EARTH WATER
Geotechnical Consulting Engineers

GONDAR GARDENS, SITE TO THE REAR OF 12 SARRE ROAD, LONDON, NW2 3SL
For
NORMA JONES

PHASE 1 PRELIMINARY CONTAMINATION RISK ASSESSMENT REPORT

Prepared by Earth Water GCE

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Geotechnical Consulting Engineers

Client Name: Norma Jones
Project Name: Gondar Gardens, Site to the rear of 12 Sarre Road, London
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This document has been prepared and checked in accordance with Earth Water GCE internal management procedures.

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Issue 1 First issue

TABLE OF CONTENTS

Figures

Tables

Appendices

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1. Introduction

1.1 Objectives

Earth Water GCE has been instructed by Norma Jones to undertake a Phase 1 Preliminary Contamination Risk Assessment Report (PRA) of the subject site, referred to as Gondar Gardens, the site located to the rear of 12 Sarre Road in the West Hampstead District and Fortune Green Ward of North-West London. The postcode for the site is NW2 3SL. The overall objective of the Preliminary Contamination Risk Assessment, also known as a Desk Study Report, was to inform the Client of the ground conditions and any potential environmental or ground-related risks associated with proposed development of the site for residential use.

The risk assessment undertaken relates to the proposed development scheme which will include the use of part of the existing residential garden at 12 Sarre Road on site to form a new, two-bedroom residential dwelling. No car parking or garage will be provided with the property, though ample cycle storage is proposed. A small soft landscaped gardens will also be provided on site. Full details on the proposed works are summarised in Section 1.3 of this report.

An Envirocheck Environmental Insight Report (report reference: 353527670_1_1 dated 22nd July 2024) has been used to support the findings of this Preliminary Contamination Risk Assessment.

1.2 Site Location and Description

The site is roughly rectangular in shape and comprises an area of approximately 0.04 hectares as shown in Figure 1.

The site lies on the eastern side of Sarre Road in West Hampstead in North-West London. The centre of the site is located at approximate National Grid Reference 524760, 185200. An aerial view of the site showing the existing red line boundary is presented in Figure 2.

Most of the site is generally flat and level. The level of Sarre Road lies approximately 2m lower than the entrance into the residential property. The site is currently occupied by a semi-detached residential property which comprises ground floor and first floor accommodation and has been divided into two self-contained residential flats (ground and first floor). No basement is present on site.

The property has a large rear garden measuring over 21m in length. The garden fronts onto a residential street known as Gondar Gardens, which lies directly to the east of the site. The existing residential garden at 12 Sarre Road has been sub-divided for each of the two residential properties and part of the garden has been allocated for car parking spaces at the eastern end of the garden on site, which is accessed via Gondar Gardens.

The site lies in a predominantly residential area, with some wider retail and leisure units present nearby including The Alliance public house approximately 100m south-east of the site and Mill Lane Veterinary Surgery lies approximately 125m south-east of the site boundary. No further significant commercial or industrial activities are recorded within the surrounding area.

The City Thameslink railway line and associated sidings are present from approximately 105m to the south-west of the site boundary, running between Cricklewood railway station (Zone 3) to the north-west of the site and West Hampstead railway station (Zone 2) to the south-east of the site.

The existing foundations on site associated with the residential property at 12 Sarre Road are likely to have comprised shallow concrete foundations (footings). It is understood that the new property within the rear

garden on site will also be constructed with shallow concrete foundations (footings).

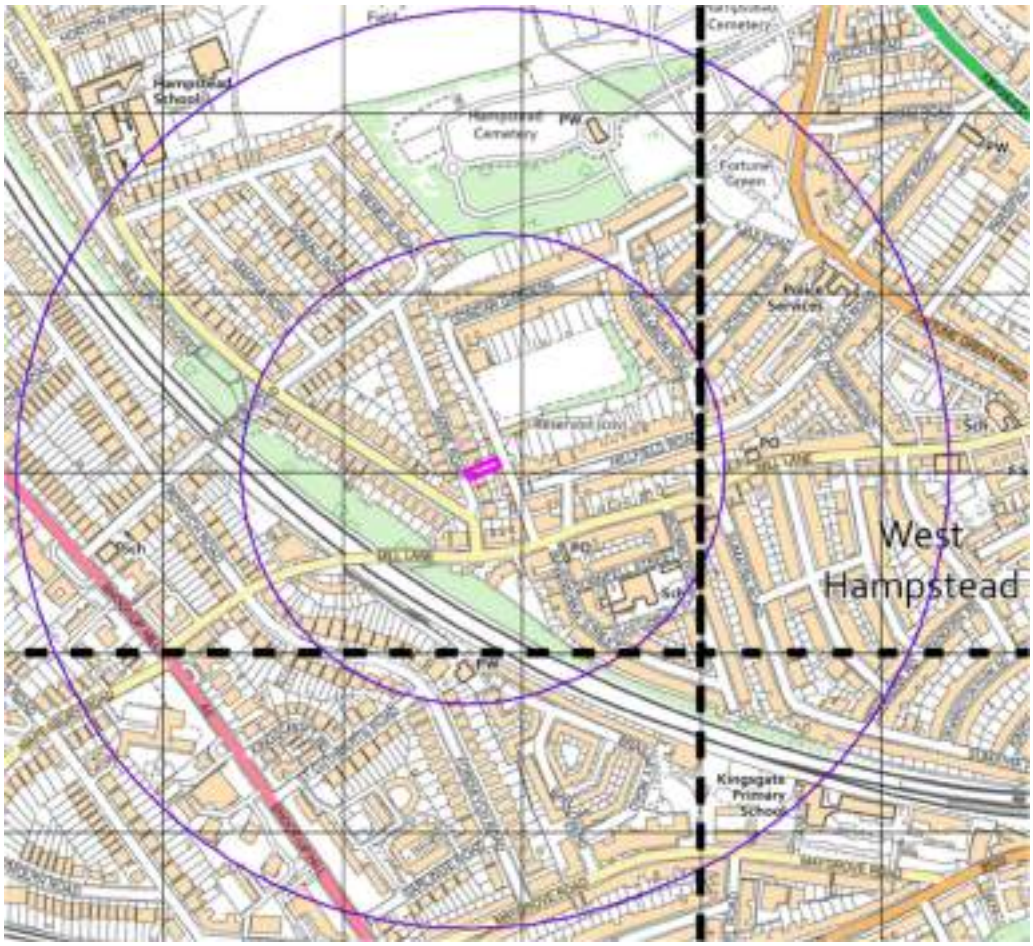

Figure 1: Site Location Plan

Taken from Environmental Insight Report OS Mapping Records

Figure 2: Aerial Site View

Taken from the Pre-Application Statement for the site produced by UPP Architects + Town Planners

1.3 Proposed Development

The proposed development scheme at the site will involve the use of part of the existing residential garden to form a new, two-bedroom residential dwelling. No car parking or garage will be provided with the new property, though ample cycle storage is proposed. A small soft landscaped gardens will also be provided as part of the proposed scheme. Key drawings of the proposed development are presented in Appendix A.

The proposed scheme aims to create a modern dwelling which will sit comfortably within the established character and appearance of the existing surrounding new residential properties which have been constructed in recent years within the rear gardens of No.2 to No.10 Sarre Road, fronting onto Gondar Gardens. These properties are modern, single family dwelling houses. The proposed development would sit immediately adjacent to these dwellings and would match the established pattern of development in the immediate locality. The site boundaries for the new dwelling on site would reflect that of the immediate neighbours.

At the time of writing in August 2024, no major demolition works had commenced at the site, as shown in the photographs included in Appendix B.

1.4 Site Walkover Survey

A site walkover survey was conducted on the 21st July 2024 by a representative of Earth Water GCE. A series of photographs taken during the walkover are presented in Appendix C.

Numerous cars were noted to be parked along Sarre Road and Gondar Gardens, adjacent to the western and eastern ends of the site at the time of the site walkover.

12 Sarre Road is a brick-built residential property elevated above the level of Sarre Road, entered via a series of steps leading up to the property entrance through the front garden on site. The property comprises two self-contained flats at ground and first floor level which were occupied at the time of writing in August 2024. A wooden fence with a narrow gateway separated the rear of the site from Gondar Gardens. Part of the rear of the site was used as a car parking area by residents at 12 Sarre Road and comprised hardstanding. This area was accessed via Gondar Gardens at the rear of the site.

A series of modern properties were observed, present within the rear gardens of No.2 to No.10 Sarre Road, directly south of the site.

The area of the site to be redeveloped for residential use currently comprises an area of the residential rear garden which is partially covered with hardstanding and a grassed area, enclosed by an approximate 2m high timber boundary fence. A wooden garden shed, wheelie bins, gardening tools and garden waste were noted in this area and will require clearance prior to the redevelopment of this area. A pile of garden wastes, containing rotting vegetation, grass cuttings and plant pots, was also noted adjacent to the shed on site.

The remainder of the site comprised the rest of the garden and was divided into two garden areas for each of the residential flats on site. Both garden areas were very overgrown and did not appear to have been regularly maintained. Several large, established and mature trees and shrubs were present on site and plastic garden furniture, solar lights and numerus plant pots and boxes were observed. Most of these items were dilapidated and in a state of disrepair.

Piles of old tables, garden gloves, pots, a mirror and household items were present on site adjacent to the residential building. Some of the vegetation within the garden encroached up to the rear of the property at 12 Sarre Road. Some trellis and garden waste bins were noted on site, as well as plastic containers and garden storage. An old garden swing and a BBQ, almost entirely covered by vegetation were present. No further waste materials or evidence of fly tipping were observed on site.

No standing water was noted on site during the site walkover. No visible evidence of contamination, including evidence of leaks or spills, was observed on site during the site walkover.

No evidence of Asbestos or Asbestos-Containing Materials (ACMs) was observed on site during the site walkover.

There were no signs of any subsidence in the existing property during the site walkover and the site was not thought to be within the exclusion zone of any tunnels or railway lines.

No electrical sub-stations were noted in the vicinity of the site and no above or below-ground fuel storage tanks were observed on or in the nearby area.

1.5 Limitations

This report is based upon information obtained from third party sources, together with observations from the site walkover. The third-party data has been accepted at face value and has not been independently verified. Earth Water GCE can therefore give no warranty, representation, or assurance as to the accuracy or completeness of such information.

This report has been prepared for the sole internal use and reliance of the Client, Norma Jones, and shall

not be relied upon by other parties without the express written authority of Earth Water GCE. If an unauthorised third party comes into possession of this report, then they rely on it at their own risk.

2. Site and Surrounding Area Historical Mapping Review

Detailed maps and aerial photographs of the site and surrounding area dated 1873 to 2024 (at scales of 1:1,056, 1:1,250, 1:2,500, 1:10,000 and 1:10,560), provided by Envirocheck for the site, have been reviewed. This has been undertaken to identify any former land uses at the site and within the surrounding area that may have geotechnical or geo-environmental implications for the proposed development. The findings are summarised in Table 1. Google Earth and other sources of publicly available information have also been reviewed to support this assessment.

Table 1: History of the site and surrounding area

Map date and scale	Key on-site features	Key off-site features
1873 to 1874 (1:2,500 and 1:10,560)	By 1873, the site comprised open, undeveloped land and was part of a large field.	By 1879, a railway line and associated sidings were present from approximately 120m south-west of the site boundary. The remainder of the surrounding area was dominated by open, undeveloped land divided into fields.
1893 to 1896 (1:1,056, 1:2,500 and 1:10,560)	The site remained as undeveloped land but no longer formed part of a large field.	By 1893, residential properties had been constructed from approximately 15m west of the site and the Grand Junction Water Works covered reservoir was present from approximately 50m north-east. Further residential properties had been built from approximately 50m to the south and south-west of the site. A school was labelled approximately 200m south-east. The railway sidings to the south-west of the site were shown to have expanded to within approximately 105m of the site. Further residential properties were shown within the wider area around the site.
1915 to 1920 (1:2,500 and 1:10,560)	By 1915, the existing property at 12 Sarre Road had been constructed on site.	Most of the area surrounding site had been developed as residential properties by 1915. A public library was present approximately 20m south-west of the site. Residential properties had been constructed on all four sides around the covered reservoir to the north-east of the site. Allotment gardens were labelled from approximately 225m north of the site boundary.
1935 to 1936 (1:1,056 and 1:2,500)	No changes were noted on site.	Further residential development had taken place by 1936 within the wider area around the site.
1950 to 1958 (1:1,250, 1:2,500 and 1:10,000)	No changes were noted on site.	By 1954, a series of residential garage were labelled approximately 55m to the south of the site. A series of flats had been constructed from 100m north-east of the site by the early-1950s. The wider allotment gardens were no longer labelled. An electrical sub-station was labelled approximately 200m to the south-east of the site.
1962 to 1978 (1:1,250 and 1:10,000)	No changes were noted on site.	By 1974, an electrical sub-station was labelled approximately 90m to the north-east of the site.
1991 to 1999 (1:1,250 and 1:10,000)	No changes were noted on site.	By 1991, an electrical sub-station was labelled approximately 95m to the south-west. By 1999, some residential development had taken place to the north and south of the site on Gondar Gardens.
2006 to 2024 (1:10,000)	No changes were noted on site.	By 2024, further residential development had taken place on Gondar Gardens. The covered reservoir remained in 2024 to the north-east of the site.

3. Environmental Desk Study Assessment

3.1 Geology

Information on the underlying geology at the site has been obtained from the British Geological Survey (BGS) Sheet 256 for North London (scale: 1:50,000 dated 2006), the BGS Geological Map Viewer and Geological Mapping provided by Landmark within the Envirocheck Report (a copy of which is provided in Appendix C).

Worked or artificial ground has not been identified on site or within 250m of the site by Envirocheck or the BGS. A minimal covering of Made Ground is anticipated to be present beneath areas of hardstanding within the area of the site to be developed and below the existing building footprint at 12 Sarre Road. According to mapping records, no historical demolition has been carried out since the original construction works prior to 1915 to create 12 Sarre Road. On this basis, the depth and extent of any Made Ground present is likely to be limited.

No areas of potentially infilled land (water or non-water) have been recorded by Envirocheck within 750m of the site boundary.

No Superficial Deposits are recorded to be present on site or within the surrounding area according to BGS and Envirocheck.

The site is shown to be directly underlain by the London Clay Formation bedrock. This stratum comprises poorly laminated, blue-grey, or grey-brown, silty to very silty clay. Clayey silt and sandy clay are occasionally recorded, and it commonly contains thin courses of carbonate concretions (known as cementstone nodules) and disseminated pyrite. The London Clay Formation can be up to 100m thick in this area of West London. The stratum was formed between 47 and 56 million years ago during the Paleogene period.

No BGS borehole records are recorded within a 250m radius of the site boundary.

There are no contaminated land register entries and notices recorded within 1km of the site.

3.2 Mining and Mineral Extraction

The site is not located within an area with a history of coal mining and no mining records are listed within 1km of the site according to Envirocheck records.

There are no BGS recorded mineral sites recorded within a 1km radius of the site boundary. No natural cavities or man-made cavities are recorded within a 1km radius of the site boundary by Envirocheck.

3.3 Soil Chemistry

Estimated BGS soil chemistry data based on characteristics of the natural geochemistry of the geological units present at the site has been provided within the Envirocheck Report. A review of this data has been undertaken and is summarised in Table 2.

Table 2: Soil Chemistry Summary

Contaminants	Average concentrations (mg/kg)
Arsenic	<15 mg/kg
Cadmium	<1.8 mg/kg
Chromium	40 to 60 mg/kg
Lead	150 to 300 mg/kg
Nickel	15 to 30 mg/kg

The estimated soil chemistry for Arsenic, Cadmium, Chromium (assuming trivalent), and Nickel do not exceed the relevant Generic Assessment Criteria (GACs) for residential with plant uptake land use, which include Soil Guidance Values (SGVs) (CL:aire), Category 4 Screening Levels (C4SLs) (DEFRA) and the 2014 Land Quality Management (LQM) / Chartered Institute of Environmental Health (CIEH) Suitable for Use Levels for Human Health Risk Assessment (S4ULs). The estimated soil chemistry for Lead could exceed the relevant GAC of 200 mg/kg for a residential with plant uptake land use as it lies within an area with an estimated soil chemistry of 150 to 300mg/kg.

No site-specific empirical data, referred to by the BGS as 'Measured Urban Soil Chemistry' has been recorded for the site. One dataset has been provided for a location approximately 15m north-east of the site boundary. A review of this data has been carried out and is summarised in Table 3. The recorded concentration of Lead of 283.3 mg/kg is in excess the residential with plant uptake land use GAC of 200 mg/kg. This concentration provides a guideline for the local ground conditions only and does not necessarily mean that the shallow soils on site necessary contain high lead concentrations.

Table 3: Empirical Soil Chemistry Data (approximately 15m north-east of the site)

Contaminants	Average concentrations (mg/kg)
Arsenic	23.6 mg/kg
Cadmium	0.8 mg/kg
Chromium	59.4 mg/kg
Lead	283.3 mg/kg
Nickel	23.6 mg/kg

3.4 Hydrogeology

The London Clay Formation bedrock which is recorded to directly underlie the site is classified as Unproductive Strata by the Environment Agency. Unproductive strata are largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them.

The site does not lie within a groundwater Source Protection Zone (SPZ) and no groundwater SPZs are recorded within 1km of the site.

There are no discharge consents to groundwater recorded within 1km and no groundwater abstractions are recorded by Envirocheck within a 1km radius of the site boundary.

The combined groundwater vulnerability on site is considered by Envirocheck to be low. This rating is due to the presence of Unproductive Strata below the site (with mixed flow, no superficial recharge, and a low

pollutant speed due to the absence of superficial deposits on site and the presence of low permeability layers at ground level). Given the hydrogeological status of the site, the groundwater beneath the site is considered to be of low sensitivity with regards to near surface contamination given the underlying Unproductive Stratum, lack of groundwater and surface water abstractions within 1km of the site, absence of nearby surface water features, and the absence of a groundwater SPZ on site or within a 1km radius of the site.

The Envirocheck Report does not record a significant risk relating to the presence of soluble rocks on site.

No Water Industry Act referrals have been recorded with respect to groundwater discharges within 1km of the site boundary.

3.5 Hydrology

The Envirocheck Report details that there are no surface water features recorded within 650m of the site boundary. No major surface water features are recorded within a 1km radius of the site boundary.

There is a disused covered reservoir from approximately 50m to the north-east of the site boundary, recorded on mapping for the as detailed in Section 2.1 of this report, though this water feature is located below-ground, is entirely covered and lies within the London Clay Formation low-permeability strata. On this basis, it is not considered to be a viable receptor at the site.

There are no pollution incidents recorded by Envirocheck within 1km of the site boundary, and no substantiated pollution incidents are recorded within the Envirocheck Report within a 1km radius of the site. No surface water abstractions are recorded within 1km of the site within the Envirocheck Report.

There is one discharge consent to surface water recorded within a 925m radius of the site, located approximately 286m to the north-east of the site boundary. This authorisation is listed as revoked by Envirocheck but related to wastewater treatment, collection, treatment and supply, operated by Thames Water Utilities Ltd. The consent was for discharge into the River Thames and became operational in 1989 and was revoked in 2000.

There are no Integrated Pollution Controls (IPC), and no Integrated Pollution Prevention Controls (IPPC) recorded within a 1km radius of the site boundary.

The closest Local Authority Pollution Prevention Control (LAPPC) to the site boundary is recorded approximately 344m east of the site and relates to Cotton Club Dry Cleaners at 57 Mill Lane for PG6/46 dry cleaning. The consent dates to February 2007 and remains permitted. No further LAPPC are recorded by Envirocheck within a 475m radius of the site boundary.

There are no records for enforcement and prohibition notices or prosecutions relating to authorised processes listed within 1km of the site within the Envirocheck Report.

No Water Industry Act referrals have been recorded with respect to surface water discharge within 1km.

3.6 Flood Risk

The site is not listed as having the potential for groundwater flooding too occur at the surface or below ground level on site or within the surrounding area.

The site falls within a Flood Zone 1 area and is therefore at low probability risk of flooding (less than 0.1% probability of flooding within a given year). It is not recorded as at risk of flooding or extreme flooding from rivers or seas without defences within the Envirocheck Report. The site does not benefit from flood defences and there are no flood water storage areas in the vicinity of the site.

According to the Environment Agency, development schemes that are smaller than a hectare in size with

a low flood risk do not require a Detailed Flood Risk Assessment. No further consideration of flood risk is given in this report. Specialist flood risk advice should be sought with regards to drainage and flooding by the Client as required.

3.7 Unexploded Ordnance

In general accordance with the CIRIA report C681 (Stone et al 2009) a non-UXO specialist screening exercise has been carried out for the site as detailed below.

The Zetica bomb risk map for the area (West Hampstead) indicates that the site is within an area with a low to moderate bomb risk. Areas designated as low to moderate risk are those assigned to areas with an estimated bombing density of less than 15 bombs to 50 bombs per 1,000 acres) with no or limited significant potential WWII targets present locally. A copy of the UXO map is presented in Appendix D.

The residential property on site at 12 Sarre Road was shown on historical mapping for the site and surrounding area dated 1915. A review of historical mapping for the site did not reveal any post-WWII UXO damage on site or immediately adjacent to the site.

Further action to mitigate the risk is considered prudent by Zetica, although not essential. Further consideration to the potential for UXO to be present at the site must be considered as part of any proposed development works.

3.8 Ground Stability

The potential ground stability hazards associated with the geology at the site, as outlined in the Envirocheck Report, have been summarised below in **Error! Reference source not found.**.

Table 4: Ground Stability Risks

Ground Stability Issue	Risk Level
Collapsible Ground	Very Low Risk
Compressible Ground	No hazard
Ground Dissolution	No hazard
Landslide Ground Instability	Very Low Risk
Running Sand	Very Low Risk
Shrinking or Swelling Clay	Moderate Risk (associated with the London Clay Formation bedrock on site)

3.9 Radon

The site is indicated within the Indicative Atlas of Radon for England and Wales and the Envirocheck Report to be in a lower probability radon area, with less than 1% of homes estimated to be at or above the action level. Therefore, the BGS and the Building Research Establishment Radon Guidance Document indicate basic radon protection measures are not required in the construction of new homes, buildings, or extensions at the site.

3.10 Waste Management and Landfill

No Environment Agency registered landfills, Local Authority landfills or BGS landfills are recorded within the Envirocheck Report within a 1km radius of the site.

No historical landfill sites are recorded within a 1km radius of the site boundary.

There are no recorded licensed waste management facilities, and no registered waste treatment, transfer or disposal sites recorded within 575m. No Integrated Pollution Control (IPC) registered waste sites have been identified by Envirocheck within 1km of the site.

3.11 Hazardous Substances

No records of explosive sites, planning hazardous substance consents or enforcements, Control of Major Accident Hazards (COMAH) or Notification of Installations Handling Hazardous Substances (NIHHS) sites have been identified within 1km of the site.

There are no registered radioactive substances recorded within 1km of the site boundary.

3.12 Contemporary Trade Directory Entries

There are no contemporary trade directory entries recorded on site or within a 50m radius of the site boundary. The closest trade directory entry to the site is located approximately 75m south-east of the site at The Mansions at 33 Mill Lane and relates to Zen Architectural Fittings (hardware). The entry is listed as inactive.

A further seven entries are recorded between 100m and 200m from the site and relate to dry cleaners, beauty electrolysis, carpet, curtain and upholstery cleaners, domestic cleaning services, window frame manufacturers and printers. No active entries are recorded within a 275m radius of the site boundary.

One entry for a commercial services point of interest is recorded within a 200m radius of the site boundary and relates to A K Locksmiths Ltd (vehicle repair, testing and servicing), located approximately 123m to the south-east of the site boundary at 56 Mill Lane.

No fuel station entries are recorded within a 500m radius of the site boundary.

3.13 Sensitive Land Uses

The Envirocheck Report indicates that the site is not located within a Nitrate Vulnerable Zone (NVZ).

The site is not located within the setting of any listed buildings and is not located within a Conservation Area.

The disused reservoir located from approximately 50m to the north-east of the site on Gondar Gardens was protected as open space and as a site of nature conservation importance in 2005. Despite this, there are currently plans at the time of writing to redevelopment this site for residential use.

There is one Local Nature Reserves (LNR) recorded within a 1km radius of the site, located approximately 245m to the west of the site and relates to Westbere Copse, designated by Natural England.

No areas of Sites of Special Scientific Interest (SSSI), National Parks, Areas of Adopted Greenbelt, Ancient Woodland, Areas of Outstanding Natural Beauty (AONB) or other sensitive land uses are located within 1km of the site. The site does not lie within an area of adopted greenbelt and no areas of adopted greenbelt are present within 1km of the site.

3.14 Invasive Weeds

During the site walkover, no ecological receptors were identified on site and no evidence of invasive weeds, including Japanese Knotweed were observed. Although a visual inspection was carried out, this does not represent a full invasive weeds survey and as such may need to be carried out by a specialist.

4. London Borough of Westminster Local Authority Search

4.1 Planning Portal Search

A search of the Camden London Borough Council planning portal was undertaken for the site and the immediate area on the 1st August 2024.

There are four planning applications listed on the planning portal which relate to the site at 12 Sarre Road. Three of these applications relate to former iterations of the proposed scheme for the erection of a two-storey dwelling within the rear garden of the property. The most recent application (planning reference: 2021/4486/P) was submitted in October 2021 and was refused. Two previous linked applications (planning references: 2020/2688/P and 2020/2689/P) were submitted in July 2020 for the erection of a three-storey dwellinghouse, later reduced to a two-storey dwellinghouse within the rear garden of the property at 12 Sarre Road. Both applications were refused in April 2021 due to several concerns, including the proposed proximity of the new property to an ash tree within the residential garden on site which is protected by a Tree Preservation Order (TPO).

The additional planning application at the site related to works to an ash tree, which has a TPO at the site. This was submitted and approved in 2004.

There is currently no submitted planning application for the site, relating to the current proposed development scheme. It is reported that the new location of the proposed residential property on site will be within the south-eastern area of the site to avoid the protected tree on site.

None of the planning applications at the site or within the NW2 3SL postcode area around the site identified any issues relating to contaminated land risk. Local applications related to the construction of new residential properties, changes to existing residential properties in the neighbourhood and to the pruning, felling or removal of deadwood of nearby trees protected by TPOs.

5. Preliminary Risk Assessment and Exposure Model

A Conceptual Site Model (CSM) represents the possible relationships between potential contaminant sources, pathways, and receptors in line with the Statutory Guidance to Part 2a of the Environmental Protection Act 1990. The following Preliminary Risk Assessment is based on the results of the Desk Study and the site walkover.

5.1 Potential Contamination Sources and Contaminants of Concern

On-site

Worked or artificial ground has not been identified on site or within 250m of the site by Envirocheck or the BGS. A minimal covering of Made Ground is anticipated to be present beneath areas of hardstanding within the area of the site to be developed and below the existing building footprint at 12 Sarre Road. According to mapping records, no historical demolition has been carried out since the original construction works prior to 1915 to create 12 Sarre Road. On this basis, the depth and extent of any Made Ground present is likely to be limited. Potential contaminants of concern could include heavy metals and metals, ACMs, and Poly-cyclic Aromatic Hydrocarbons (PAHs).

During the site walkover, no significant waste materials were noted and there is not considered to be the potential for significant localised leakage to have occurred due the absence of contamination sources such as tanks or electrical infrastructure on site or in the nearby vicinity. In addition, no pollution incidents have been recorded on site or within a 1km radius of the site by Envirocheck. No further sources of contamination have been identified on site and no evidence of Asbestos or Asbestos-Containing Materials (ACMs) has been observed on site.

There is not considered to be a potential risk from ground gas and vapour risks from any Made Ground due to the nature and extent of the anticipated Made Ground, which is not expected to comprise organic materials or be extensive in thickness. In addition, the underlying bedrock geology is not considered to pose a significant ground gas risk. In addition, no issues associated with ground gas have been recorded on site or in the site vicinity since records began. The associated risks are considered to be negligible.

Off-site

There are no contemporary industrial land uses recorded on site or within a 100m radius of the site boundary within the Envirocheck Report that are considered to pose a potential risk to the site and the proposed development scheme.

The nearby residential garages are not considered to pose a significant risk to the site due to their distance from the site boundary (approximately 55m from the site) and the nature of the underlying low permeability London Clay Formation on site.

The City Thameslink railway line and associated sidings lie within a cutting approximately 105m to the south-west of the site. Due to the distance, and the low permeability of the underlying bedrock on site, this land use is not considered to pose a risk to the site and the proposed development scheme.

The surrounding residential properties, retail, schools and leisure facilities are not considered to pose a potential risk to the site or the proposed development scheme due to the non-contaminative nature of these land uses. In addition, the former garage and allotment gardens located over 200m from the site and the identified contemporary electrical sub-stations over 85m from the site and not considered to pose a viable risk to the site.

5.2 Potential Pathways

There are viable pathways for direct human contact and ingestion by future residents, visitors, and neighbours due to the proposed soft landscaped garden area on site.

The potential pathways identified for the site include the following:

- Direct human contact and soil ingestion within soft landscaped areas (including the potential consumption of home-grown produce).
- Inhalation (dust inhalation in soft landscaped areas and during construction and future maintenance works).
- Direct contact with aggressive ground conditions.

The potential for leaching and migration via overland flow and groundwater is considered to be negligible and is not considered further as part of this assessment. This is due to presence of Unproductive Strata below the site and due to the absence of viable surface water receptors in the vicinity of the site.

5.3 Potential Receptors

The potential receptors identified for the site include the following:

- Future site end users (future residents, visitors, and neighbours).
- Groundworkers (construction and future maintenance workers).
- Building materials (buried concrete and underground services).

Controlled waters receptors are not considered as part of this assessment. This is due to the absence of surface water receptors in the vicinity of the site and due to the present of Unproductive Strata below the site. It should be noted that the disused, covered reservoir present from approximately 50m from the site is located below-ground, is entirely covered and lies within the London Clay Formation low-permeability strata. On this basis, it is not considered to be a viable receptor.

5.4 Summary of Potential Contaminant Linkages

Table 6 lists the plausible contaminant linkages identified for the site.

These are considered as potentially unacceptable risks in line with guidelines published in CLR 11, and additional risk assessment may be required. Linkages have been assessed in general accordance with guidance provided in the CIRIA Report C552 (Rudland et al 2001) but with the addition of a ‘no linkage’ category as detailed in Table 5.

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to groundworkers (construction and future maintenance workers), consideration of occupational health and safety issues is beyond the scope of this report and needs to be considered separately in the Construction Phase Health and Safety Plan. This will include good site practices such as dust suppression and the use of Personal Protective Equipment (PPE).

Table 5: Risk Assessment Process

Consequence				
Probability	**Severe**	**Medium**	**Mild**	**Minor**
High Likelihood	Very high risk	High risk	Moderate risk	Low risk
Likely	High risk	Moderate risk	Low risk	Very low risk
Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
Unlikely	Low risk	Very low risk	Very low risk	Very low risk
No Linkage	No risk			

The information gathered in this Phase 1 Preliminary Contamination Risk Assessment Report has been compiled to produce a Conceptual Site Model (CSM), which is summarised in Table 6.

Table 6: Conceptual Site Model

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
<u>On-Site</u> Made Ground (associated with the existing hardstanding areas on site and the residential property)	Dermal / direct contact	Current site users (garden sparingly used and 12 Sarre Road property occupied by two flats)	Yes	Very Low
	Direct ingestion		Yes	Very Low
	Direct inhalation		Yes	Very Low
	Inhalation of wind-blown dust		Yes	Very Low
	Ground gas and vapour generation and migration		No	No linkage (no significant source, and no issues recorded since construction >100 years ago)
	Dermal / direct contact	Future site users (equivalent to residential with plant uptake land use with potential consumption of home-grown produce)	Yes	Low (likely presence of minimal Made Ground on site)
	Direct ingestion		Yes	Low (likely presence of minimal Made Ground on site)

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
	Direct inhalation		Yes	Low (likely presence of minimal Made Ground on site)
	Inhalation of wind-blown dust		Yes	Low (likely presence of minimal Made Ground on site)
	Ground gas and vapour generation and migration		No	No linkage (no significant source, and no issues recorded since construction >100 years ago)
	Direct contact	Services (following development)	Yes	Very Low
	Migration of contaminants off-site: non-aqueous phase		Yes	Very Low
	Migration of contaminants off-site: aqueous phase		Yes	Very Low
	Migration of contaminants off-site: non-aqueous phase	Adjacent residential properties	Yes	Very Low
	Migration of contaminants off site: aqueous phase		Yes	Very Low
	Vapour migration		Yes	Very Low
	Inhalation of wind-blown dust	Ecological impacts	Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low
	Migration of contaminants: non-aqueous phase		Yes	Low

5.5 Summary of Potential Contaminant Risks

The preliminary contamination risk assessment has identified complete source-pathway-receptor linkages with a maximum **Low** risk level from the potential contamination sources and risk drivers identified on the site and surrounding area. On this basis, a ground investigation is not required at the site to support the proposed development scheme at this stage from a contaminated land perspective.

There are not considered to be any significant potential source drivers representing a risk to the current and future site users or controlled waters. No significant sources of contamination or evidence of any contamination on site have been identified. Some areas of the site will be covered in the building footprint and hardstanding meaning exposure will be limited to the soft landscaped garden and to periods of maintenance works only. Minimal Made Ground only is anticipated on site and due to the site history and absence of off-site receptors, this material is unlikely to be significantly contaminated. It is considered that

providing good practice measures are adopted, these risks can be managed appropriately during the forthcoming proposed development works at the site within the rear garden of 12 Sarre Road, fronting onto Gondar Gardens.

Recommendations for further works at the site are provided in Section 7 of this report.

6. Geotechnical Hazard Identification

Potential geotechnical hazards have been identified by Envirocheck during the Phase 1 Desk Study. These issues are presented below:

- Excessive settlement (creep and inundation settlement or differential settlement of foundations) or unstable, poor-quality material within any limited Made Ground present.
- Attack of buried concrete by aggressive ground conditions.
- There is a moderate risk from shrinking or swelling clay on site, associated with the presence of the London Clay Formation bedrock on site.
- If piling is adopted, environmental objections can usually be overcome if piles are designed in accordance with the EA's advice "Piling and Penetrative Ground Improvement Methods on Land Affected by contamination: Guidance on Pollution Prevention (reference: NC/99/73).
- Consideration should be given to the re-use of pile arisings if bored piles are used. It may be possible to re-use pile arisings subject to risk assessment; however, certainty of use and volume should be confirmed in accordance with the requirements of CLAIRE guidance.

7. Conclusions and Recommendations

7.1 Risk Evaluation

Based on historic land uses and its current operational use, the overall risk from land contamination at the site is **Low** based on the proposed use of the site for residential use.

It is highly unlikely that the site would be classified as Contaminated Land under Part 2a of the EPA 1990 however this has not been formally confirmed by the Local Authority.

Table 6 provides a summary of the geo-environmental risks identified and the overall risk associated with the site has been designated using qualitative judgement using the risk categories provided in Table 7.

Table 7: Assessed Overall Risk Categories for the Site from Land Contamination

Risk Category	Definition
Very High Risk	A significant contaminant linkage, including actual evidence of significant harm or significant possibility and significant harm, is clearly identifiable at the site (e.g. from visual or documentary evidence) under current conditions, with potential for legal and / or financial consequences for the site owner or other Responsible Person. Remediation advisable based on acute impacts being likely. Immediate action should be considered.
High Risk	A contaminant linkage is identifiable on site under current and future use conditions. Although likely, there is no obvious actual evidence of significant harm or significant possibility and significant harm under current conditions. Extent of risk is therefore subject to confirmation by investigation and risk assessment, and most likely to be deemed significant. Realisation of the risk is likely to present a substantial liability to the site owner or other Responsible Person. Remediation required for redevelopment and may also be required under Part 2A for existing receptors.
Moderate Risk	A contaminant linkage is identifiable on site under current and future use conditions. However, it is not likely to be a significant linkage under current conditions. It is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild. Actual extent of risk subject to confirmation by additional investigation and risk assessment and most likely to lie between no possibility of harm (under current conditions) and significant possibility of significant harm (under conditions created by new use). Remediation may be required for redevelopment.
Low Risk	Potential pathways and receptors exist but history of contaminative use or site conditions indicates that contamination is likely to be of limited extent and below the level of possibility of harm. Unlikely that the site owner or other Responsible Person would face substantial liabilities from such a risk. Precautionary investigations and risk assessment advisable on change of use. Any subsequent remedial works are likely to be relatively limited.
Very Low Risk	No contaminant linkage likely to exist under current or future conditions, but this cannot be completely discounted. If harm is realised, it is likely at worst to be mild or minor. Site not capable of being determined under Part 2A (in accordance with PPS23) where the Local Authority inspects the site. No further action needed.
No Risk	No contaminant linkage exists.

7.2 Recommendations for Future Work

Based on the findings of this report, the risks to human health receptors from contamination at the site is considered to be **low** and the risks to controlled waters are considered to be **low**. On this basis, a ground investigation is not required at the site to support the proposed development scheme at this stage from a contaminated land perspective.

It is recommended that a watching brief for contamination is maintained throughout the proposed earthworks on site. Should any unexpected contamination such as hydrocarbon staining, odours or ACMs be identified during the future groundworks, such as evidence of the use of former chemicals or the burial of waste on site, then a suitably qualified and experienced geo-environmental engineer should be consulted and if necessary further assessment should be undertaken.

Due to the presence of the London Clay Formation at or close to the existing ground level on site, it is possible that topsoil and sub-soil will need to be imported to site for use within the newly landscaped garden areas. All imported materials should be confirmed as suitable for use from a contamination perspective prior to importation.

Detailed geotechnical assessment should be carried out to ensure the proposed structures on site are appropriate given the ground conditions present.

It should be noted that the risk assessment undertaken as part of this Desk Study has assumed that appropriate PPE and working practices will be put in place by contractors, to ensure that site workers are protected from contamination which may be present at the site. Appropriate Health & Safety precautions, including dust suppression will need to be implemented during construction works to ensure the protection of site users, workers, and neighbours.

Any changes to the proposed scheme could change the risk assessment contained within this report and would need to be reviewed and updated accordingly.

References

1. British Geological Survey Map (2006) *North London, Solid and Drift,* Sheet 256 scale 1:50,000.
2. Indicative Atlas of Radon in England and Wales. Health Protection Agency (HPA) and British Geological Society. Report HPA-RPD-033. 2007.
3. Contaminated Land Risk Assessment – A Guide to Good Practice CIRIA Report C552. CIRIA London. 158 pp. 2001.
4. Radon: Guidance on Protective Measures for New Buildings, Extensions, Conversions and Refurbishment. Building Research Establishment Report. BR211. BRE Garston. 2007.
5. Unexploded Ordnance (UXO) – A Guide to the Construction Industry. CIRIA Report C681. CIRIA London. 141pp. 2009.

APPENDICES

A. Proposed Development Drawings

Location Plan
1 : 1250

0 10 20 30 40 50

Proposed site plan
1 : 500

0 5 10 15 20 25

Schedule of Areas

Total Site Area
55.20 s.q.m.

Existing Residential
0.00 s.q.m.

Existing Non-Residential
0.00 s.q.m.

Residential area lost by change of use or demolition
0.00 s.q.m.

Non Residential area lost by change of use or demolition
0.00 s.q.m.

Proposed Residential
73.00 s.q.m.

Proposed Non-Residential
0.00 s.q.m.

Net additional area
73.00 s.q.m.

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000GO-A-01-001

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CV

Drawing
Location Plan

Checked
EA

Scale
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Issue Date
30.10.2023

Project Address
Gondar Gardens (site RO 12 Sarre Road) NW2 3S

Client
Norma Jones (Peter Jones)

Status
For Pre Application

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EXISTING BLOCK PLAN

PROPOSED BLOCK PLAN

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000GO-A-01-002

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Block plans

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EA

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Drawing
Proposed Pedestrian Visualization

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SCHEDULES OF ACCOMMODATION

Name	Area
Ground Floor	35.21 m²
First Floor	37.78 m²
	72.98 m²

Rev No.	Date	Description

Notes:

Dwg No: **000GO-A-03-101**

Drawn: **CV**

Drawing: **Proposed Ground Floor Plan**

Checked: **EA**

Scale: **1 : 100 @ A3**

Issue Date: **30.10.2023**

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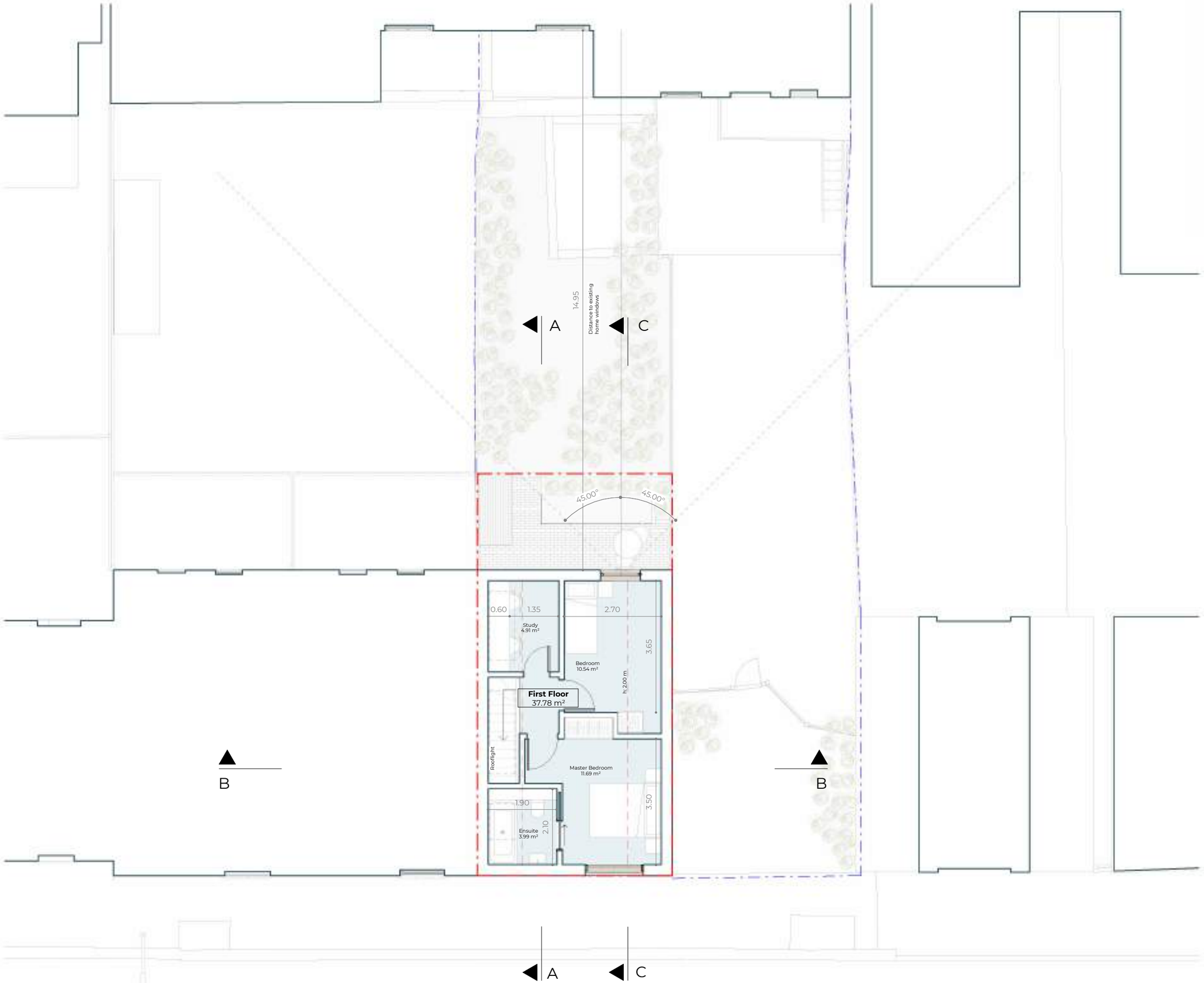

SCHEDULES OF ACCOMMODATION

Name	Area
Ground Floor	35.21 m²
First Floor	37.78 m²
	72.98 m²

Rev No.	Date	Description

Notes:

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Proposed First Floor Plan

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First Floor	37.78 m²
	72.98 m²

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Proposed Roof Plan

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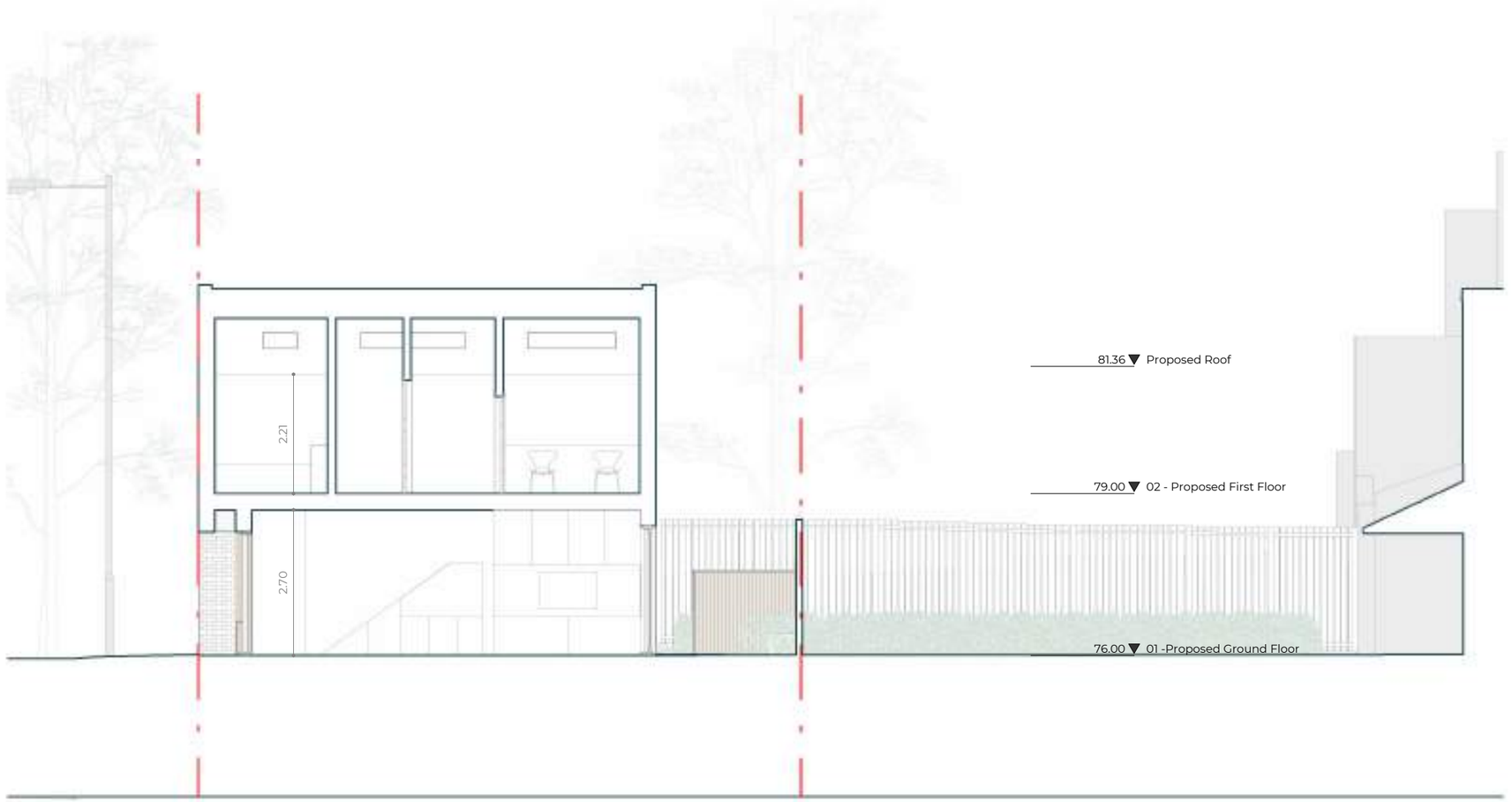

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Notes:

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Proposed Section A-A'

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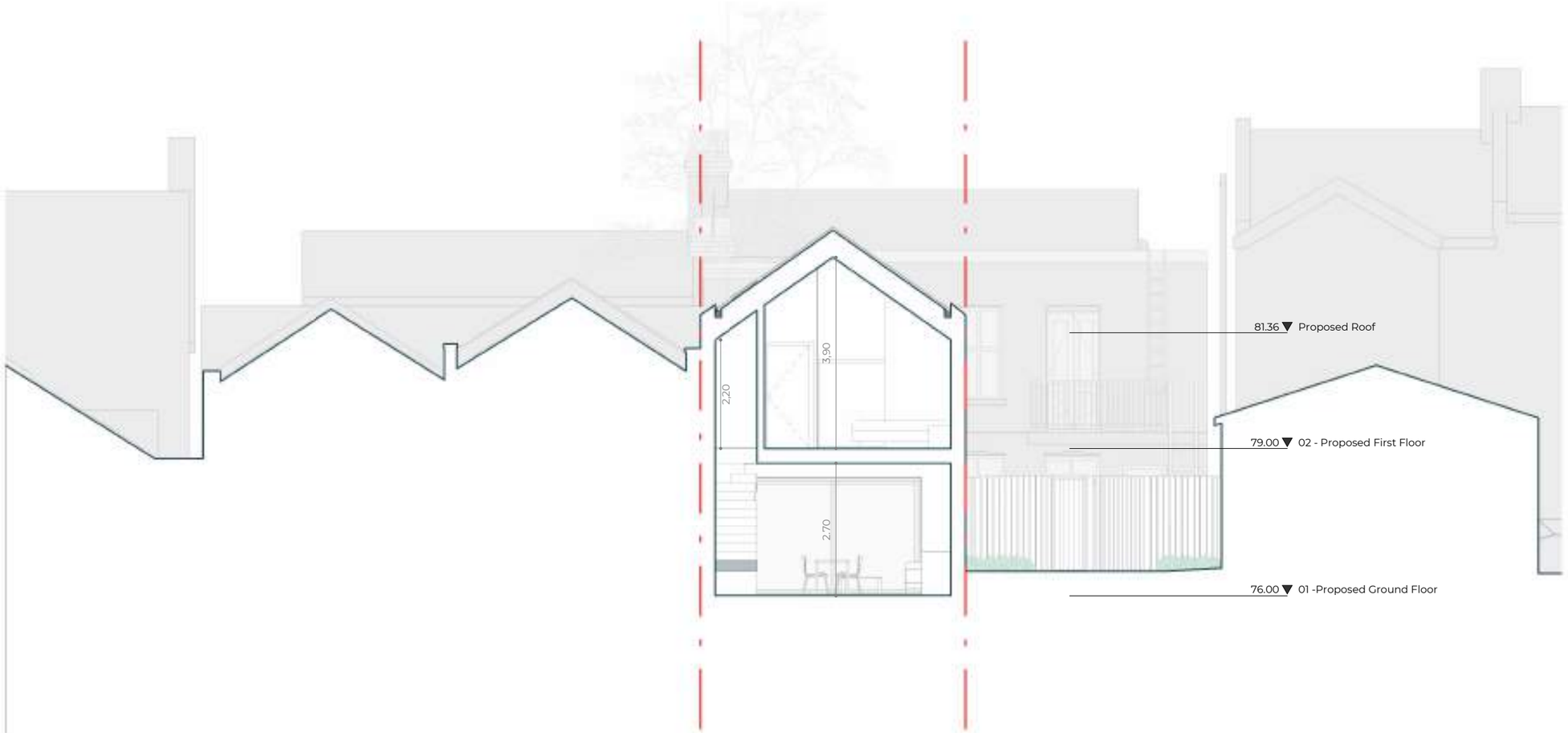

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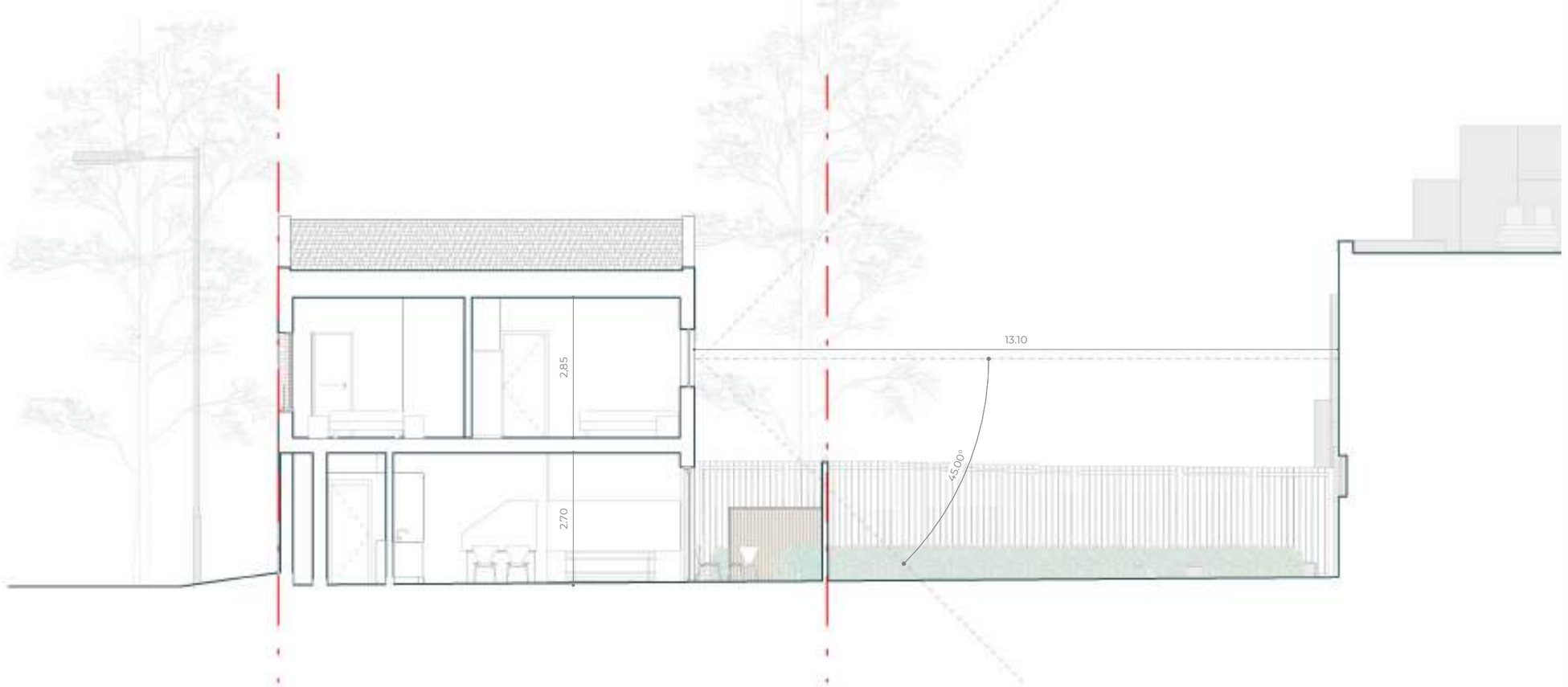

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Proposed Section C-C'

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