elliottwood

38 Regents Park Road
London
NW1 7SX

Structural Report

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Appendices

Non-Technical Summary

It is understood that the lower ground floor deepening and the sunken garden room have both obtained planning consent and that the current application combines the two and brings the application up to date with current planning guidance from the London Borough of Camden Council

If the proposed measures and sequence of works are taken into account in the design and construction of the proposed works and are properly undertaken by a suitability qualified contractor, these works should have no significant impact to the structural stability of the adjoining properties or surrounding grounds.

A ground movement analysis has been carried out by GEA prior to the works starting on site. Based on current knowledge of the building and the ground movement assessment, if the works are carried out in this manner, then the likelihood of damage to the adjacent properties should be limited to 'very slight or less' as set out in CIRIA Report 580.

The attached reports and Basement Impact Assessment (BIA) state that the proposed basement will have no significant adverse effect on the local hydrogeology. They also state that both ground water and surface water will not be affected or cause significant adverse effects to the surrounding properties.

A Construction Traffic Management Plan (CTMP) will be completed by the appointed Contractor which gives advice on the likely programme, vehicular access and site set up.

To this end, EW will have an on-going role during the works on site to monitor that the works are being carried out generally in accordance with our design and specification. This role will typically involve weekly site visits at the beginning of the project and fortnightly thereafter.

1.0 Introduction

1.1 Elliott Wood Partnership is a firm of consulting structural engineers approximately 120 strong operating from offices in Central and South West London, and Nottingham. Residential developments of all scales have been central to the workload of the practice with many in the Greater London area. In particular Elliott Wood Partnership LLP have been producing designs for basements to both existing and new buildings. To date this numbers over 500 sites many of which have been in the Borough of Camden, the Royal Borough of Kensington and Chelsea, and Westminster. Our general understanding of the development of London, its geology and unique features together with direct experience on many sites puts us in a strong position to advise clients on works to their buildings and in particular the design and construction of their basement.

1.2 Elliott Wood Partnership were appointed by the building owner, Mr Shay O'Brien, to complete an appraisal of the existing structural condition of the building and advise on the structural implications of proposed alterations. The report provides information on the site, the proposed alterations and their impact on the house and adjoining properties.

1.3 Access has generally been gained to all parts of the building, although access to the second floor and roof was restricted as it is privately rented apartment. No opening up works have been undertaken to confirm the building's structure.

1.4 Elliott Wood Partnership have a comprehensive understanding of the underlying ground conditions in the area gained from the numerous basement projects we have completed in the near vicinity. A site specific investigation was undertaken by GEA to determine the soil and water conditions on the site, and to confirm the existing foundation structures. This report can be found in the appendix.

1.5 A basic survey of the existing site and buildings has been provided by Cadplan Land and Building Surveyors.

1.6 This report sets out the scope of works that will be required to address the current Camden Planning Guidance CPG4: Basements and Lightwells, following the July 2015 update. In order to get a full understanding of what is required at this stage it is necessary for us to appraise the existing site and review the proposed scheme.

2.0 Description of Existing Building and Site Conditions

2.1 The existing building, 38 Regents Park Road is a large semi-detached town house constructed circa 1850-60; located in the Primrose Hill Conservation Area of the London Borough of Camden. Nos. 36 and 38 were previously converted to residential apartments with a communal entrance in no. 38.

2.2 The building is six storeys high including a lower ground floor and accommodation in the roof space, with a roof pod above. The glazed infill extension between 38 and 36 provides access to the flats at ground, first and second floor levels within 38 and the first floor flat at 36.

2.3 The building is traditionally constructed with brickwork masonry external walls and a combination of masonry and timber stud internal walls. The floors are typically timber joists spanning front to back spanning onto load bearing walls. Localised areas of the ground floor construction consist of brick vaulted masonry floors. The lower ground floor is likely to be constructed as a concrete ground bearing slab.

2.4 The existing garden is split into two separate areas divided between the existing ground/first and lower ground floor flats. To the rear of the existing property is mainly soft landscaping and planting and to the rear of the garden is an existing decked area.

2.5 The overall stability of the building is provided by the cellular arrangement of floors and walls and the combined action of the terrace as a whole. The building appears to be reasonably well constructed and its stability has been verified over a long period of time.

2.6 The underlying soil strata in this area are shown on the Geological Map to comprise London Clay.

2.7 The foundations and ground conditions at the site have been confirmed by the first stage of a detailed site investigation consisting of two trial pits and three boreholes at lower ground floor level (Refer to Appendices, Site Investigation). The building is well founded on corbelled brickwork and concrete footings approximately 800mm below existing slab level, bearing onto the London Clay. No water was encountered during the course of the initial investigation.

2.8 The site is located within flood zone 1, hence is not at risk of flooding from rivers or the sea, and with reference to historic maps showing the Lost Rivers of London, the site is not in the vicinity of the course of any culverted rivers.

2.9 The site is not in the vicinity of London Underground infrastructure and there was no WWII bomb damage recorded according to the London Bomb Damage Maps.

3.0 Proposed Alterations

3.1 The proposed structural works include the overall re-planning and refurbishment of the internal layouts on lower ground, ground and first floor levels to recreate a single family dwelling. It is also proposed to partially demolish the later extension to the rear of the house at ground floor and construct a single storey extension; this will be the full width of the property and include a glazed roof and accessible flat roofs to act as terrace areas.

3.2 The lower ground floor is to be reduced to the level of the existing sunken lounge area and extended; forward under the front car port, and to the rear to form the ground floor slab for the new full width extension. The proposals necessitate the excavation of part of the existing lower ground floor to a depth of approximately 1.0m. Site investigations have shown that the existing walls and foundations adjacent to this area of excavation extend close to the proposed basement depth and so underpinning in this location is recommended. The current foundations are bearing on good founding strata.

3.3 A sunken garden annexe will be constructed to the rear of the property separate from the main building. See drawings in the appendices for the layout of the garden room relative to the main building. The excavation will be approximately 3.0m deep from the existing ground level.

3.4 Load bearing walls are to be removed at ground and first floor level within the main house. These will be replaced by steel box frames that will support the walls, floors and roof above and provide lateral stability to the building. The picture frames will also help to tie the floors and walls together. The beams forming this structure will be concrete encased at lower ground floor level and concealed within the floor zones at all other levels.

3.5 The extension to the rear of main house will be constructed from a combination of load-bearing brickwork masonry walls supported on steel framing and glazed walling designed by specialists.

3.6 The extension of the lower ground floor plan under the front car port will be constructed using reinforced concrete walls with a reinforced concrete slab at lower ground and ground floor levels. The new front courtyard deepening will require the underpinning of the front boundary wall to the existing property.

3.7 The sunken garden annexe and sun terrace will be constructed using an RC ground bearing slab, RC retaining wall, and suspended RC slab for the terrace.

3.9 At lower ground floor level there is likely to be some new below ground drainage routes. This is not extensive and given the depth of the existing foundations will not have any significant structural impact.

4.0 Party Wall Matters

4.1 The proposed development falls within the scope of the Party Wall etc Act 1996. Procedures under the Act will be dealt with in full by The Employer's Party Wall Surveyor. The Party Wall Surveyor will prepare and serve necessary Notices under the provisions of the Act and agree Party Wall Awards in the event of disputes. The Contractor will be required to provide The Party Wall Surveyor with appropriate drawings, Method Statements and other relevant information covering the works that are notifiable under the Act. The resolution of matters under the Act and provision of the Party Wall Awards will protect the interests of all owners.

4.2 The designs for 38 Regents Park Road will be developed so as not to preclude or inhibit similar, or indeed any, works on the adjoining properties in the Street. This will be verified by the Surveyors as part of the process under the Act.

5.0 Basement Impact Assessment

5.1 The Land Stability, Groundwater and Surface Flow assessments have been carried out by GEA. The assessments conclude that the proposed development is unlikely to result in any specific land/slope stability issues or surface flooding issues. The assessment concluded the proposed development is unlikely to affect the groundwater regime beneath, or adjacent to the site.

5.2 Based on current knowledge of the building and the ground movement assessment completed by Geotechnical & Environmental Associates (GEA), if the works are carried out in this manner, then the likelihood of damage to the adjacent properties should be limited to: category 1 (very slight) or less, for number 40 Regents Park Road; and category 0 (negligible) or less, for number 36 Regents Park Road, as set out in CIRIA Report C580.

6.0 Hydrogeological Statement Summary

6.1 Groundwater was measured as seepage at varying depths below ground level during the boring operations carried out by GEA. Monitoring has shown depths between 5.7m and 0.55m seepage below ground level. Significant prolonged groundwater inflows are not anticipated in the basement excavation though some inflows may occur from the made ground stratum.

6.2 The structural slab level of the lower basement slab is approximately 3.0m bgl. It is therefore possible that perched water may be encountered during the construction of the basement, although based on the monitoring completed this is unlikely. Any pumping used to remove water from excavations onsite would have filters on to restrict the movement of fines in the soil.

6.3 Arup's Subterranean Development Scoping Study (para 5.1), June 2008, notes that the impact of subterranean development on groundwater flows is negligible as groundwater flows will find an alternative route if blocked by a subterranean structure.

7.0 Conclusions

7.1 It is intended that the above measures and sequence of works are adopted for the eventual design and construction of the proposed works.

7.2 Detailed method statements and calculations for the enabling and temporary works will need to be prepared by the Contractor for comment by all relevant parties including party wall surveyors and their engineers. Elliott Wood will attend site at key points in the programme to ensure works are being undertaken in accordance with the engineering drawings and specifications.

8.0 Monitoring and Limits on Ground Movement During Construction

8.1 The Contractor shall provide monitoring to all structures and infrastructure adjacent to the basement excavation at the time of excavation and construction.

8.2 Monitoring shall be completed as follows:

1) One month prior to any works being started to provide a base reading.
2) At the start and end of every shift during the excavation and until the basement slab and line of underpinning has been cast.
3) On a monthly basis thereafter for a 6 month period following completion of the notifiable works.

8.3 Cumulative movement of survey points must not exceed:

1) Settlement and Lateral displacement
   Code amber trigger values: +/-4mm
   Code red trigger values: +/-8mm

8.4 Movement approaching critical values:

Code Amber trigger value:

All interested parties, including the Adjoining Owner's Surveyor and his Engineer should be informed and further actions immediately agreed between two of the three Surveyors and implemented by the Building Owner. The Contractor is to ensure that he has 24 hour / 7 days a week access to emergency support provision including but not limited to additional temporary props, needles, waling beams and concrete supply at the start of the excavation and prior to any likelihood of this trigger value being reached. If this value is reached the Contractor, and his Engineer, must without delay provide all interested parties with his plan to implement any emergency remedial and supporting works deemed necessary. The Contractor must be ready to carry out these works without delay if the movement continues and approaches the trigger value below.

Code Red trigger value:

All interested parties including Adjoining Owner's Surveyor and Engineer will be informed immediately. Works will stop and be made safe using methods and equipment agreed at the above stage. The Contractor is to ensure that the movement has stopped as a result of the implemented remedial works designed and installed at this stage. The requirements of the Party Wall Act will also ensure that, two of the three Surveyors and their advising Engineers shall then enter into an addendum Award, setting out whether or not the Building Owner's works can re-commence and when, and if so agree additional precautions or modifications to the proposals prior to re-commencement.

9.0 Construction Method Statement

9.1 Construction generally

It is assumed that the above measures and assumed sequence of works are taken into account in the eventual design and construction of the proposed works.

Detailed method statements and calculations for the enabling and temporary works will need to be prepared by the Contractor for comment by all relevant parties including Party Wall Surveyors and their Engineers. The Contractor will need to ensure that adequate supervision and monitoring is provided throughout the works particularly during the excavation and demolition stages.

To this end, EW will have an on-going role during the works on site to monitor that the works are being carried out generally in accordance with our design and specification. This role will typically involve regular site visits which will be agreed in accordance with the construction programme set out by the Principal Contractor. A written site report is provided to the design team, Contractor and Party Wall Surveyor.

Access onto the site will be from Regents Park Road and must be coordinated in a sensible manner to minimise disruption to the adjoining residents; and provide a safe working environment.

9.2 Assumed Sequence of Construction

Stage 1: Site set-up

- Erect a fully enclosed painted plywood site hoarding along the front boundary wall, this should not impede on the neighbouring properties.

- The services within the site should be identified and isolated as necessary. All below ground obstructions should also be removed to allow the works to progress.

- The principles for the removal of spoil shall be agreed. Detailed information for this can be found within the Construction Management Plan to be put forward by the Principal Contractor.

- Arboriculturalist's report shows the works do not impact any root protection areas hence tree protection methods not required.

- Monitoring points should be installed to all neighbouring structures and infrastructure and a base reading should be taken prior to any construction works starting on the site.

Stage 2: Internal soft strip & demolition

- Complete soft strip of internal finishes within the building where required.

- Install temporary works where required for demolition works to proceed.

- Carefully demolish the specified parts of the existing building in accordance with Contractor's programme of works.

Stage 3: Installation of Sub-Structure

- Dig trial underpins for inspection to check how well the existing soil is cemented, ground water levels and flows and in particular the grounds stability whilst the individual underpin is completed.

- For the main house underpinning, construct the underpins to form the new lower ground floor area perimeter wall in sequence. Reduce level dig down to enable installation of the ground bearing slab. The underpins will be constructed as reinforced concrete pins and completed in a maximum of 1 metre sections in a sequence to be agreed by the Contractor. The underpins will be left to cure for 3 days prior to excavating the adjacent pin.

- For the extension under the car port and for the sunken garden annexe the retaining walls should be completed in sections no wider than 1.0m in sequence agreed by the Contractor. Temporary propping should be installed to enable the reduced level dig and installation of the ground bearing slab. The retaining wall sections will be constructed as reinforced concrete L-shaped pins. The underpins will be left to cure for 3 days prior to excavating the adjacent pin.

- For installation of ground bearing slabs; at formation level cast blinding layer and install the below ground drainage as required. Install and tie reinforcement for the basement slab dowelling into the RC perimeter thickenings as required. Cast RC base slab and thickenings. Once the base slab has cured it will provide a permanent low level prop to the basement retaining walls and hence, the lowest level of horizontal propping and waling beams can be removed.

Stage 4: Installation of Super-Structure

- For the main house; install the permanent steel structure according to the structural drawings. Temporary works can be removed following inspection and advice on the permanent structure by Elliott Wood.

- Install remaining reinforced concrete elements according to the structural drawings. Temporary works can be removed following inspection and advice on the permanent structure by Elliott Wood.

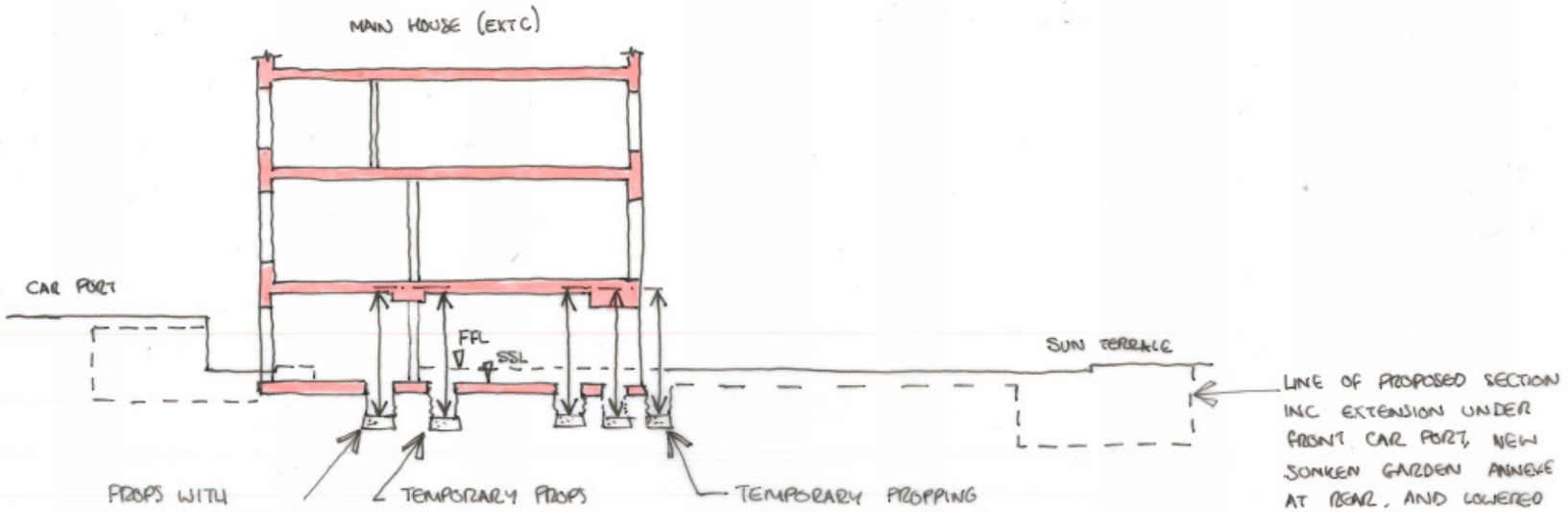
9.3 Work Programmes and Timescales for Each Phase:

The preliminary construction programme is summarised as follows for each phase:

- Site set up and soft strip 3 weeks
- Temporary works and demolition 5 weeks
- Underpinning and reduce level dig, construct retaining walls to front and rear 8 weeks
- Construction of lower ground floor structure, complete front extension and rear sunken garden annexe, superstructure works 10 weeks
- Fit out 10 weeks

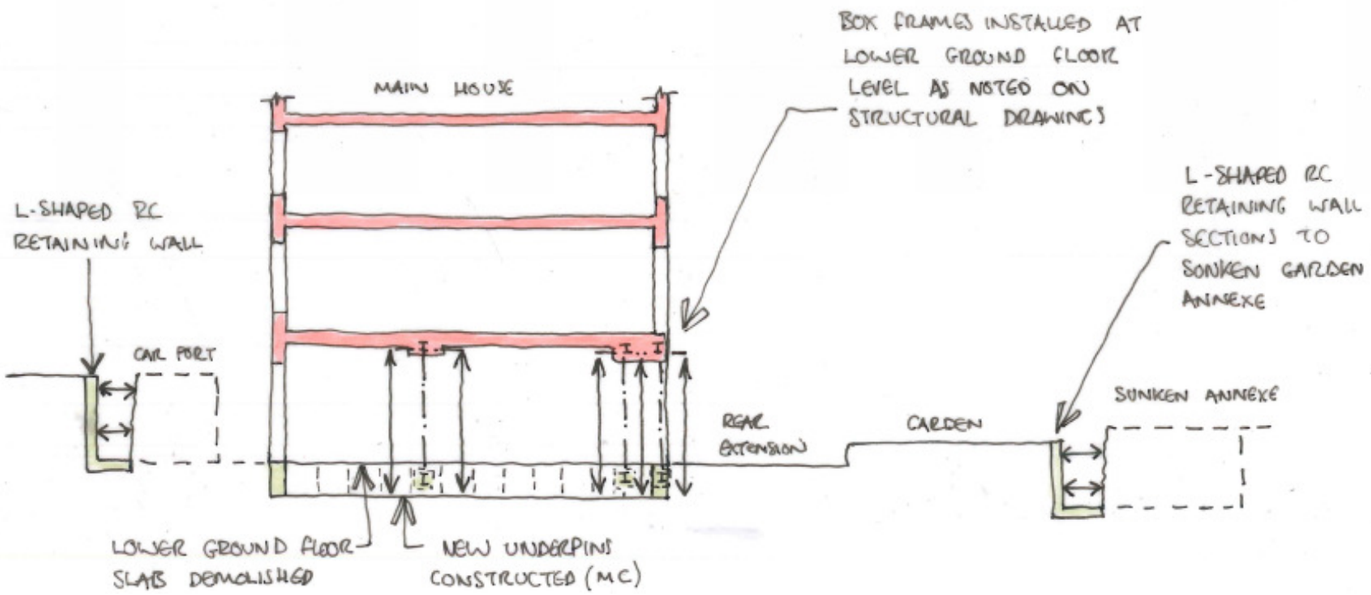
STAGE (1)

- COMPLETE INTERNAL SOFT STRIP
- INSTALL TEMPORARY WORKS WHERE REQUIRED FOR DEMOLITION WORKS TO PROCEED
- CAREFULLY DEMOLISH SPECIFIED PARTS OF BUILDING
- REFER TO SECTION 9.0 IN EW REPORT FOR ADDITIONAL INFORMATION



STAGE (2)

- REFER TO EW PLANS FOR EXTENT OF UNDERPINNING TO EXISTING WALLS
- UNDERPINS + L-SHAPED RETAINING WALLS CONSTRUCTED IN HIT + MISS SEQUENCE IN SECTIONS 1.0m WIDE MAX.
- REDUCE LEVEL DIG IN MAIN HOUSE TO REQUIRED LEVEL ONCE UNDER-PINNING COMPLETED.



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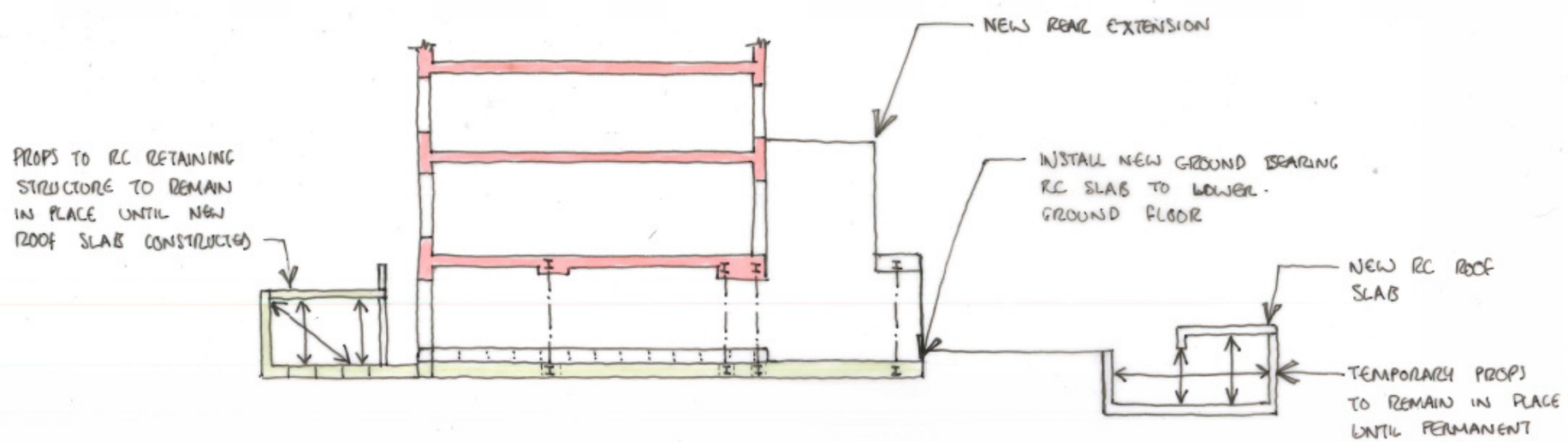

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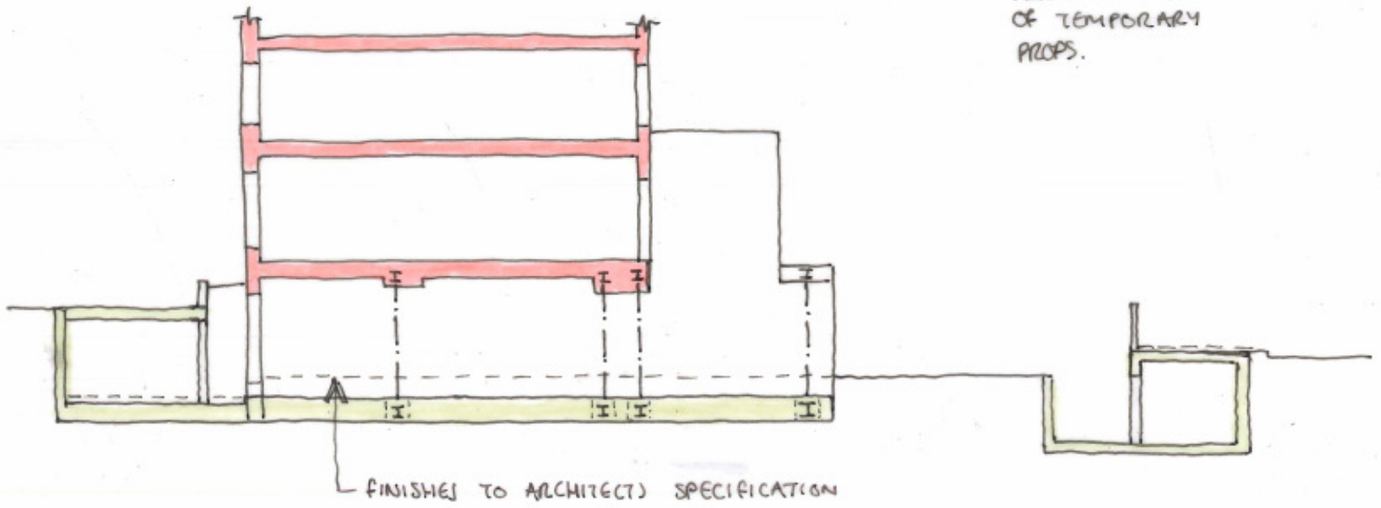

10.0 Noise, Vibration, and Dust

10.1 Below we have described the mitigation measures that are proposed to keep noise, dust and vibration to acceptable levels during construction.

10.2 Mitigation Measures for Demolition of Existing Building

The breaking out of existing structures shall be carried out by diamond saw cutting and hydraulic bursting where possible to minimise noise and vibration to the adjacent properties. All demolition and excavation work will be undertaken in a carefully controlled sequence, taking into account the requirement to minimise vibration and noise. The contractor will need to utilise non-percussive breaking techniques where practicable.

Dust suppression equipment should be used during the demolition process to ensure that any airborne dust is kept to a minimum.

10.3 Mitigation Measures for Bulk Excavation

Due to the size of the proposed works it is likely that mechanical plant will be required to complete the bulk excavation. The contractor should ensure that any mechanical plant is switched off when not in use and is subject to regular maintenance checks and servicing. An electrically powered conveyor will be used as detailed above.

10.4 Mitigation Measures for the Construction of the concrete structure

The contractor should ensure that any concrete pours are completed within the permitted hours for noise generating works. The contractor should allow for a contingency period to ensure that concrete pours can be completed within these hours regardless of unforeseen circumstances such as batching plant delays and traffic congestion.

The fabrication and cutting of steelwork for the reinforced concrete walls and underpins shall take place off site. If any rebar needs to be trimmed on site this should be completed using hydraulic or pneumatic tools instead of angle grinders.

10.5 Dust Control

In order to reduce the amount of dust generated from the site, the contractor should ensure that any cutting, grinding and sawing should be completed off site where practicable. Any equipment used on site should be fitted with dust suppression or a dust collection facility.

The contractor will be responsible for ensuring good practice with regards to dust and should adopt regular sweeping, cleaning and washing down of the hoardings and scaffolding to ensure that the site is kept within good order. The contractor selected will be a member of the Considerate Contractors Scheme. Contact details of the contractor who will be responsible for containing dust and emissions within the site will be displayed on the site boundary so that the local residents can contact the contractor to raise any concerns regarding noise and dust.

The building will have hoarding to the perimeter and any stockpiles of sand or dust-generating materials will be covered. Cement, fine aggregates, sand and other fine powders should be sealed after use.

1.0 Existing Drawings

2.0 Proposed Drawings

3.0 Site Investigation Report

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