engineersHRW

7 THE GROVE
LONDON N6 6JU

STRUCTURAL ENGINEER'S CONSTRUCTION METHOD STATEMENT

This report was written / compiled by Brett Scott and reviewed by Simon Robinson CEng MIStructE of engineersHRW

Signed ……. Date 24th February 2023

Job Number: 2247

STRUCTURAL ENGINEER'S STATEMENT

This Structural Engineer's Statement has been prepared by engineersHRW, based on the planning proposals by Lisa Shell Architects in support of a planning application for the garden works for the site located at 7 The Grove, London, N6 6JU. It is for the use of the client, the client's professional advisers and London Borough of Camden and is for their use only. The report should not be used for any purposes other than for which it was considered. The report should be read in conjunction with EngineersHRW Structural drawings (drawing references listed in 7.3.1), Desk Study and Site Investigation Report including the Basement Impact Assessment by Geotechnical and Environmental Associates (GEA).

1.0 Introduction

Engineers HRW have been asked to consider the engineering issues surrounding the proposed construction works to support the planning application.

The proposed structural works comprise of:

- Construction of a new swimming pool in the rear garden

This report has been prepared in compliance with Camden's CPG Basements January 2021 requirements for basement extensions. It is the equivalent of Appendix 5 of the Camden BIA proforma and is signed by a Chartered Structural Engineer (MIStructE). It includes proposals for a sequence of construction. A desk study and site-specific soils investigation have been carried out by GEA and signed off by a Chartered Geologist and Hydrologist.

2.0 Site Information

The site is located within the London Borough of Camden, approximately 400m west of Highgate Village. It fronts onto The Grove to the east with Fitzroy Park and Highfields Grove to the west. The site is in the Highgate Village Conservation Area.

The site is occupied by No 7 and 7A The Grove, a four-storey semi-detached property. The house and front railings are Grade II listed.

Topographically, the site slopes to the rear. The rear third of the garden shares a retaining wall with No 5 The Grove to the south and this continues to the end of the garden to No 4 Highlands Grove. The wall retains a 3m height of the garden to No 7 and is approximately 4.5.high total. The wall is listed.

Figure 1 - Extract from the Camden Highgate Conservation Area Map

2.1 Existing Garden

The existing garden slopes towards the rear with two distinct areas separated by a brick arcade. The main section of garden, at the rear of the house, consists of terraces and lawn with trees and planting. Beyond the brick arcade is a water feature within an overgrown area of trees and shrubs. The pool is to be located on the site of the existing water feature.

To the south is a listed retaining wall forming the boundary to No 5 The Grove. To the north is a modern low brick wall forming the boundary to No 8 The Grove.

There are a large number of mature trees and shrubs within the garden. Some of these are to be removed. See the arboricultural report for details.

Figure 2 – Existing Arcade and water feature

2.2 Ground Conditions

2.2.1 Geology

A detailed Geotechnical Site Investigation has been carried out by GEA Ltd. and the findings are covered in the GEA Ground Investigation and Basement Impact Assessment Report J22393 dated February 2023.

The British Geological Survey (BGS) map of the area (Sheet 256) indicates the site to be underlain by the Bagshot Formation overlying the Claygate Member of the London Clay. The investigation has generally confirmed the expected ground conditions in that, beneath a moderate thickness of made ground, the Bagshot Formation was encountered to the full depth of the investigation.

Atterberg results show the clay to be of low to medium shrinkability.

2.2.2 Groundwater

Groundwater was not encountered during the investigation and the three standpipes have been found to be dry during a single monitoring visit.

2.2.3 Contamination

The desk study findings indicate that the site does not have a potentially contaminative history as it has only been developed with houses for its entire developed history.
The results of the chemical analyses have indicated all of the samples tested to contain elevated concentrations of lead while one of the samples also contained an elevated concentration of arsenic.
The development will not result in an increase in soft landscaping at the site, meaning exposure will remain as it has been throughout the history of the site. As a result, a requirement for remedial measures at the site is not envisaged.

2.3 Trees

An Arboricultural survey of all trees within an impact distance of the site work has been undertaken. Refer to Arboricultural Impact Assessment Report by Russell Miller Arboriculture dated November 2022.
The Report shows a number of trees to be removed and the root protection zones of the trees to remain. The pool construction is outside the root protection zones however surrounding paving may be within.

2.4 Flood Risk

The site is not within an area shown by the Environment Agency to be at risk from flooding from rivers or the sea and does not lie within any known areas of sensitive land use.

Based on the above there is a Low surface water flood risk at this site and the pool may be designed for a ground water level of 1m below ground level.

2.5 UXO Risk Assessment

A Preliminary UXO Risk Assessment has been completed by 1st Line Defence (report ref PA17108-00, dated December 2022), and the report is included in the appendix of GEA Ltd. Ground Investigation and Basement Impact Assessment Report.

The report shows that a minimal risk of encountering unexploded ordnance has been identified for the site and no further action is recommended in this respect.

3.0 Proposed Structural Works

3.1 Introduction

The proposed development involves construction of a swimming pool and associated structures in the rear garden.

The construction of the new basement will involve excavation below the existing ground level to a depth of 2.1m. The excavation will be formed within propped trench sheeting.

The swimming pool design is to be completed by others but is assumed to be a reinforced concrete box to provide a robust, high quality structure.

3.2 Excavation Works

The works are to be carefully sequenced and undertaken and the contractor is to provide full temporary works and supervision to ensure that the stability of the surrounding structures is maintained at all times.

3.3 Pool Structure

The new pool structure is to consist of reinforced concrete walls and base. It will be designed to support hydrostatic and soil pressures in both full and empty conditions. It will also be designed for floatation.

4.0 Control of Movement

The pool excavation is sufficiently remote from the adjacent listed boundary wall that the proposed works will not cause damage. The garden arcade masonry wall is to be partly reconstructed to realign the existing piers. This work will be carried following construction of the pool.

4.1 Ground movement analysis

The GEA Report has concluded that there will be no impact on the listed boundary wall.

5.0 Sustainable Construction

The form of construction requires a reinforced concrete basement structure, where possible materials will be chosen to reduce embodied carbon and Environmental Product Declarations (EPDs) will be required. Concrete will be specified with cement replacement products, CEM lll mixes with 50% plus GGBS can reduce embodied carbon by 50-60%. Steelwork and concrete reinforcement will come from re-cycled sources where possible. Products such as the following will be specified.

Concrete Global warming potential 100kgCO_2e/t (Cemex Vertua for example).

Reinforcement Global warming potential 647kgCO_2e/t (Supplier Celsa Steel UK for example).

6.0 Method Statement / Sequence of Works – Swimming Pool

Construction methodology and the temporary works assumed in the design are as described below and on sketch drawings 2247/SK 001 to 003. These will be superseded by the contractor's proposals.

1. Root protection zones to be identified and protected.
2. The existing arcade arches and piers carefully dismantled where to be reconstructed.
3. Initial excavation to 0.5m to remove existing water feature foundations.
4. Trench sheeting inserted and propped.
5. Excavation to formation level.
6. Pool base constructed.
7. Walls constructed.

7.0 Design Criteria

7.1 Code of Practice

The design and construction of the works shall conform to the relevant Eurocodes with UK annexes and other Technical Publications latest editions as amended, in particular:

Building Regulations 2010 Edition.

BS EN 1991 Eurocode 1: Actions on Structures

BS EN 1992 Eurocode 2: Design of Concrete Structures

BS EN 1993 Eurocode 3: Design of Steel Structures

BS EN 1994 Eurocode 5: Design of Timber Structures

BS EN 1996 Eurocode 6 Design of Masonry Structures

BS EN 1997 Eurocode 7: Geotechnical Design

7.2 Loading – Imposed loadings to Eurocode 1

Landscape areas = 5.0 kN/m2
Domestic areas = 1.5 kN/m2
Roof (flat with no access) = 0.75 kN/m2
Roof (pitched) = 0.6 kN/m2

7.3 List of relevant structural drawings and reports

7.3.1 Drawings

eHRW Sketches:

- 2247/SK/001 Site Plan
- 2247/SK/002 Section A
- 2247/SK/003 Section B

Lisa Shell Architects Drawings

- GRO7L/SSP/001
- GRO7L/SSP/101
- GRO7L/SSP/102
- GRO7L/GA/001
- GRO7L/GA/101
- GRO7L/GA/201

7.3.2 Reports

- Ground Investigation and Basement Impact Assessment by GEA J22393 dated February 2023
- Arboricultural Method Statement by Russell Miller Arboriculture dated November 2022

7.3.2 Appendices

- Appendix 1 - EngineersHRW Proposed Structural Sketches

8.0 Conclusion

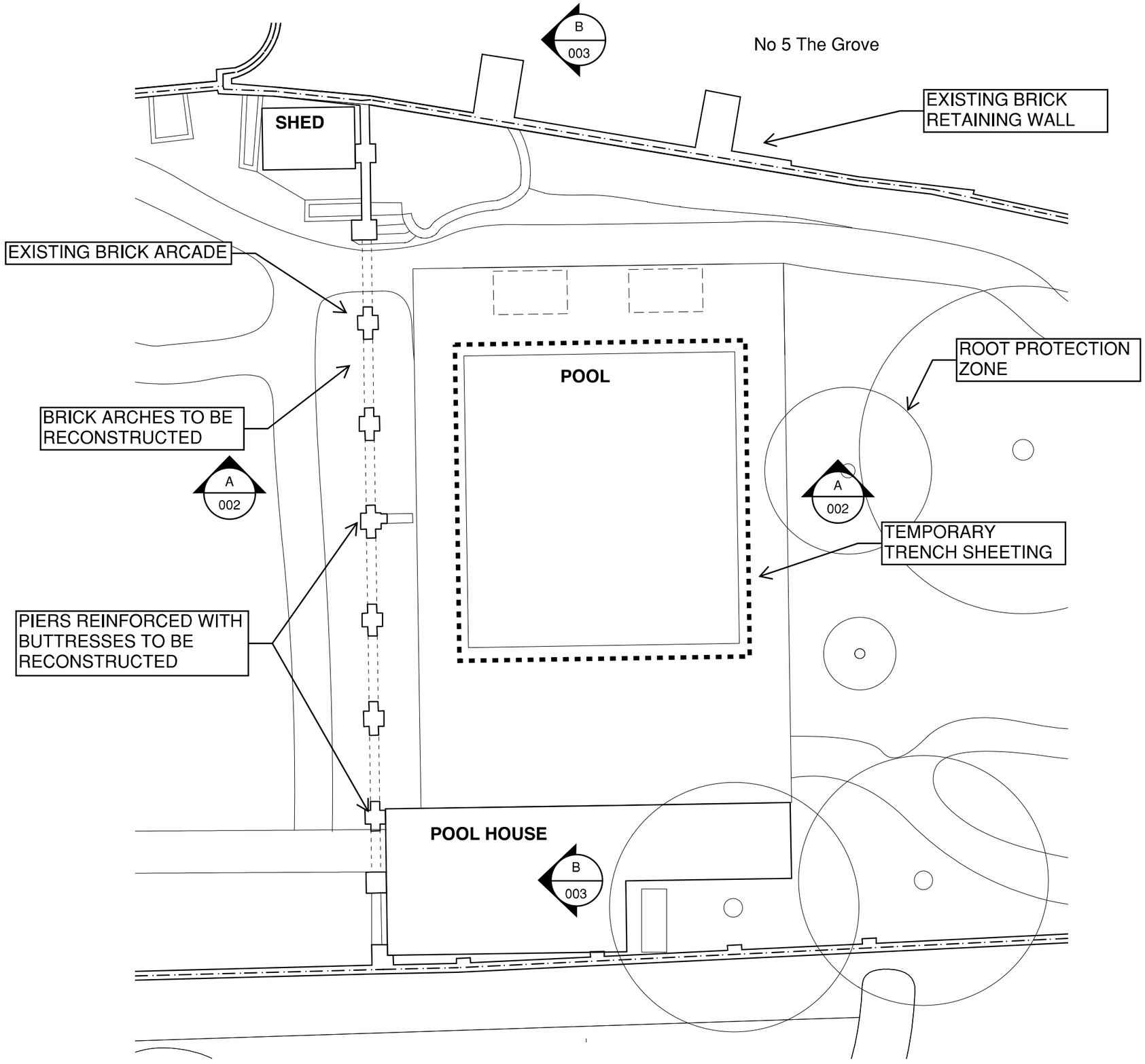
The following has been carried out in preparing this Structural Engineer's Construction Method Statement:

- A Desk Study followed by a full Site Investigation were undertaken to establish ground conditions, soil contamination and groundwater levels.
- A Basement Impact Assessment
- An engineering scheme proposal considering the surrounding structures and site constraints. This includes a sequence of construction.

Based on the above we are satisfied that the scheme is viable and is designed and can be constructed in accordance with Camden Council's CPG Basements dated January 2021.

APPENDIX 1

EngineersHRW Proposed Structure Sketches



NOTES:
1) Pool design by contractor. Design to allow for water at 1m below ground level.

2) Temporary works design to be by the contractor. Fully propped trench sheeting assumed.

2) Piers and arches to be reconstructed using existing brickwork. Lime mortar to be used. Repointing to remaining piers to match.

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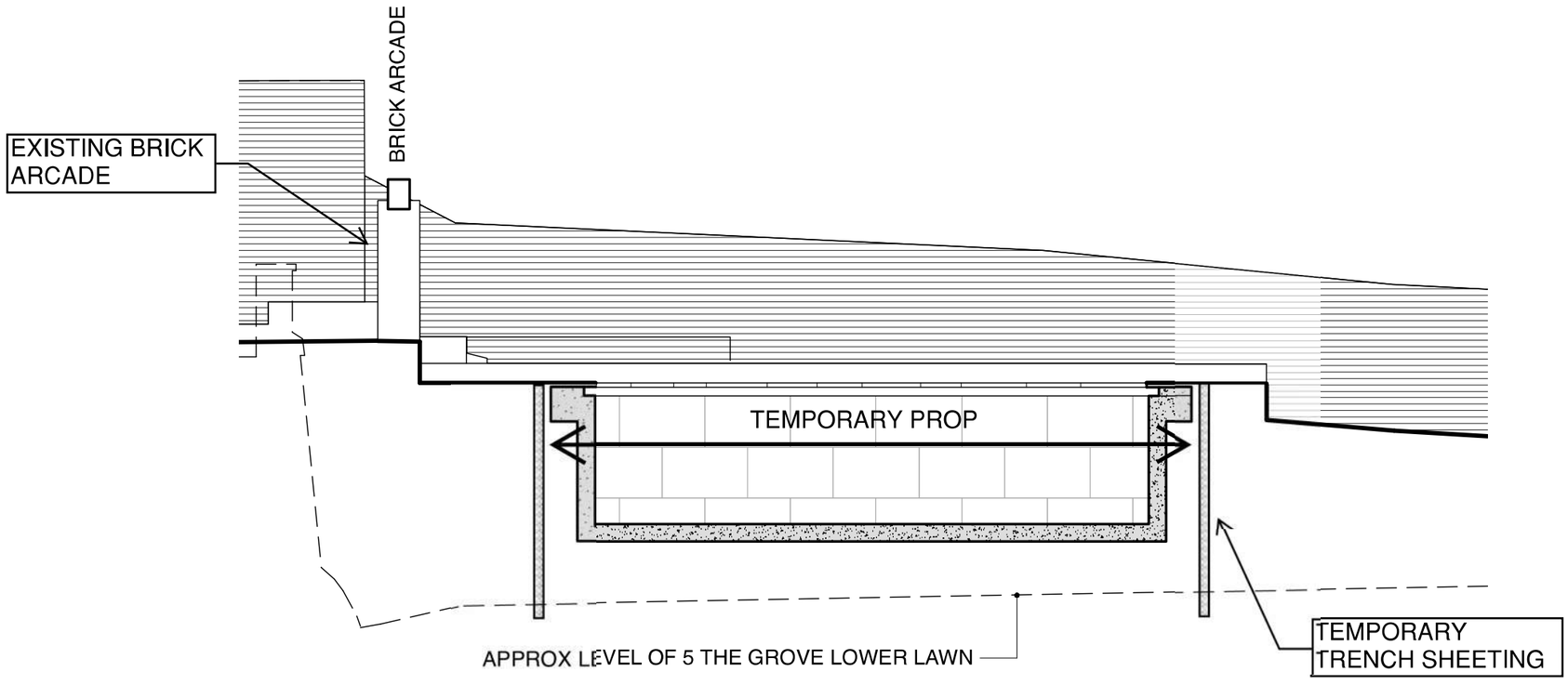
Project Title:
7 The Grove

Drawing Title:
Site Plan

Scale at A3:	Drawn by:	Date:	Checked:
NTS	BS	01/23	-

Drawing Status:
Preliminary

Project No:	Drawing Type:	Drawing No:	Revision:
2247	SK	001	-



SECTION A-A

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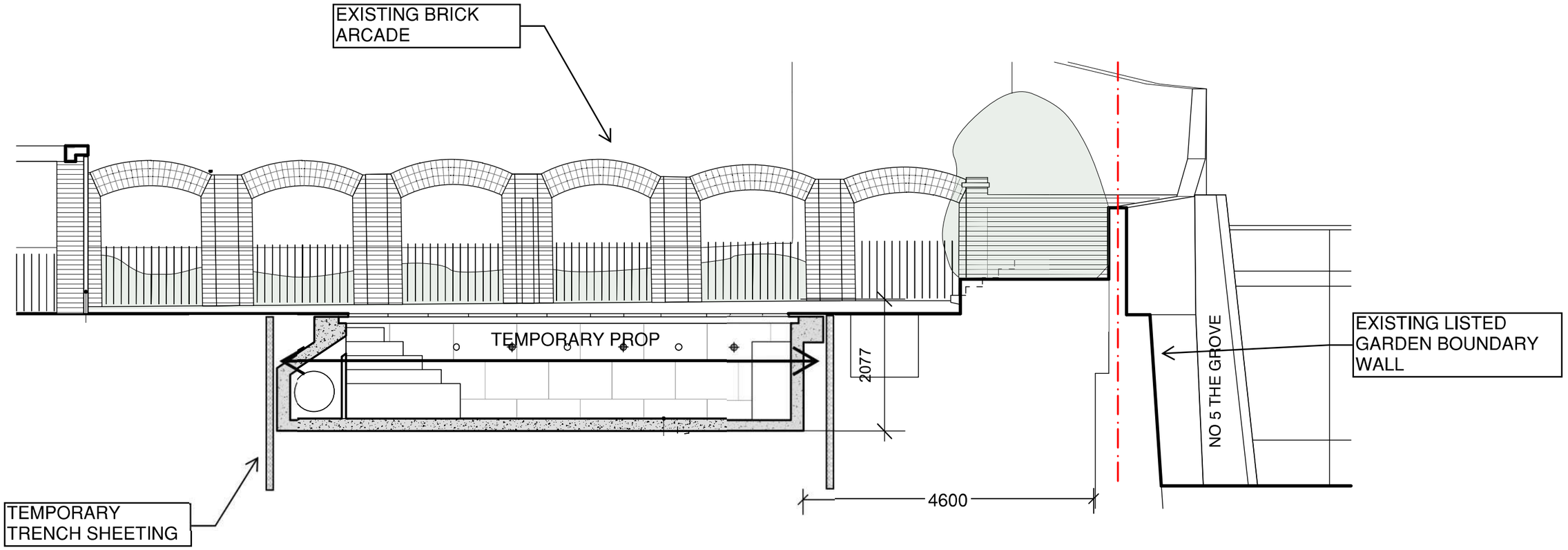
Project Title:
7 The Grove

Drawing Title:
Section A

Scale at A3:	Drawn by:	Date:	Checked:
NTS	BS	01/23	-

Drawing Status:
Preliminary

Project No:	Drawing Type:	Drawing No:	Revision:
2247	SK	002	-



SECTION B-B

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Project Title:
7 The Grove

Drawing Title:
Section B

Scale at A3:	Drawn by:	Date:	Checked:
NTS	BS	01/23	-

Drawing Status:
Preliminary

Project No:	Drawing Type:	Drawing No:	Revision:
2247	SK	003	-