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Land Between 60 and 66 Alwyne  
Road, SW19 7AE

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## **Construction Method Statement**

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Job  
number: 222364  
Revision: P1  
Status: Planning  
Date: February 2023

09.02.23	P1	ISSUED FOR PLANNING	
Structures by:	Sarah Wadley	Approved by:	Tim Botfield
Qualification	MEng CEng MIStructE		MEng CEng MIStructE
signature:			

## Contents

1.0	Non-technical Summary .....	4
2.0	Description of Existing Site .....	5
3.0	Ground Conditions.....	5
4.0	Desk Study Summary and Observations .....	6
5.0	Proposed Alterations.....	7
6.0	Basement Waterproofing .....	7
7.0	Party Wall Matters .....	8
8.0	Hydrological Statement Summary .....	8
9.0	Impacts on Proposed Below Ground Drainage.....	8
10.0	Ground Movement.....	8
11.0	Conclusions.....	9
12.0	Construction Method Statement (to be read in conjunction with drawings in Appendix A).....	10
13.0	Noise, Vibration and Dust Mitigation.....	12
14.0	Structural Monitoring Proposals.....	14
	APPENDIX A – Proposed Structural Scheme Drawings.....	15

## 1.0 Non-technical Summary

Structural Design Studio Limited were appointed by the Client, Ernle Estates, to advise on the structural implications of constructing a new two storey residential building with a single storey basement beneath. The following report has been prepared to help ensure that the structures on the neighbouring sites are safeguarded during the works.

The report provides information in accordance with the advice provided in Merton's Basement Planning Policy.

A desktop study of the site has been completed to establish the site's history and a risk-based interpretation used to inform the onsite testing. A site specific ground investigation comprising of two boreholes has been completed by STM Environmental to confirm soil and groundwater conditions. The results of this investigation have been used to provide information on the local ground conditions and to inform the structural scheme design.

This report supports the conclusion that should the works be completed by a competent contractor, the basement extension can be constructed without any significant adverse effect on the neighbouring properties, groundwater, surface water or on the stability of the adjoining ground.

Based on our current knowledge of the site and calculations, if the works are carried out in accordance with our proposed design then the likelihood of damage to the neighbouring property should be limited to Category 1 as set out in CIRIA report C580.

## 2.0 Description of Existing Site

The existing site is an plot of land on Alwyne Road which is approximately square on plan. There is a small existing garage on the site which is set back from the road. It is bounded by No.66/67 Alwyne Road to the south west, the rear garden of 69 Woodside to the north west and the rear garden of 68 Woodside to the north east. The site fronts onto Alwyne Road.



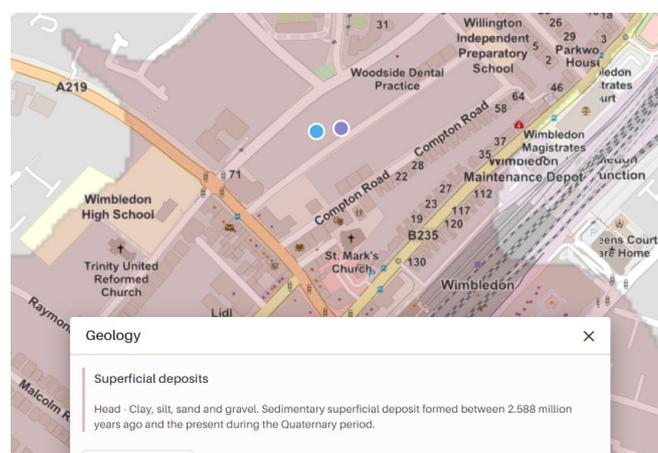
*Land Between 60/66 Alwyne Road, Front Elevation (Google Maps, 09.02.23)*

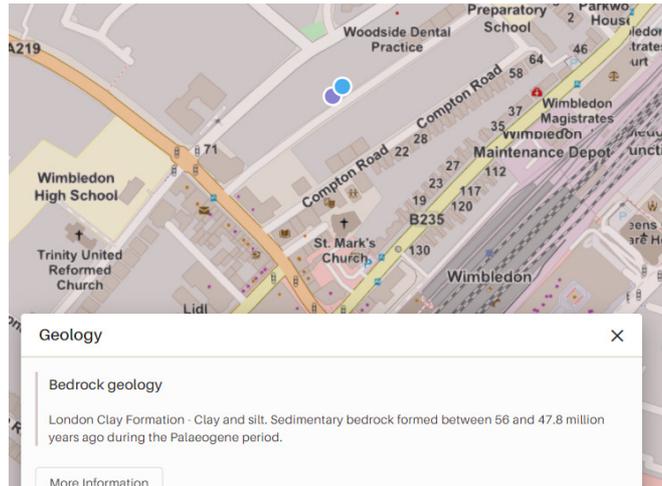
There is a neighbouring building at 66/67 Alwyne Road which was built in 2014. Based on the planning application drawings available on Merton planning portal we understand that this building has a basement which is at similar level to the proposed basement. There is a timber built shed in the garden of no. 68 Woodside which is adjacent to the new building.

Access is gained to the site from the front via Alwyne Road.

## 3.0 Ground Conditions

Geological maps show that the site is situated in an area of Head deposits overlying London Clay Formation. The maps available from the British Geological Survey indicate that the site is clay, silt and sand.





Excerpt of Geology of Britain Viewer (British Geological Survey, 09/02/2023)

A site specific site investigation was undertaken by SMT Environmental on 15<sup>th</sup> December 2022. 2 no. boreholes were undertaken using a windowless sampler rig. The investigation encountered ground conditions consistent with the published geological records of the area. Made ground consisting of gravelly silt with an abundance of brick fragments was encountered to a maximum depth of 1.2m bgl. The made ground was underlain by brown and grey Clay to 10m bgl.

The results of the SPT testing undertaken within the Clay gave N values that ranged from a minimum of 5 at 2m bgl to a maximum of 42 at 10m bgl. The report recommends that a bearing capacity of 145kPa can be assumed at 4m below ground level which means that the basement can be supported on traditional underpins without the need for piles.

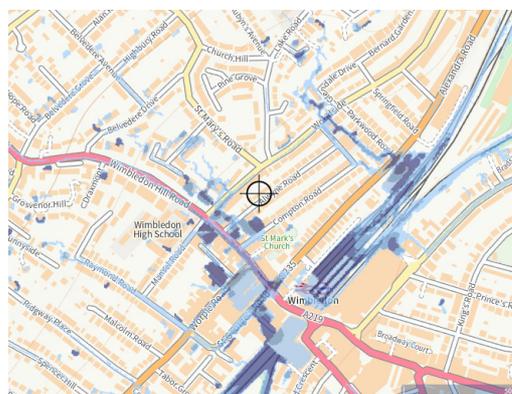
The tested samples produced results ranging from Clay of high to very high plasticity. The results of the sulphate tests showed that the soil fall into Class DS-3.

Groundwater was not encountered in any of the boreholes during the investigation or subsequent monitoring of borehole 1 one week after investigation.

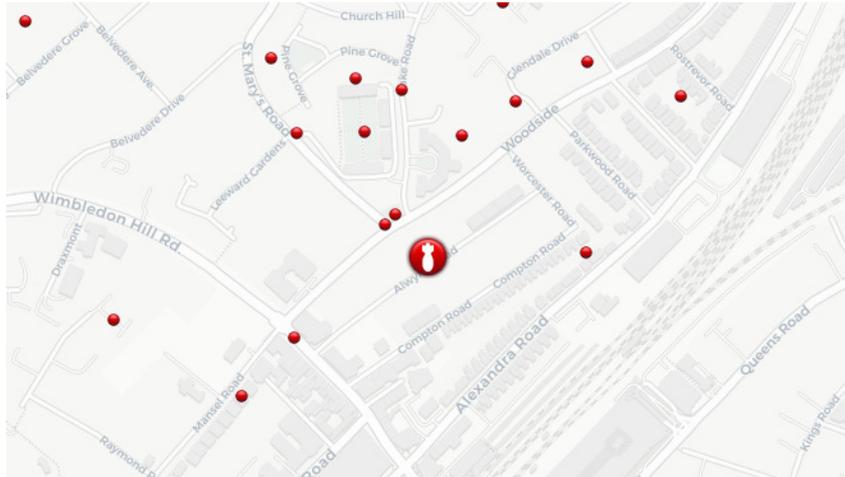
#### 4.0 Desk Study Summary and Observations

The results of our desk study are as summarised below;

- The site is located within a Flood zone 1. This means it has a low probability of flooding from rivers and the sea. The site appears to be at 'very low risk' of flooding due to surface water, as shown on the latest Environment Agency Flood Maps (reference; [www.environmentagency.gov.uk](http://www.environmentagency.gov.uk)). A flood risk assessment has been undertaken by STM Environmental.



- Public Sewer records are to be obtained from Thames Water to determine whether there are any Thames Water assets located within the proposed site.
- The site is approximately 150m away from Wimbledon overground station, as such any works at the site will not affect the railway lines.
- There are records of a high explosive bomb dropping on Alwyne Road. However, it is unclear how much damage was caused to the buildings on the street. Reference (bomb sight.org).



Map of bombs dropped in the surrounding area (Bomb sight.org)

## 5.0 Proposed Alterations

The proposed works involve the construction of a new residential building which consists of a single storey basement across the site with a two storey superstructure. There are two lightwells proposed to the front and a single full width lightwell to the rear. The building will house three separate apartments.

A set of proposed structural scheme drawings can be seen in Appendix A.

L-shaped reinforced concrete underpins will be used to form all perimeter walls to the proposed basement box.

Vertical loads from the superstructure perimeter will be transferred to the ground by the RC edge thickenings to the basement slab. A load bearing masonry wall will be constructed at basement level to support the ground floor slab.

The reinforced concrete underpins will be designed as a propped cantilever, supporting the surcharge from the soil and neighbouring buildings. The underpins will be designed as a cantilever in the location of the new lightwell.

A suspended reinforced concrete slab will be constructed at basement level to provide permanent propping to the bases of the underpins and will deal with any heave from the London Clay.

The groundwater level will be monitored as part of the works but given the site is within a non-aquifer it is unlikely that inflows of groundwater will be experienced during excavation. As such, any potential inflows that may occur should not be significant.

If groundwater is experienced during excavation, suitable control of any inflows would be achieved using sump pumping. If required, a detailed method statement for this process will need to be prepared by the Contractor for comment by all relevant parties including party wall surveyors and their engineers.

Trial underpins will be dug when the contractor first starts on site to confirm the stability of the soil and to further investigate the presence of any groundwater inflows.

## 6.0 Basement Waterproofing

The basement waterproofing will be the responsibility of the Contractor.

We assume that the reinforced concrete retaining walls and basement slabs will be cast using water resistant concrete to form an initial barrier with an internal drained cavity system as a primary barrier against possible

water ingress. As part of the system, any water that seeps through will be collected and drained out into the main drainage system.

## **7.0 Party Wall Matters**

The proposed works development falls within the scope of the Party Walls Act 1996. Procedures under the act will be dealt with in full by the Building Owner'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. 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 provisions of the Party Wall Awards will protect the interests of the owners.

The proposed works on the site will be developed so as not to inhibit any works on the adjoining properties. This will be verified by the Surveyors as part of the process under the Act.

## **8.0 Hydrological Statement Summary**

The site investigation indicates that ground water is not likely to be encountered during the excavation. 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.

A flood risk assessment and surface water drainage strategy has been completed by STM Environmental Consultants Ltd. This report has advised that a green roof and green wall should be introduced to intercept and attenuate surface water on the site. A small section of permeable paving will be introduced on the ground floor which will form ground floor amenity space. The excess surface water from the rooftop will discharge into the nearby sewer via the permeable paving sub-base which will be lined.

The report confirms that the proposal will provide 4.7m<sup>3</sup> of attenuation storage and the proposed SuDS management train will reduce the discharge to the sewer.

## **9.0 Impacts on Proposed Below Ground Drainage**

It is proposed to maintain gravity connections at ground floor level and above, where possible. The new drainage at basement level will be routed to a submersible pumping station which will pump waste directly to the outfalls. A non-return valve will be installed to protect against sewer surcharging.

A cavity drain system will be incorporated into the design to provide the second means of defence against water ingress. The waterproofing will be to a specialist design.

Thames Water Public Sewer Records will also be procured to ensure there are no Thames Water assets within the boundary of the property.

## **10.0 Ground Movement**

On the basis that the new basement structure is being formed with underpins completed in a maximum of 1 metre sections and the fact that the neighbouring building already has a basement; the new construction is unlikely to have any significant adverse effect.

Based on our current knowledge of the building, if the works are carried out in accordance with our proposed design and by a competent contractor, then the likelihood of damage to the neighbouring property at 66/67 Alwyne Road should be limited to being no greater than Category 1 (as defined on the Burland Scale), as set out in CIRIA report C580. The properties at no. 68 and 69 Woodside are remote from the proposed basement works therefore we would suggest that the likelihood of damage to these properties would be negligible.

If deemed necessary and in agreement through the Party Wall process ground movement monitoring system may also be installed to the neighbouring properties 66/67 Alwyne Road, with trigger values set to allow the works to be controlled appropriately in the event of ground movement occurring (as outlined in section 14.0).

## 11.0 Conclusions

It is intended that the above measures and sequence of works are adopted for 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. A specification and indication of monitoring requirements is given in section 14.0.

To this end, SDS Ltd. 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 fortnightly site visits during the main structural works. A written site report will be provided to the design team, Contractor and Party Wall Surveyor.

It is assumed that the above measures and sequence of works are taken into account in the eventual design and construction of the proposed works. If the works noted above are properly undertaken by suitably qualified contractors, these works should pose no significant threat to the structural stability of the house or the adjoining properties. Based on our current knowledge of the site, if the works are carried out in this manner then the likelihood of damage to the adjacent properties should be limited to Category 1 as set out in CIRIA report C580.

## 12.0 Construction Method Statement (to be read in conjunction with drawings in Appendix A)

Some of the issues that affect the sequence of works on this project are:

- The stability of adjoining and adjacent buildings;
- Forming sensible access onto the site to minimise disruption to the neighbouring residents; and
- Providing a safe working environment.
- The stability of the adjacent road

The proposed works involve the construction of a new single storey basement and two storey superstructure above. It is expected that these works will be completed in a “bottom up” construction sequence. Alternatively, a temporary contiguous piled wall could be installed around the perimeter of the site and the works could be completed in a top down approach.

The undertaking of such projects is specialist work and SDS Ltd. will be involved in the selection of an appropriate Contractor with the relevant expertise and experience for this type of project.

The Contractor is entirely responsible for maintaining the stability of all existing buildings and structures, within and adjacent to the works, and of all the works from the date of possession of the site until practical completion of the works.

A full set of temporary works drawings and calculations will be provided by the Contractor and will be reviewed by SDS Ltd. prior to works starting on site.

Please refer to section 13.0 for noise, vibration and dust assessment with proposed associated mitigation methodologies.

### **Stage 1 – Site Setup and Enabling Works**

- All incoming services to the property are to be located and marked. Their location and depths should be communicated to the design team.
- Schedules of conditions for the adjoining properties to be completed.
- If movement monitoring has been agreed as part of the Party Wall awards this should be installed and base readings taken.
- Demolition of the existing garage structure on the site.
- Install temporary hoarding and protection to the neighbouring properties.
- Install tree protection measures as required.

### **Stage 2 – Install Underpins to Perimeter**

- Dig trial underpins for inspection by SDS Ltd. to check how well the existing soil is cemented, ground water levels and flows, and in particular the ability of the ground to “stand up” whilst the individual underpin is completed.
- The underpins to the perimeter of the basement are to be formed in reinforced concrete. All underpins are to be taken down to proposed basement formation level.
- Dig the underpins in maximum 1 metre sections in the agreed sequence, installing localised trench sheeting and props around the perimeter of the shaft.
- The reinforcement in the toe of the underpin can be tied and the toe cast.
- The reinforcement in the stem of the underpin can be tied, lapping with the reinforcement from the toe and the stem cast.
- Install temporary lateral props between the face of the underpinning and the central bund of soil. These will be removed as part of the bulk excavation. This method of construction will be used to limit any horizontal ground movement associated with the construction of the underpins and limits the risk of the underpinning works on the neighbouring buildings.

- The Contractor should wait a minimum of 72 hours after casting before digging an adjacent underpin. Adjacent underpins should be dowelled together. An assumed sequence of underpinning is shown on the attached drawing however, the exact sequence of underpinning will be advised by the Contractor as it will relate to their sequence of construction.

### **Stage 3 – Install Horizontal Temporary Props and Reduced Level Dig**

- Reduce level dig to allow the high level horizontal temporary props to be installed to the tops of the underpins cast in Stage 2.
- Temporary propping across the basement to be provided to the underpinning to prevent sliding and overturning.
- Reduce level dig down to new basement level installing low level propping as required

### **Stage 4 – Cast the New Basement Slab and Remove Low Level Horizontal Props**

- Install the new drainage including the surface water runs and sump pumps. The drainage should be tested prior to casting the slab.
- The basement slab can be cast with reinforcement continuous with the underpin bases.
- Once the slab has cured, the bases of the RC underpins are propped by the slab, avoiding sliding and overturning in the permanent case. The low level horizontal temporary propping to the underpins can be removed.

### **Stage 5 – Construct Load bearing blockwork wall within the basement**

- Construct the new load bearing blockwork wall up to ground floor level

### **Stage 6 – Install Ground Floor RC Slab**

- Tie the reinforcement for the new ground floor slab and erect the formwork to the underside of the slab.
- Cast the new ground floor slab
- Remove remaining temporary horizontal props.

### **Stage 7 – Superstructure Works**

- Construct new superstructure.

### **13.0 Noise, Vibration and Dust Mitigation**

The Merton Planning advice states that during the undertaking of any basement works that noise and dust should be mitigated where possible and “full care and consideration should be given to neighbouring properties as the works can be particularly intrusive to neighbours.”

The construction works involve the demolition of the existing garage structure, creating a retaining wall in an underpinning sequence, as well as excavation and construction of the basement shell. A more detailed sequence of the works has been given in section 12.0. Those most likely to be affected by noise, dust and vibration will be the immediate neighbours at No.66/67 Alwyne Road. The properties opposite and behind are remote from the proposed development and are therefore less likely to be affected, however need to be considered. There may be some impact on other residents on Alwyne Road due to the related construction traffic, but this should be minimal.

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

#### **Mitigation Measures for Demolition of Existing Garage Structure**

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. Where practical, concrete should also be wetted down prior to and during breakout to further inhibit airborne dust.

#### **Mitigation Measures for Underpinning works to the Perimeter**

The underpin shafts will be excavated using hand tools where possible. At the base of the underpin shaft it may be found that compressed air tools are required due to the compaction of the ground. Care should be taken in selecting a suitable air compressor that keeps noise to a minimum. The air compressor should be located within the site and behind a hoarding to minimise noise transfer to the adjoining properties.

The spoil will be removed from the excavation using an electrically powered conveyor. The contractor will need to ensure that this is regularly serviced and inspected to ensure any noise from this is kept to a minimum. In order to minimise dust, skips and conveyors should be covered or completely enclosed to ensure that dust cannot escape.

#### **Mitigation Measures for 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 for large volumes of spoil removed.

#### **Mitigation Measures for the Construction of the Concrete Basement Shell**

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 underpins and slabs 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.

#### **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. If cutting, grinding and sawing is being carried out on site, surfaces are to be wetted down prior to and during these types of work whenever possible. 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 Constructors 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 be enclosed within suitable scaffold sheeting 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.

## 14.0 Structural Monitoring Proposals

Monitoring and limits on ground movements during excavation and construction

The Contractor shall provide monitoring in line with the agreements made in the Party Wall agreements.

Monitoring shall be completed as follows:

- 1) One month prior to any works being started to provide a base reading.
- 2) Weekly readings during the excavation and until the basement slab has been cast.
- 3) On a monthly basis thereafter for a three-month period following completion of the notifiable works.

Cumulative movement of survey points must not exceed:

a). Settlement

Code amber trigger values: +/-6mm

Code red trigger values: +/-10mm

b). Lateral displacement

Code amber trigger values: +/-4mm

Code red trigger values: +/-8mm

Movement approaching critical values:

Code amber trigger value:

All interested parties, including the Adjoining Owner's Surveyor and their 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 must without delay provide all interested parties with their 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 above.

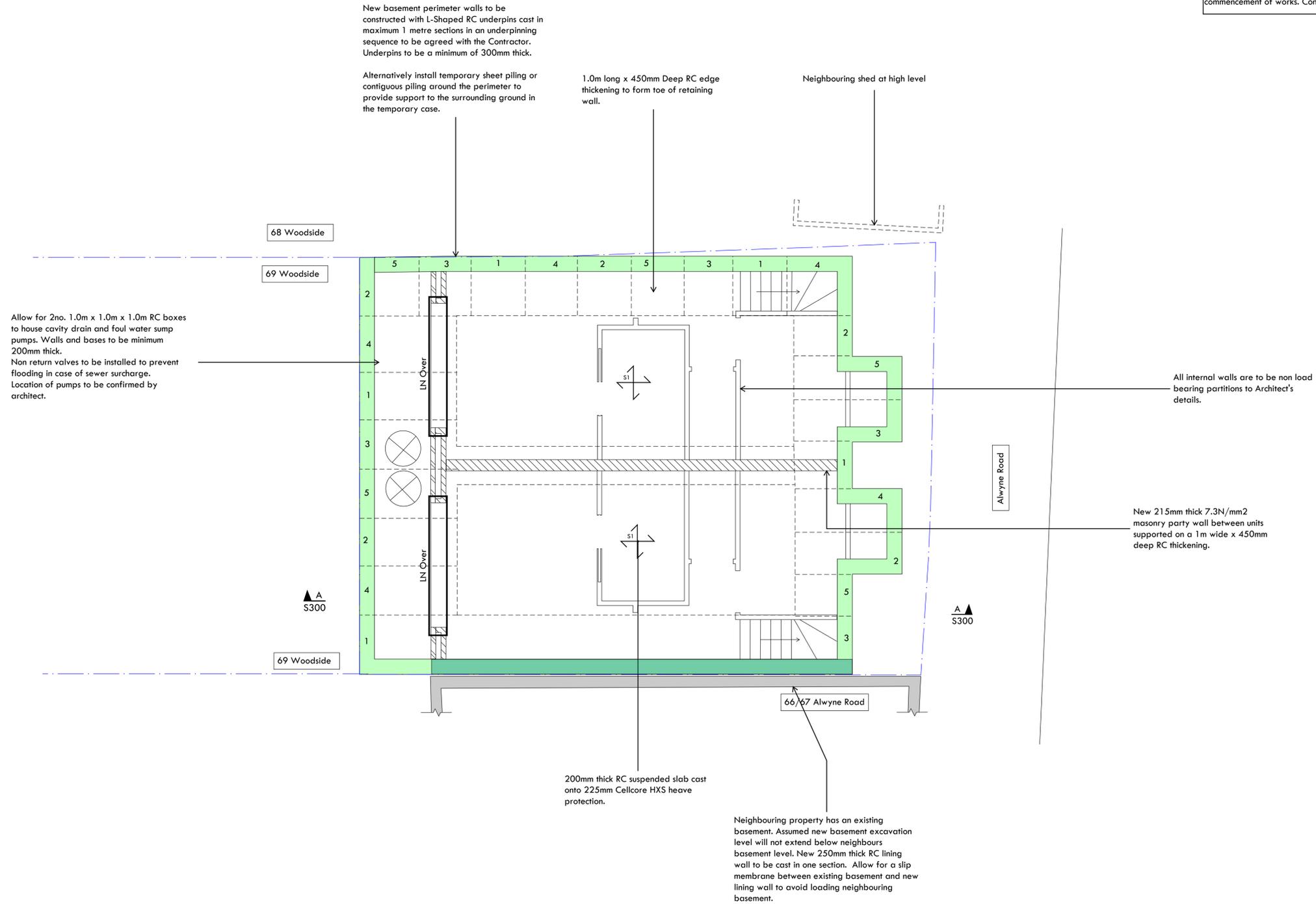
Code red trigger value:

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.

## APPENDIX A – Proposed Structural Scheme Drawings

**BASEMENT NOTES:**

1. Due to the presence of sulphates the concrete mix design for all reinforced concrete below ground will need to be designed for Class DS-2 conditions
2. Waterproof concrete to be used for the basement construction. Allow for using Caltite or similar approved.
3. Waterproofing of the basement is the responsibility of a waterproofing specialist appointed by the Contractor. SDS take no responsibility for the waterproofing of the basement.
4. Temporary propping is the sole responsibility of the Contractor. Contractor to allow for fully designed and detailed temporary support to the floors, walls, retaining walls and roof during demolition and basement excavation. Temporary works design, calculations and sequence to be submitted prior to commencement of works. Contractor to request splices if required for handling purposes.



**General notes:**

1. Do not scale from this drawing
2. To be read in conjunction with all other structural drawings and the structural specification
3. To be read in conjunction with all other relevant disciplines drawings and specifications
4. All levels, setting out, waterproofing and fireproofing to be confirmed with the Architect
5. The Contractor is responsible for the temporary stability of the existing and proposed structure throughout the works. The sequencing and method of installation should be carefully considered and the temporary works should be designed and detailed by a suitably qualified person (appointed by the Contractor) prior to commencing the works
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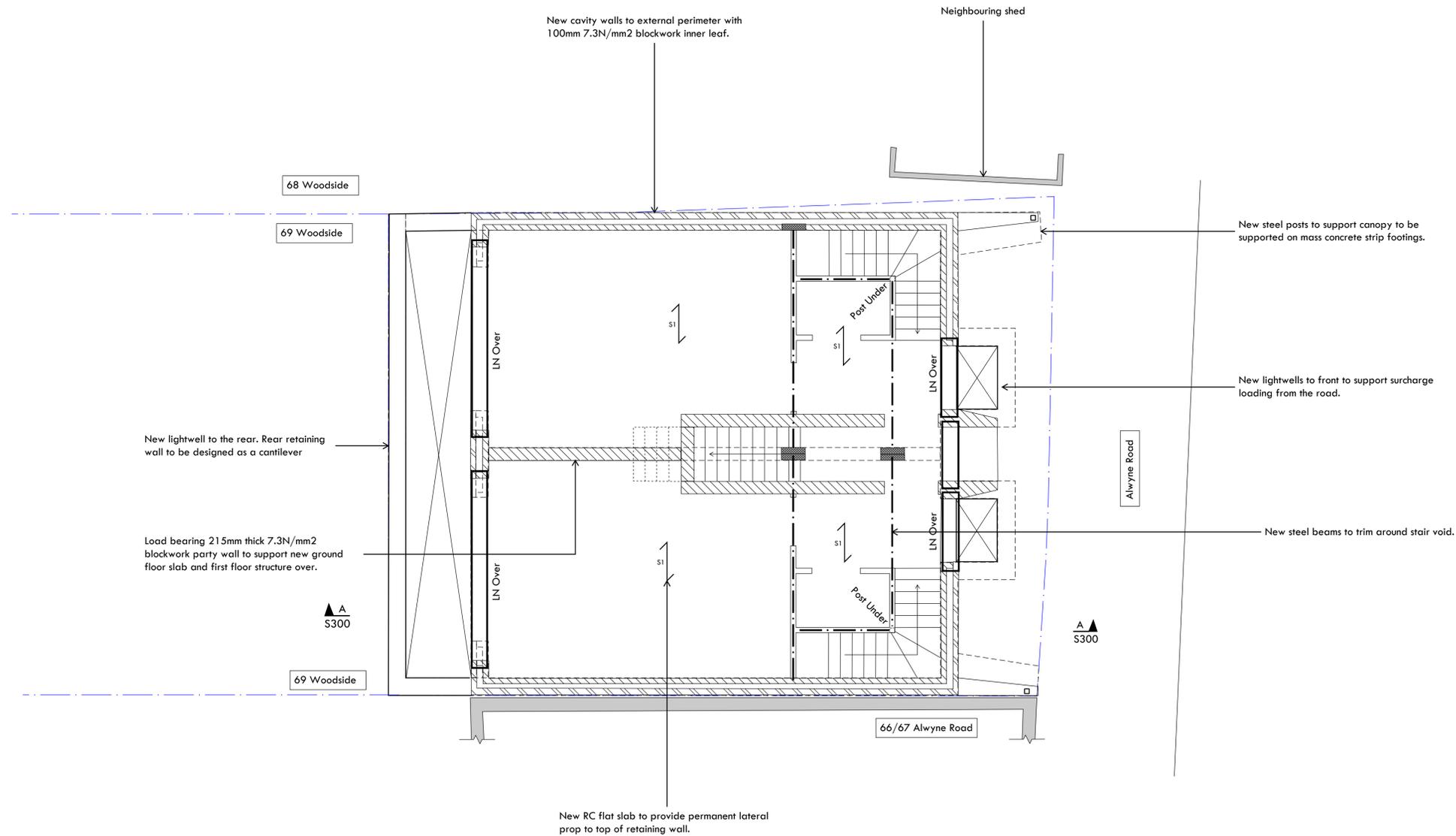
Studio 1, Three Eastfields Avenue, SW18 1GN

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Project			
Land Between 60 and 66 Alwyne Road			
Drawing Title:			
Proposed Basement Floor Plan			
Job. No.	Drawing no.	Revision	
222364	S090	Preliminary	
Scale	Date	Drawn by	Rev. no:
1:50@A1	Feb 22	SW	P1

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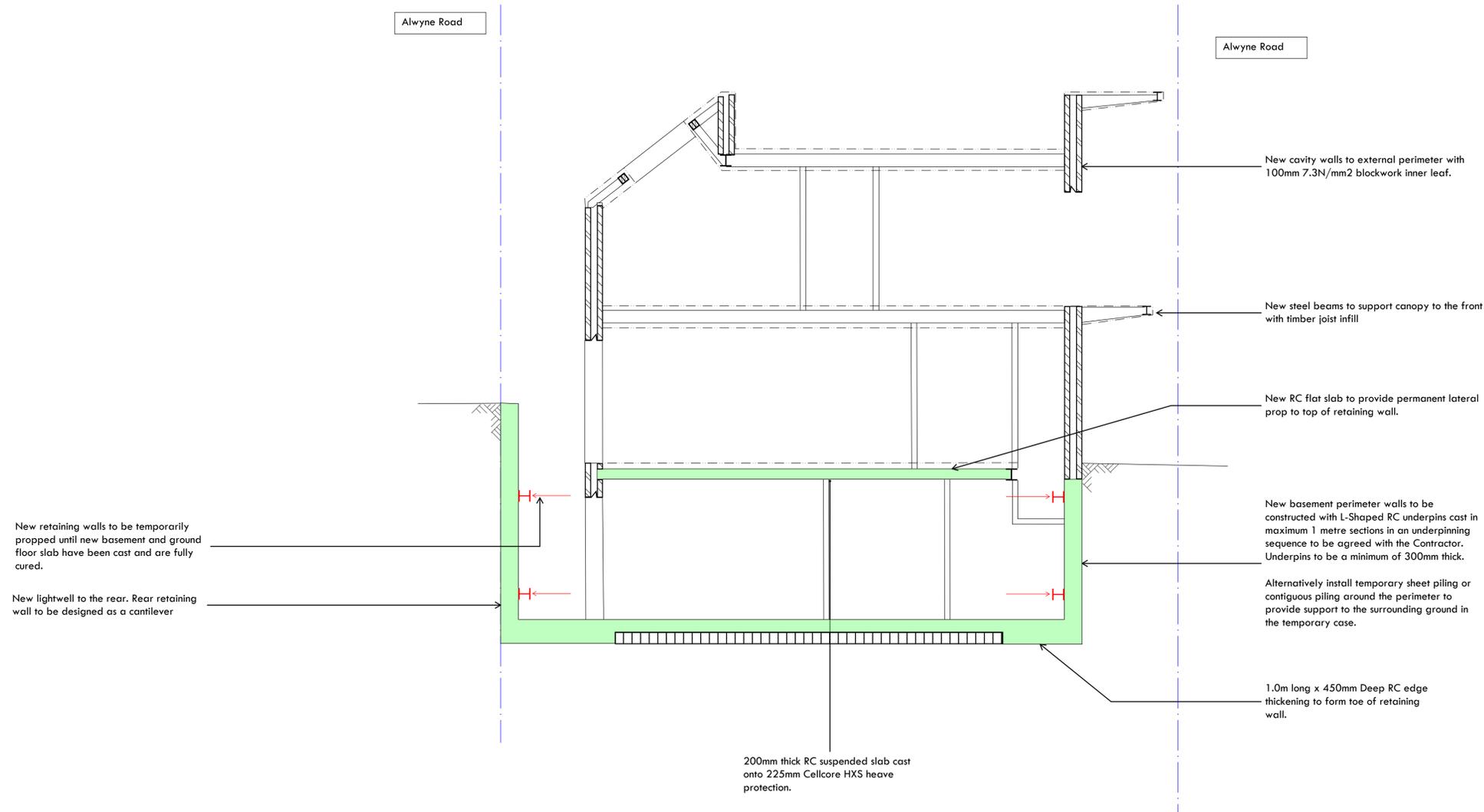


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Project			
Land Between 60 and 66 Alwyne Road			
Drawing Title:			
Proposed Ground Floor Plan			
Job. No.	Drawing no.	Revision	
222364	S100	Preliminary	
Scale	Date	Drawn by	Rev. no:
1:50@A1	Feb 22	SW	P1

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Project			
Land Between 60 and 66 Alwyne Road			
Drawing Title:			
Proposed Section A-A			
Job. No.	Drawing no.	Revision	
222364	S300	Preliminary	
Scale	Date	Drawn by	Rev. no:
1:50@A1	Feb 22	SW	P1