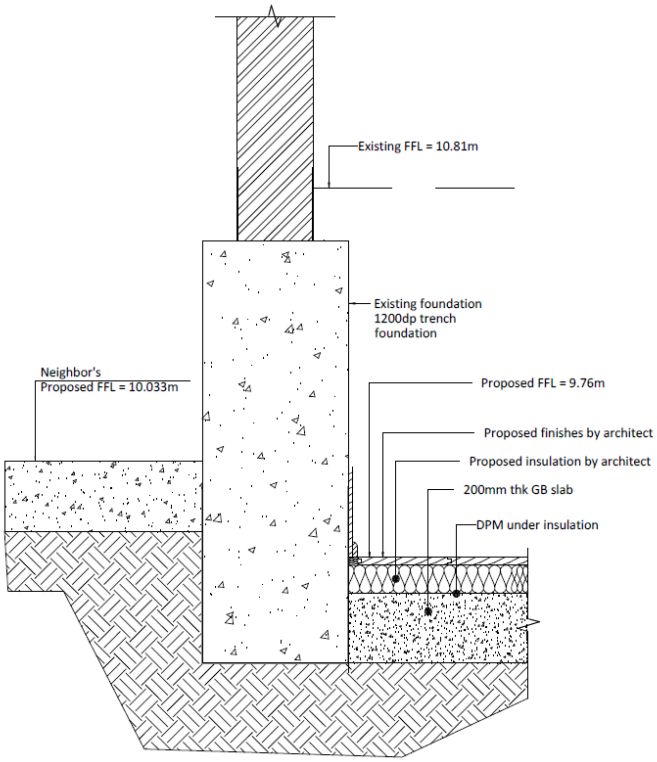

Fig. 8 – Party Wall Agreed Detail

On the proposed section on fig.8 above, it can be noticed that no underpinning was proposed underneath the existing foundation.

At the time this report is written, the neighbor's slab level was lower than the existing slab as a result of renovation works carried out by the adjacent property owner.

On fig. 9 below, the party wall location is clearly indicated and as it can be seen, the entire length of the party wall was included in the agreement signed by both parties.

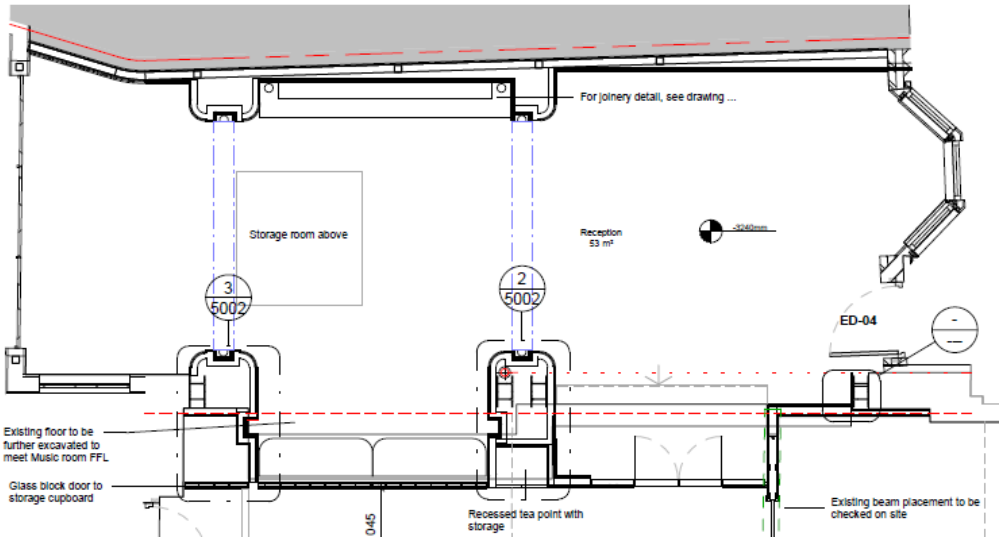

Fig. 9 – Proposed Lower Ground Floor Plan

At the front area of the annex, the ramp was replaced by a large patio including a bay-window and a main access door. While at the rear part of the building, a small arena was created to provide space for family and guests, as on the fig. 10 below.

The front patio structure was created by designing a 300mm thick cantilever RC retaining wall with a 350mm thick base structure to balance the ground horizontal force and to reduce the pressure on the ground. Without any geotechnical input, the ground bearing pressure (GBP) was assumed to be 100 kN/m^2.

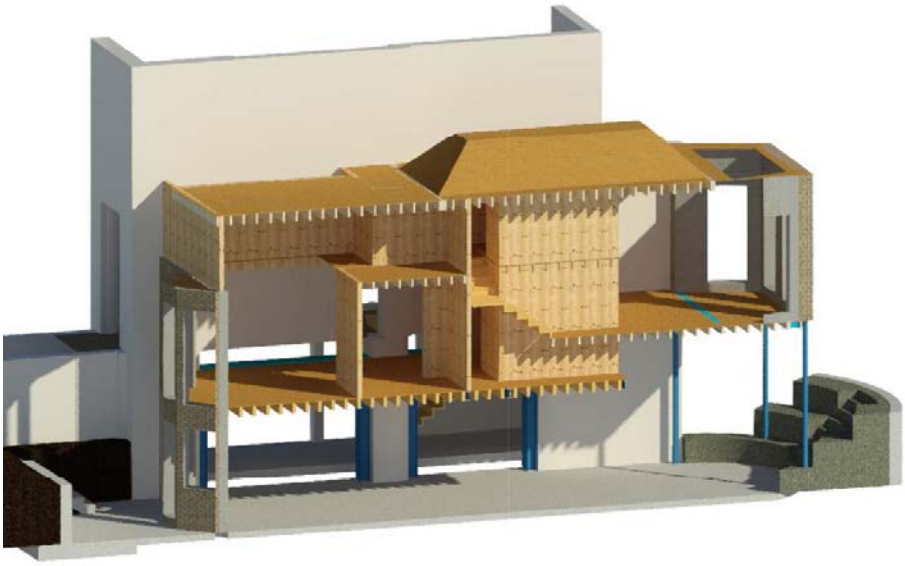

Fig 10 – 3D View showing the front patio and rear arena

As part of the agreement, the owner of 5a Parkhill Road will demolish and rebuild the fence wall and its foundation. An RC retaining wall was also designed underneath the fence wall to improve the strength and the durability of the wall.

Fig 11 below illustrates the particular of the RC retaining wall designed at the party wall interface.

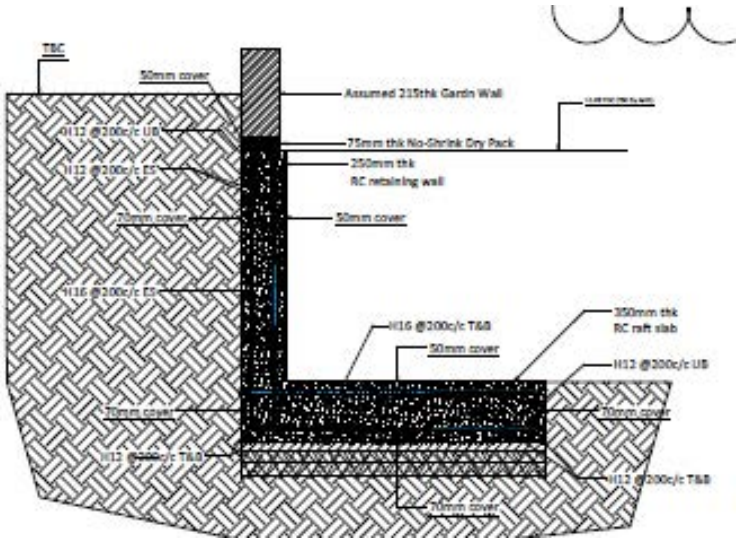

Fig 11 – RC Retaining Wall

As shown on the proposed lower ground floor plan (Fig. 9), no vertical supports were planned to be installed within this area. The proposed structural solution was to design double timber joists bolted together to be able to span the entire length from the existing building wall to party wall.

The following fig. 12, there is the detail of the metal hanger system supported to a timber batten bolted to the party wall.

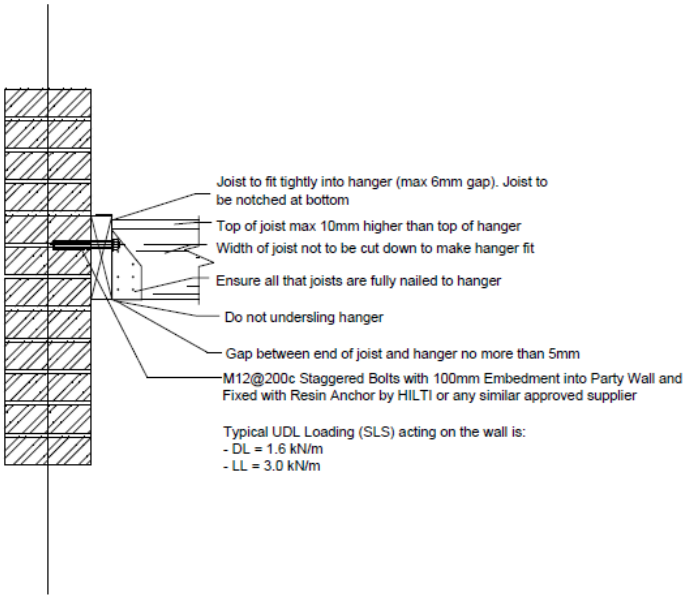

Fig 12 – Timber Joists Support

A different system was adopted to support the steel beams. Each steel beam was bearing on the main existing building edge wall and a steel column on the other side end.

The ground bearing slab was also checked under the point load to understand if it was able to resist the punching effect of the columns. The typical steel column base plate detail is shown below on fig. 13.

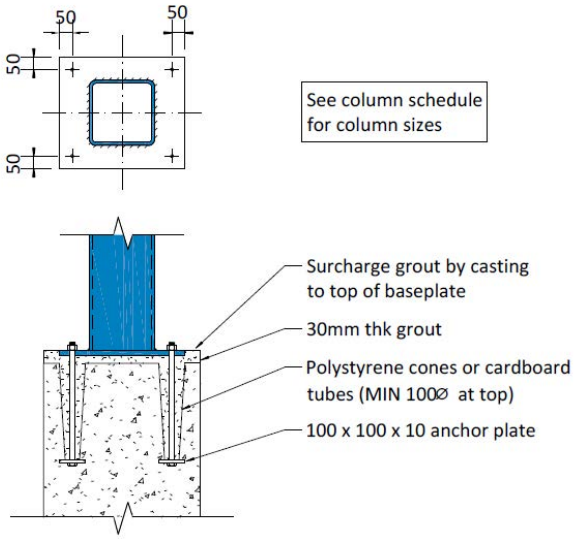

Fig. 13 – Base Plate Detail

the lower ground floor structure included the design of a couple of steel box frames to support the entire edge masonry wall of the main building. This to allow the connection between the existing building to the proposed annex area.

Fig. 14 below illustrates a section of the box frame designed to hold the entire load running down from the existing wall. Each box frame was formed by 2 adjacent frames connected to each other to share the high load from the existing building.

Encased steel beams were designed to spread the load on the ground and a full calculation check was undertaken in order to make sure that the GBP remained below the 100 kN/m^2 limit.

The frames were located within the existing building wall; therefore, the party wall was not involved.

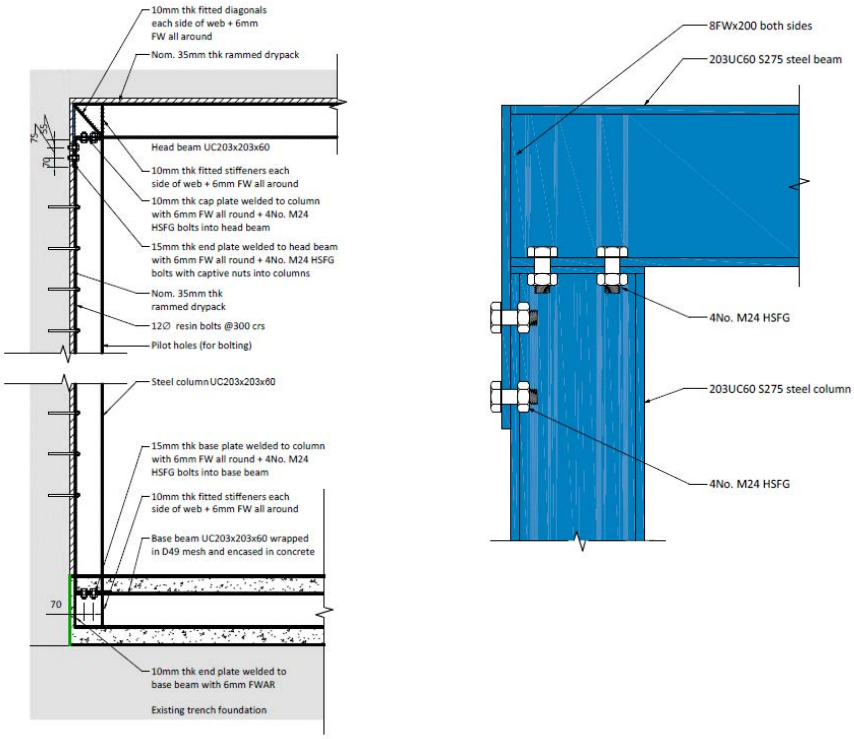

Fig. 14 – Box Frame and Connection

As part of the continuous development, the existing lower ground floor and ground floor were subject to further review and design by the appointed architect.

No digging or excavation works were needed to be undertaken for the internal renovation works as well as no party wall agreement was required for the proposed internal works as ban be seen.

Finally, if an underground pipe would need to across the foundation, then a bridge over detail will be applied to avoid clash with the trench foundation and to maintain the direction and the sloping angle of the pipe constant. Below on fig. 15 is shown the typical the bridge over agreement detail over trench foundation.

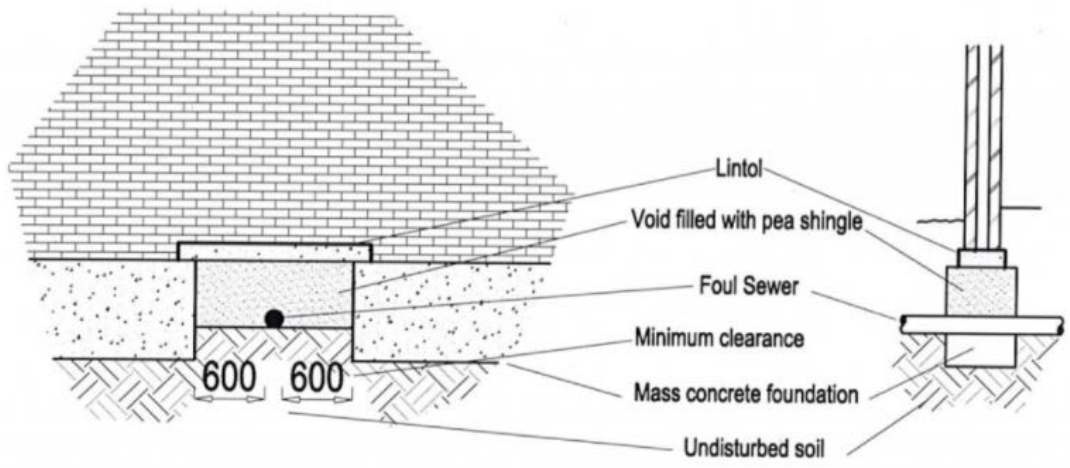

Fig.15 – Typical Bridge Over Agreement

4.0 CONCLUSION

The report was requested by the Camden Planning Office as part of the BIA report as this project was classified as a basement project by the Planning officers.

The structure was designed to minimize the impact of the proposed works onto the adjacent buildings and also the aim to reach a clear and formal party wall agreement with the adjacent property owner.

Several solutions were selected to reduce the impact at the buildings interface and they were:

- No underpinning underneath the party wall trench foundation
- Steel columns supporting steel beams to avoid breaking the party wall to make space for beams and padstones
- Reconstruction of the fence wall and foundation at 5a Parkhill road owner cost
- Simple timber batten bolted to the party wall to support the timber joists

Every additional work, change or amendment to the original design or to the structure will be dealt with the same principle of avoiding party wall issues and minimize the impact on other structures around 5a Parkhill Road.

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