
PADDOCK

GEO ENGINEERING



**2 Gloucester Road,
Luton, LU1 3HX**

Preliminary Contamination Risk Assessment



Mr. Amir Jaffer

June 2023

P23-137pra

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ISSUE	DATE	Written By	Comments
1	28/06/2023	Andrew Cowtan BSc MSc	-
		Checked by	
		Matthew Paddock MSc FGS	
For and on behalf of Paddock Geo Engineering Limited			

1.0 INTRODUCTION

Paddock Geo Engineering Limited (PGE) were instructed by Amir Jaffer; the Client, to undertake a Preliminary Contamination Risk Assessment (Stage 1 Tier 1 (formerly Phase 1) of a Site Contamination Assessment) of the subject site, referred to as 2 Gloucester Road, Luton, Lu1 3HX.

The overall objective of the Preliminary Contamination Risk Assessment was to inform the Client of the ground conditions and any potential environmental or ground-related risks associated with the development of the site. The Risk Assessment undertaken relates to a mixed commercial/residential redevelopment of the site.

1.1 Terms of Reference

- British Standard BS10175:2011+A2:2017 Investigation of Potentially Contaminated Sites - Code of Practice;
- CLR7 Assessment of Risks to Human Health from Land Contamination 2002, DEFRA / Environment Agency (withdrawn);
- CLR8 Potential Contaminants for the assessment of Land 2002, DEFRA / Environment Agency (withdrawn);
- CLR11 Model Procedures for the Management of Land Contamination 2010, DEFRA / Environment Agency;
- PPG23 (PPS23) Planning and pollution control (contaminated land aspects) 2002;
- GPLC1 Guiding Principles for Land Contamination 2010, Environment Agency;
- Environmental Protection Act: 1990 – Contaminated Land Statutory Guidance, April 2012, DEFRA;
- CIRIA C665 Assessing risks posed by hazardous ground gases to buildings, CIRIA 2007; and
- BS 8576:2013 Guidance on investigations for ground gas - Permanent Gases and Volatile Organic Compounds (VOCs).

2.0 THE SITE

2.1 Site Description

The site comprises a roughly rectangular plot of land accessed off Gloucester Road located adjacent to the northeast of the site. A two-storey building of brick construction covers the majority of the site and is currently occupied by a church group as prayer space. A hardstand parking area fronts the building to the northeast.

The subject site covers an area of approximately 0.04 hectares, with the centre of the site at approximate national grid reference 509670, 221000 and postcode LU1 3HX.

Site Location Plans and an Aerial Photograph are presented in Appendix A.

2.2 Proposed Development

The proposed development scheme is understood to comprise the construction of a seven-storey building, including commercial units on the ground and first floor and 15no. residential flats across the first to seventh floors. The ground floor will also include a single-storey bike store in the south-east corner and the building will have a green roof.

As the proposed development does not include private garden areas or areas of soft-landscaping, the soil contamination exposure characteristics for the proposed development will be comparable to residential without plant uptake.

A proposed development plan is presented within Appendix A.

2.3 Walkover Survey

2.3.1 Site Area

A site walkover survey was conducted on 16th May 2023 by a representative of Paddock Geo Engineering Limited. A series of photographs taken during the walkover survey are presented in Appendix B along with a Site Walkover Survey Plan.

The site comprises a roughly rectangular plot of land accessed off Gloucester Road located adjacent to the northeast of the site. A two-storey building of brick construction covers the majority of the site and is currently occupied by a church group as prayer space. A hardstand parking area fronts the building to the northeast.

During the site walkover, the ground floor of the building was observed to largely comprise of an open room currently used as a seating area and a stage for prayer and storage areas and toilets. The first floor was observed to be sub-divided into separate rooms, largely used for the storage of church related materials and equipment.

The parking area in the northeast of the site was largely tarmac surfaced and observed to be in good condition.

No evidence of significant fuel spillages or contamination were noted during the site walkover.

2.3.2 Surrounding Area

The subject site is located in an urban area within the town of Luton, Bedfordshire, approximately 1.5km to the south-east of the town centre.

A gated pedestrian alley is located adjacent to the south-western boundary of the site, immediately beyond which are industrial/commercial units. The edge of the on-site building generally forms the north-western site boundary, adjacent to which is Bolton Road and further beyond is A505 Park Viaduct Road with car parking beneath. The northeastern site boundary is open, leading directly onto Gloucester Road with industrial/commercial units immediately beyond. The site building is adjoined by a further building of similar brickwork construction to the southeast, with a further commercial property (SPB Metal Works Ltd) immediately beyond.

Proximal to the site is further light industrial land use to the east and high density residential to all other directions. The commercial centre of Luton is located proximally to the northwest of the site. A recreational ground is located approximately 100m to the south-east of the site.

The Envirocheck Report records numerous contemporary trade directories within 1km of the site. Active entries located within 250m of the site include SPB Metal Works 19m southeast, Whitehill (tool design & manufacturers) 83m northeast, Warden Domestics 71m southwest, Mcdonald Humfrey Automation (electrical/mechanical engineers) 140m east, Drive Ryte (garage services) 168m south, Nu Branding (printers) 212m north, Halfords Autocentre (garage services) 241m east and Crown Decorating Centre 249m east. The closest inactive entries include Alfast Fixings & Fasteners Ltd (nuts, bolts & fixings) 5m to the south-east and Industrial Plant Development Ltd (precision engineers) 15m to the south-east.

There are 5no. fuel station entries recorded within 1km of the site. The closest, Parkway Service Station located 199m to the south, is listed as obsolete. The majority of the other entries are also listed as obsolete, although Luton Service Station, located 740m to the south-west, is listed as currently open.

There are a number of Local Authority Pollution Prevention and Controls, Integrated Pollution Prevention and Controls and Integrated Pollution Controls recorded within 1km of the site. The closest is a PG1/14 (petrol filling station) permit located 199m south and 200m north of the site.

There are 2no. Contaminated Land Register Entries and Notices recorded within 1km of the site at 486m to the north-west (remediation works completed) and 511m to the north-west (special site).

2.4 Geology

Information on the underlying geology at the site has been obtained from the British Geological Survey (BGS) Sheet 220 (scale: 1:50,000 dated 1992) for Leighton Buzzard, the BGS Geological Map Viewer and the EnviroScience Geological Report Maps provided by Landmark within the Envirocheck Report (a copy of which is provided in Appendix C).

The site is indicated to be underlain by superficial deposits of Mid-Pleistocene Glaciofluvial Deposits of Sand and Gravel.

The bedrock beneath the site is indicated to be Holywell Nodular Chalk Formation and New Pit Chalk Formation (Undifferentiated), which comprises chalk formed approximately 94 to 101 million years ago in the Late Cretaceous Period. Such rocks are typically formed in a local environment dominated by warm chalk seas.

A large area of Made Ground is indicated from c.200m south and southeast associated with the heavy industrial area of the town, such as the former GM/Vauxhall car plant and airport.

2.4.1 Borehole Records

A search was made of the online British Geological Survey database for published borehole records within the area. This indicated numerous boreholes in the site area.

Further to this, publicly accessible ground investigation data was available (Nichols Colton report LR-G08073A December 09¹), which was associated with the recent development of the student accommodation complex c.30m to the south of the site. This included shallow and deeper boreholes, the closest two of which, namely CP2 and WS3, are located c.30m to the south of the site. Copies of the associated borehole logs are presented in Appendix C and are summarised below.

Local Borehole Data Summary

Borehole Reference (location)	Date Drilled	Total Depth (bgl) Approx.	Level (A.O.D)	Strata		Groundwater Depth (m) Approx.
				Basal Depth (m) Approx.	Strata	
CP2	18-19 Sept 2008	25.00m	-	0.55	Gravel and Concrete Surfacing	7.70m
				2.00	Made Ground – Soft brown organic and gravelly CLAY	
				5.00	Medium dense brown very clayey fine to coarse SAND and fine to coarse sub-angular to sub-rounded flint GRAVEL	
				20.00	Structureless Grade Dm Chalk	
WS3	16 Sept 2008	3.00m	-	0.20	Topsoil	None
				1.80	Made Ground – Sand and Gravel and deeper soft organic CLAY	
				3.00	Brown very clayey fine to coarse SAND and fine to coarse sub-angular to sub-	

¹ See Section 4.1 for details.

					rounded GRAVEL	flint	
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2.5 Hydrogeology

The groundwater vulnerability map and bedrock aquifer designation map for the site and the surrounding area are presented in Appendix C and indicate that the chalk bedrock underlying the site is designated as a Principal Aquifer.

The superficial Glaciofluvial Deposits are classified as a Secondary A Aquifer.

The combined groundwater vulnerability on site is considered by Envirocheck to be 'high'.

The Envirocheck report indicates that the site lies within Zones 1-3 of a Source Protection Zone (SPZ).

The Envirocheck report indicates that there are 10no. groundwater abstractions recorded within 1km of the site. The closest is a lapsed groundwater abstraction for pump and treat groundwater remediation works located approximately 189m south of the site. An abstraction for potable water supply is recorded 246m to the south-west of the site.

The BGS groundwater flood susceptibility mapping indicate that there is a potential for groundwater flooding to occur at the surface on the site itself.

2.6 Hydrology

It is indicated within the Envirocheck Report that the nearest surface water feature to the site is located 136m to the north-east and is suspected to be the River Lea.

There are 17no. pollution incidents to controlled waters listed within 250m of the site within the associated EnviroCheck Report. The nearest listing related to an incident occurring 98m to the north-west of the site in July 1990. The incident is classified as a Category 3 (Minor) and involved an unknown pollutant. The other incidents recorded within 250m of the site are also generally Category 3, although a Category 2 (Significant) incident involving the release of sewage in May 1991 is recorded 170m to the east of the site.

There are also 5no. Substantiated Pollution Incidents registered within 1km of the site. The closest is recorded 209m to the south of the site and resulted in a Category 2 (Significant) impact to water and Category 3 (Minor) impact to land following the release of oils (diesel and petrol) in October 2005.

A prosecution relating to controlled waters is recorded 514m to the north-west of the site and related to the leakage of c.40,000 litres of petroleum oil from an underground storage tank in October 2002.







There are no surface water abstractions listed within 1km of the site.

There are no discharge consents listed within 250m of the site.

The site does not fall within an area at risk of flooding and/or at risk of extreme flooding from Rivers or Sea without defences. However, there is a zone of extreme flooding from rivers of sea as close as 81m to the south-east of the site.

2.7 Geotechnical Risks

The geotechnical risks that could impact the site and any shallow foundations present are listed below.

Hazard	Assessed On-Site Risk (and area within 10m of the site)	
	Present	Level
Potential for Collapsible Ground Stability		Very Low
Potential for Compressible Ground Stability		No Hazard
Potential for Ground Dissolution Stability		Very Low
Potential for Landslide Ground Stability		Very Low
Potential for Running Sand Ground Stability		Very Low
Potential for Shrinking or Swelling Clay		No Hazard

2.8 Ground Stability and Mining

The site is not located within an area with a history of coal or mining activities. The potential risk of non-coal mining activities in the local area is recorded as rare.

Man mad cavities are indicated 993m north of the site relating to 'Historical Lime and Whiting Works-Potential Chalk Mining'.

A mineral site, named Crescent Road Rail Depot, is recorded 486m to the north of the site. The quarry is used to extract rock.

2.9 Radon

The property is indicated within the Envirocheck Report to be in an intermediate probability radon area, with 1-3% of homes estimated to be at or above the action level. Therefore, no radon protection measures are necessary in the construction of any new dwellings, buildings or extensions on site.

2.10 Waste Management and Landfill

No registered or historical landfills are recorded within the Envirocheck report within 1km of the site.

There are no Waste Management Facilities listed within 250m of the site. There is, however, a Waste Treatment site listed 22m east of the site for a scrapyards (Purdue Metals Ltd), which is licensed for non-ferrous scrap metals.

2.11 Sensitive Land Uses

The site is recorded to be located in a nitrate vulnerable zone, named Lee Nvz (surface water).

3.0 HISTORIC LAND USE MAPPING SUMMARY

A review of available historical topographic mapping obtained from the Envirocheck Report has been carried out and comprises County Series, Ordnance Survey Plans and Unpublished Survey Information (at scales of 1:2,500, 1:10,000 and 1:10,560). Maps covering the site were published between 1880 and 2023. Extracts from this mapping data set are presented in Appendix D.

The maps are reproduced in accordance with Landmark Information Group Limited’s Ordnance Survey License. All directions and distances are therefore approximate. A summary of the history of the site and immediate area is provided in the table below.

Date of mapping	Site History	History of the area surrounding the site
1880 & 1884	A residential property and part of an associated garden is located in the north-east of the site. A further residential building and part of an associated garden is located in the west of the site. The far eastern portion of the site forms part of a wider field.	<p>The site is situated in a mixed rural and urban area, on the south-eastern edge of the town of Luton with open land to the east and housing to the west and south.</p> <p>A railway line is noted running approximately northwest to southeast approximately 300m northeast at its closest point to the site.</p> <p>A Brass and Iron Foundry is indicated approximately 350m east of the site and a Sewage Works is indicated straddling the River Lea approximately 300m southeast of the site. A brewery and malthouse are located c.200m to the north-west. St Mary’s Church and an associated graveyard (disused) is recorded c.200m to the north.</p>
1901 & 1901-02	The site has been redeveloped. Two terraced residential properties are located in the north-east of the site, with associated gardens in the south. A further structure is present in the west.	Significant residential development is recorded in the local area, particularly to the northeast and east of the site. Residential properties are located adjacent to the north of the site. Two ‘Dyeing and Bleach Works’ are located c.200m to the east and c.350m to the north-west. An Iron Foundry is located c.200m to the west.
1924 & 1925-26	No significant changes.	Continued residential development in all directions of the site. A large building, later marked as a warehouse, is located c.30m to the south. A Tram Depot is noted approximately 200m south of the site. A ‘Corporation Yard’, including several tanks, is present c.200m to the north of the site. A Boiler & Engineering Works is present c.250m to the north.
1938	No significant changes apparent.	No significant changes.
1947-50	No significant changes apparent.	Some redevelopment evident in the areas

Date of mapping	Site History	History of the area surrounding the site
		surrounding the site, largely beyond c.500m.
1960	No significant changes apparent.	No significant changes.
1962-63	No significant changes.	Some redevelopment evident in the local area. A garage is recorded c.150m to the west and a further garage c.220m to the south. A Bus Depot is indicated to have replaced the former Tram Depot c.200m south of the site.
1968-78 & 1971-75	No significant changes.	Significant redevelopment evident in the local area. A car park has been constructed c.40m to the north-west of the site in the former location of terraced housing. A Hat Factory and electricity sub-station is recorded c.70m to the north-east. An Electricity Generating Station is present c.200m to the north. A Motor Works is present c.300m to the south. Numerous 'Works' are recorded beyond c.400m to the east and south-east of the site.
1968-88, 1977 & 1979-85	The site has been completely redeveloped and the current configuration appears to have been achieved with a commercial/industrial building covering the majority of the site.	Further redevelopment evident in the local area, including commercial/industrial units adjacent to the north, east and south. The Park Viaduct Road has been constructed c.30m to the north-west.
1992 & 1993	No significant changes.	Minor redevelopment evident in the local area. A Garden Centre is located c.60m to the south.
1999	No significant changes apparent.	Minor redevelopment evident in the local area.
2023	No significant changes apparent.	Minor redevelopment evident in the local area.

3.1 Historical Mapping Summary

The available historical maps span a period of 143 years, dating back to 1880.

In the earliest maps the residential properties and associated gardens are present across the majority of the site. The site was redeveloped in the late 1800s/early 1900s with two terraced residential properties in the north-east, associated gardens in the south and an additional structure in the west. The site was additionally redeveloped around the 1970s a commercial/industrial unit, achieving the current site configuration.

In the earliest maps, the site was situated in a mixed rural/urban area on the southeastern edge of Luton, with open land to the east and housing to the west and south with occasional scattered industrial premises. The area has experienced significant development over the years, including residential and industrial/commercial development in all directions.

There was much clearance of former residential properties especially to the north and east of the site in the early 1970s to facilitate the development of the adjacent Park Viaduct. The industrial estate currently to the east of the site was noted from this time as well as the new road layouts as current.

In the local area there is much heavier industrial land use also, including the following historical premises within 250m of the site: Dyeing and Bleach Works 200m east, Iron Foundry 200m west, Boiler and Engineering Works 250m north, Hat Factory 70m northeast and an Electricity Generating Station 200m north.

4.0 ENVIRONMENTAL DATABASE SEARCH

The Envirocheck Report for the site was commissioned on behalf of the Client, to gather significant data relating to the site and the immediate vicinity. A copy of this report is provided in Appendix E. The table below and overleaf summarises the key environmental disclosure data for the site.

Date type	No. of listings (distance from site)				Details
	On-Site	0m to 250m	251m to 500m	501m to 1km	
Geological					
Radon	Yes	-	-	-	1-3% of homes are at or above the action level. No radon protection measures are necessary in the construction of new dwellings or extensions on site.
Mineral sites and man-made cavities	-	-	1	-	Crescent Road Rail Depot 486m N (active quarry).
Agency and Hydrological					
Contaminated Land Register Entries and Notices	-	-	1	1	Closest: 486m NW (remediation works completed).
Enforcement and Prohibition Notices	-	-	-	-	None identified within 1km of the site.
Nearest surface water feature	-	Yes	-	-	River Lea 135m NE.
Pollution Prevention Controls	-	2	7	24	Closest: PG1/14 (petrol filling station) 199m S and 200m N.
Groundwater Vulnerability	Yes	n/a	n/a	n/a	See details in Section 2.5.
Discharge Consents	-	-	5	18	Closest: Trade discharge to surface water 295m NE.
Water Abstractions	-	4	-	6	Closest: groundwater abstraction for pump and treat remediation works 189m S (lapsed).
Source Protection Zones	3	1	-	-	On-site: Zones 1-3.
Pollution Incidents to Controlled Waters	-	17	38	60	See details in Section 2.5.
Substantiated Pollution Incident Register	-	2	-	3	See details in Section 2.5.
BGS Groundwater Flooding Susceptibility	Yes	-	Yes	n/a	On site risk –potential for groundwater flooding to occur at surface.
Flooding from rivers and seas	-	Yes	n/a	n/a	See details in Section 2.6.
Waste					

Date type	No. of listings (distance from site)				Details
	On-Site	0m to 250m	251m to 500m	501m to 1km	
Registered landfill Sites	-	-	-	-	None identified within 1km of the site.
Local Authority Registered Landfill Sites	-	-	-	-	None identified within 1km of the site.
Historical registered landfill sites	-	-	-	-	None identified within 1km of the site.
Registered waste transfer sites and waste management facilities	-	1	2	-	See details in Section 2.10.
Hazardous Substances					
Control of Major Accident Hazard Sites	-	-	-	-	None identified within 1km of the site.
Explosive sites	-	-	-	-	None identified within 1km of the site.
Planning Hazardous Substance Consents or explosive sites	-	-	-	-	None identified within 1km of the site.
Notification of Installations Handling Hazardous Substances	-	-	-	-	None identified within 1km of the site.
Industrial Land Use					
Contemporary Trade Directory Entries	-	39	150	260	Closest active: SPB Metal Works 19m SE. Closest inactive: Alfast Fixings & Fastenings Ltd 5m SE.
Fuel Station Entries	-	2	-	3	Closest: Parkway Service Station 199m S (obsolete).
Sensitive Land Uses					
Areas of Adopted Greenbelt	-	-	-	-	None identified within 1km of the site.
Ancient Woodland	-	-	-	-	None identified within 1km of the site.
Areas of Outstanding Natural Beauty (AONB)	-	-	-	-	None identified within 1km of the site.
RAMSAR sites	-	-	-	-	None identified within 1km of the site.
Sites of Special Scientific Interest (SSSI)	-	-	-	-	None identified within 1km of the site.
National Parks and Nature Reserves	-	-	-	-	None identified within 1km of the site.
Local Nature Reserves	-	-	-	-	None identified within 1km of the site.
Special Protection Areas and Areas of Conservation	-	-	-	-	None identified within 1km of the site.

Date type	No. of listings (distance from site)				Details
	On-Site	0m to 250m	251m to 500m	501m to 1km	
Environmentally Sensitive Areas	-	-	-	-	None identified within 1km of the site.
Nitrate Vulnerable Zones	1	-	-	-	On-site: Lee Nvz (surface water).

4.1 Planning Search

A search of the Luton Council planning portal was undertaken for the site and the immediate area using the site postcode and plan location as search terms on the 28th June 2023 to gather details of relevant planning applications. A map search term was employed. The results of the search are summarised below.

On-Site

- 84/00403/FUL – Use of light industrial building for the repair and servicing of motor vehicles. Application permitted on 05/06/1984.
- 81/00413/FUL – Erection of warehouse extension to industrial premises. Application permitted on 19/01/1982.
- 80/00400/FUL – Erection of office & workshop area extension to side of electrical wiring systems and components factory. Application permitted on 09/01/1981.

Off-Site

- Numerous applications for alterations of change of use of units on Bolton Road.
- Numerous applications for Park Terrace, Manor Road for change of use (D1-C3 and D1-D2) and alterations.
- 08/01047/FUL – Clearance of site c.30m to the south of subject area and replacement with a 5-storey 273 room student accommodation complex.
 - Associated with this is 09/00080/DOC – Contamination Risk conditions 12 and 13 discharge - Based on data within Nichols Colton Ground Investigation report G08073-IR dated December 2008, which comprised boreholes, sampling and contamination risk assessment including ground gas monitoring. This concluded that there was insufficient contamination and ground gas risk for any remedial works.
 - Further associated works 10/00220/DOC – Further contamination investigation supplemental to above due to EA comments based on data within Nichols Colton Ground Investigation report G08073a-SR dated December 2009 to better cover the site area. Conclusions remained the same that there is insufficient contamination to soil or groundwater risk as well as ground gas risk for any remedial works.

4.2 Summary of Environmental Search Data

A review of the environmental data obtained from the Envirocheck Report and the site walkover survey has indicated the following potential contamination risk driver features generally within 500m of the site (or further if considered significant):

Current or Recent Land Uses

- Current use of the site as a church prayer facility: **Low Risk**;
- Fuel spillages from vehicle parking in the northeast of the site: **Low Risk**;
- Potential Asbestos Containing Material (ACM) within the fabric of the existing building: **Low to Moderate Risk**; and
- Industrial land-use in the vicinity of the site: **Low to Moderate Risk**.

Historical Land Uses

- Past industrial/commercial land-use of the site from around the mid-1970s (potentially including vehicle repairs/servicing): **Low to Moderate Risk**;
- Historical phases of residential development, pre 1970s: **Low Risk**;
- Industrial land-use in the surrounding area: **Low to Moderate Risk**; and
- Pollution incidents in the local area, including release of oils (diesel and petrol) 209m south in October 2005 and a recorded prosecution relating to the leakage of c.40,000 litres of petroleum oil from an underground storage tank in October 2002 at a distance of 514m to the north of the site: **Low to Moderate Risk**.

Site Environmental Features

- The underlying superficial Glaciofluvial Deposits is classified as a Secondary A aquifer.
- The underlying bedrock Holywell Nodular Chalk Formation and New Pit Chalk Formation (Undifferentiated) is classified as a Principal aquifer.
- The site is located in groundwater Source Protection Zones 1-3.
- The closest surface water feature is the River Lea 136m to the north-east.

5.0 PRELIMINARY CONCEPTUAL SITE MODEL AND RISK ASSESSMENT

5.1 Risk Assessment Guidance

Guidance has been published by the Department of the Environment, Transport and the Regions (DEFRA) 'Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance' (DEFRA April 2012) which promotes the 'risk-based approach' for defining contaminated land. The statutory guidance states:

“Part 2A takes a risk-based approach to defining contaminated land. For the purposes of this Guidance, “risk” means the combination of: (a) the likelihood that harm, or pollution of water, will occur as a result of contaminants in, on or under the land; and (b) the scale and seriousness of such harm or pollution if it did occur.”

A means to assess the risk posed by potential contamination on or under a site is to carry out a preliminary contaminated land risk assessment. The risk assessment process is defined within the statutory guidance:

“For a relevant risk to exist there needs to be one or more contaminant- pathway-receptor linkages - “contaminant linkage” - by which a relevant receptor might be affected by the contaminants in question. In other words, for a risk to exist there must be contaminants present in, on or under the land in a form and quantity that poses a hazard, and one or more pathways by which they might significantly harm people, the environment, or property; or significantly pollute controlled waters. For the purposes of this Guidance:

(a) A “contaminant” is a substance which is in, on or under the land and which has the potential to cause significant harm to a relevant receptor, or to cause significant pollution of controlled waters.

(b) A “receptor” is something that could be adversely affected by a contaminant, for example a person, an organism, an ecosystem, property, or controlled waters. The various types of receptors that are relevant under the Part 2A regime are explained in later sections.

(c) A “pathway” is a route by which a receptor is or might be affected by a contaminant.”

The contaminant linkage is described within the statutory guidance as:

“The term “contaminant linkage” means the relationship between a contaminant, a pathway and a receptor. All three elements of a contaminant linkage must exist in relation to particular land before the land can be considered potentially to be contaminated land under Part2A, including evidence of the actual presence of contaminants.

The term “significant contaminant linkage”, as used in this Guidance, means a contaminant linkage which gives rise to a level of risk sufficient to justify a piece of land being determined as contaminated land. The term “significant contaminant” means the contaminant which forms part of a significant contaminant linkage”.

The following sections relate to a qualitative risk assessment of the site and surrounding environs.

The data within this assessment will be employed to produce a Conceptual Site Model which will be tested to assess if a ‘significant possibility of significant harm’ to human health, non-human health or significant pollution to controlled waters is likely to occur and the risk level posed by any such linkages. The risk level classification system employed in the risk assessment is generally based upon those described in CIRIA C552².

² Rudland, D., Lancefield, R.M., Mayal, P.N. (2001) Contaminated Land Risk Assessment: A Guide to Good Practice. CIRIA C552. UK.

5.2 Potential Contaminant Sources

The potential contamination sources identified as part of this Preliminary Contamination Risk Assessment are summarised in the table below. The potential contaminants are based on the data within CL8, Department of the Environment (DoE) Industry Profiles, the current and historic site uses.

Current Potential On-Site Contaminant Sources	Potential Contaminants
Made Ground associated with existing and former phases of development.	Inorganics (heavy metals and metalloids), Organics, hydrocarbons (PAH and TPH), and asbestos.
Localised fuel spillages from parked vehicles.	Hydrocarbons.
Potential ACM within the fabric of the existing building.	Asbestos.
Historical Potential On-Site Contaminant Sources	Potential Contaminants
Past industrial use of the site.	Organics, inorganics, hydrocarbons, heavy metals, lubricant oils, fuels and solvents.
Current Potential Off-Site Contaminant Sources	Potential Contaminants
Industrial land-use in the surrounding area.	Organics, inorganics, hydrocarbons, heavy metals, lubricant oils, fuels and solvents.
Historical Potential Off-Site Contaminant Sources	Potential Contaminants
Industrial land-use in the surrounding area.	Organics, inorganics, hydrocarbons, heavy metals, lubricant oils, fuels and solvents.
Pollution incidents in the local area involving hydrocarbons – inc. large scale hydrocarbon spillage.	Hydrocarbons.

5.3 Conceptual Source-Pathway-Receptor Model

The information gathered in this Preliminary Contamination Risk Assessment has been compiled to produce a Source-Pathway-Receptor (S-P-R) model, which is summarised in the table below and overleaf. A Contamination Conceptual Site Model Cross Section is presented in Appendix F.

The risk posed to site construction workers has not been assessed as any risks are considered to be mitigated through good site practices such as dust suppression and the use of Personal Protective Equipment (PPE).

Potential Site Contaminant Sources	Potential Pathways	Potential Receptors	Pathway Complete	Risk Level Classification
<p>Current</p> <p>Made Ground associated with existing and former phases of development.</p> <p>Potential ACM in the fabric of the existing building.</p>	Dermal / direct contact	Current site users (church workers and visitors)	No	
	Direct ingestion		No	
	Direct inhalation		No	
	Inhalation of Radon		No	
	Inhalation of wind-blown dust		No	
	Vapour migration		Yes	Low
	Ground gas migration	Yes	Low	
	Dermal / direct contact	Future site users (residential/commercial)	Yes	Low
	Direct ingestion		Yes	Low
	Direct inhalation		Yes	Low
	Inhalation of Radon gas		No	
	Inhalation of wind-blown dust		Yes	Low
	Vapour Migration onto the site		Yes	Low to Moderate
	Ground gas migration	Yes	Low to Moderate	
<p>Localised fuel spillages from vehicle parking.</p> <p>Industrial land-use in the local area.</p> <p>Historical</p> <p>Industrial land-use in the local area.</p> <p>Pollution incidents in the local area – inc. large scale hydrocarbon spillage</p>	Direct contact	Services (following redevelopment)	Yes	Low
	Migration of contaminants: non-aqueous phase		Yes	Low
	Migration of contaminants: aqueous phase		Yes	Low
	Migration of contaminants off-site: non-aqueous phase	Adjacent Properties	Yes	Low
	Migration of contaminants off site: aqueous phase		Yes	Low
	Vapour migration		Yes	Low
	Inhalation of wind-blown dust	Ecological Impacts	No	
	Migration of contaminants: non-aqueous phase		No	
	Migration of contaminants: aqueous phase		No	
	Migration of contaminants from site: non-aqueous phase	Controlled groundwater	Yes	Low to Moderate
Migration of contaminants from site: aqueous phase	Yes		Low to Moderate	
Migration of Contaminants: non-aqueous phase	Surface Waters	Yes	Very Low	
Migration of contaminants: aqueous phase		Yes	Very Low	

5.4 Potential Contamination Risk Summary

The preliminary contamination risk assessment has identified complete Source-Pathway-Receptor (SPR) linkages with a worst-case **Low to Moderate** risk level from the potential contamination sources and risk drivers identified on the site and surrounding area.

The main on-site contamination source risk stems from the site's historical usage. Prior to the current usage as a church prayer room, planning applications submitted in the 1980s indicate that the site may have been used for the repair and servicing of motor vehicles or as an industrial warehouse. Past industrial usage may have resulted in fuel and chemical leakages to the underlying soils; however, as the site is predominately covered in hardstanding and no evidence of significant contamination was observed during the walkover, these risks are likely to have been mitigated.

Furthermore, there is the potential presence of organic and inorganic substances and asbestos within any Made Ground beneath the site associated with existing and former phases of development. There is also the potential for localised fuel spills associated with car parking on site.

A risk remains from the existing and historical industrial land use locally. However, this is considered lower bound as significant mobile contamination was not identified in the reviewed 2008/2009 Nichols Colton Ground Investigation works on the nearby land area 30m to the south of the site. A contamination linkage has also been concluded with respect to heavier industry in the site area and mobile contamination migrating to impact the site. Furthermore, pollutant incidents have historically been recorded in the local area, including the release of hydrocarbons. These sources are considered to be of low to moderate risk due to the highly permeable Chalk bedrock and superficial sand and gravel geology, that underlies the site and the surrounding area, providing a pathway for mobile contamination to impact the site.

It is considered unlikely that significant deposits of putrescible organic material are present in Made Ground, although the presence, nature and extent of any such deposits are currently unknown. Furthermore, there are no landfills recorded within 1km of the site. However, there is the potential that any historical hydrocarbon leakages either on-site or in the local area may have degraded over time, providing a potential source of ground gases.

Given that no areas of soft-landscaping are currently present on-site or proposed as part of the redevelopment, there is considered no significant potential pathway for the exposure of the end-users to any potential contaminants in the underlying soils through direct contact and ingestion pathways, although inhalation pathways remain with respect to the potential for the inhalation of vapours and ground gases.

Due to the age of the existing building, indicated to have been constructed from around the 1970s, there is the potential for the presence of Asbestos Containing Material (ACM) within its fabric. As such, it is recommended that prior to the commencement of any demolition or refurbishment works, that an asbestos survey is undertaken of the building to determine the presence of asbestos-containing materials. If present, removal works will need to be undertaken by a specialist contractor prior to the demolition and/or refurbishment phase.

Given the discussion above, to assess if a 'Significant Possibility of Significant Harm' is present from potential contamination sources to the proposed future residential site users, it is recommended that an intrusive soil investigation be undertaken focusing on the highlighted potential contaminative features within the near surface soils and deeper soils should significant surface contamination be identified.

Key items to investigate include evidence of hydrocarbon and/or chemical contamination in the near surface soils and water table, to determine any potential vapour/ground gas inhalation risk. Furthermore, the installation of gas monitoring wells should be considered to allow an assessment of ground gas risk through subsequent ground gas and vapour monitoring.

Further to this, should any unexpected contamination be identified during the future development groundworks, then a suitably qualified and experienced Geo-Environmental Engineer should be consulted and if necessary further assessment should be undertaken.

5.5 Potential Geotechnical Risk Summary

A maximum “Very Low” geotechnical risk was identified on-site within the Envirocheck Report associated with the anticipated underlying natural geology in relation to potential for collapsible, ground dissolution, landslide and running sand ground stability hazards. Furthermore, Made Ground of unknown nature and extent is likely to be present across the site associated with existing and former phases of development.

It is recommended that a geotechnical appraisal of the site be carried out to determine the geology and groundwater beneath the site and to derive foundation design criteria for the structures on the site.

6.0 CERTIFICATION

This report is produced for the sole use of the Client, and no responsibility of any kind, whether for negligence or otherwise, can be accepted for any third party who may rely upon it.

The site walkover survey was carried out within reasonably accessible areas of the site. No responsibility of any kind can be accepted for any conditions or features not identified due to inaccessibility of areas such as locked, unstable or unsafe buildings and heavily overgrown areas.

The conclusions and recommendations given in this report are based on our understanding of the future plans for the site and based on a scope of works agreed by the Client and afforded by the agreed budget. No responsibility is accepted for conditions not encountered, which are outside of the agreed scope of work.

If the future plans for the site are changed, such as the site is developed for a more or less sensitive use, then a different interpretation might be appropriate.

The report has been prepared following the guidelines and principles established in the British Standards, BS 10175:2011, entitled 'Investigation of Potentially Contaminated Sites – Code of Practice' and the DEFRA / EA Contaminated Land Reports CLR7 and CLR8. It necessarily relies on the co-operation of other organisations and the free availability of information and total access. No responsibility can, therefore, be accepted for conditions arising from information that was not available to the investigating team as a result of information being withheld or access being denied.

This report may suggest an opinion on a possible configuration of strata or conditions between exploratory points and below the maximum depth of investigation. However, this is for guidance only and no liability can be accepted for its accuracy.

REFERENCES

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Report on behalf of Mr. Amir Jaffer

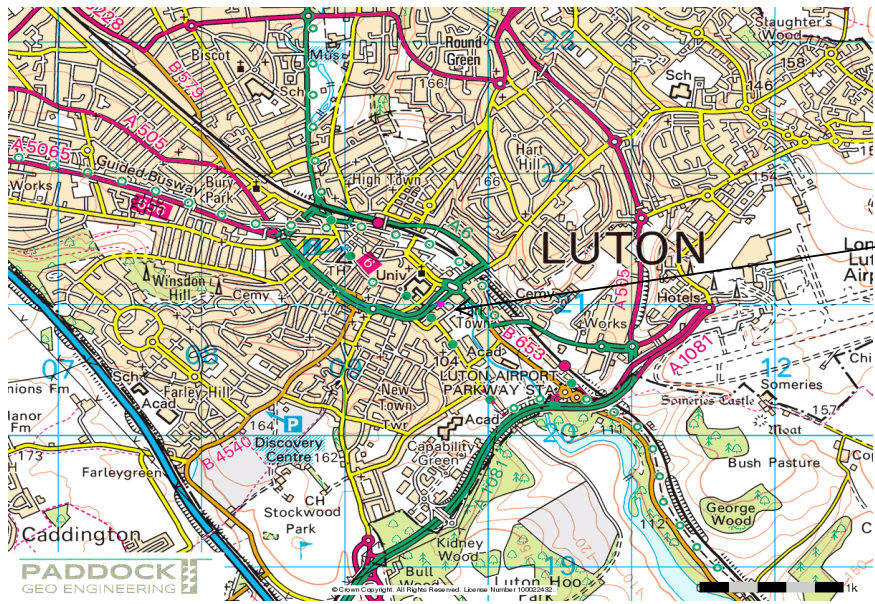
P23-137pra – 2 Gloucester Road, Luton, LU1 3HX

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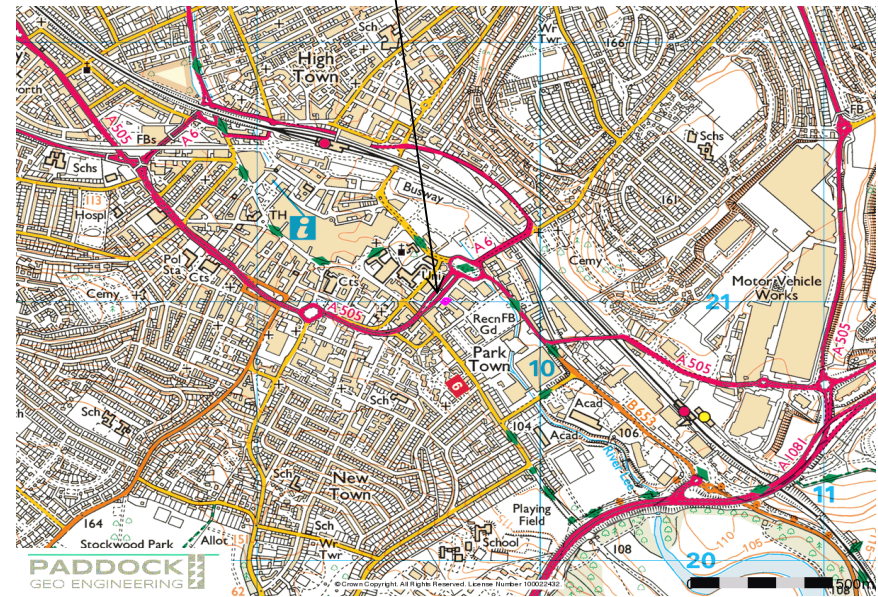
APPENDIX A

Site Location Plan
Site Plan
Aerial Photograph
Proposed Development Plan

SITE LOCATION PLAN

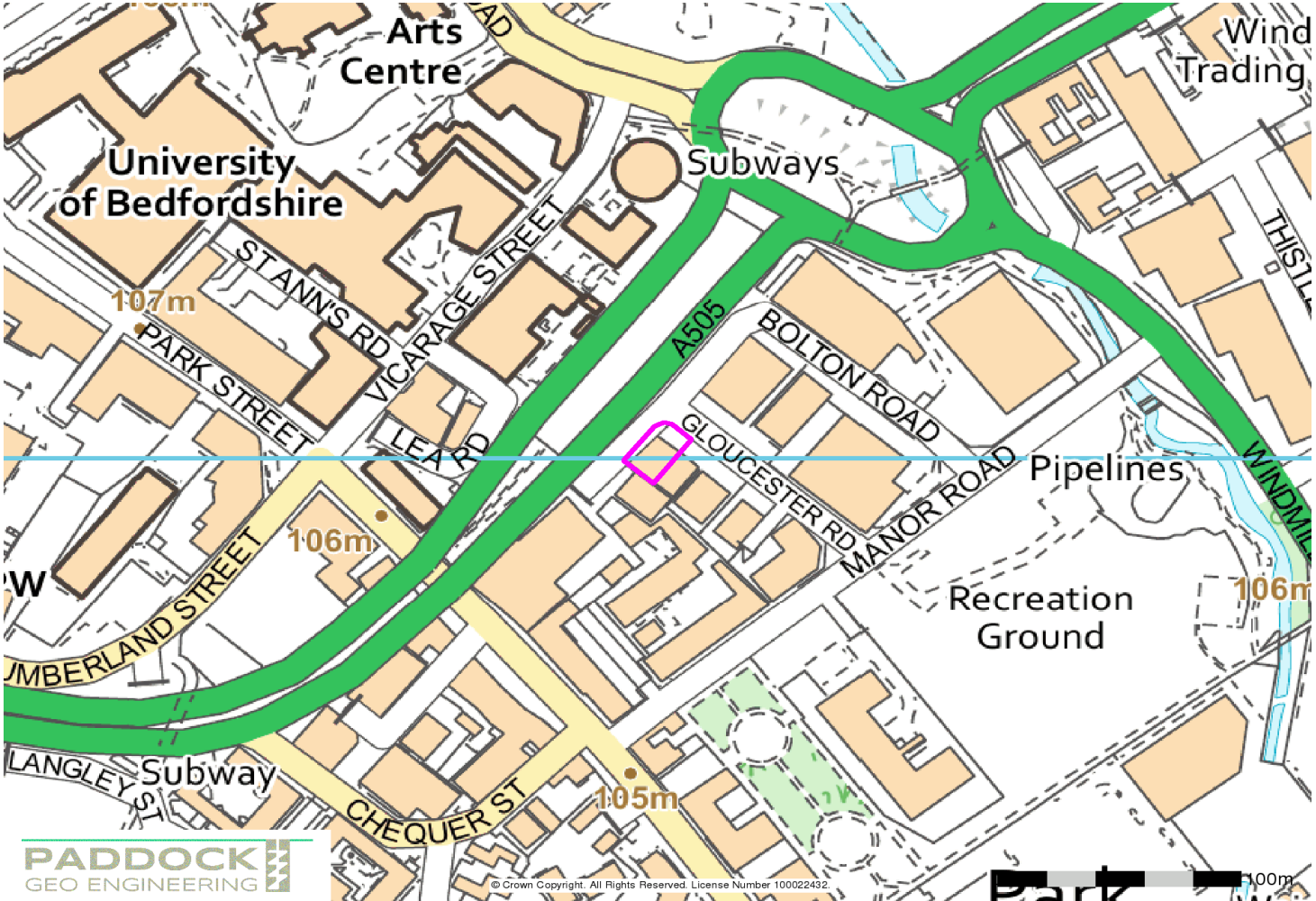


Site Location

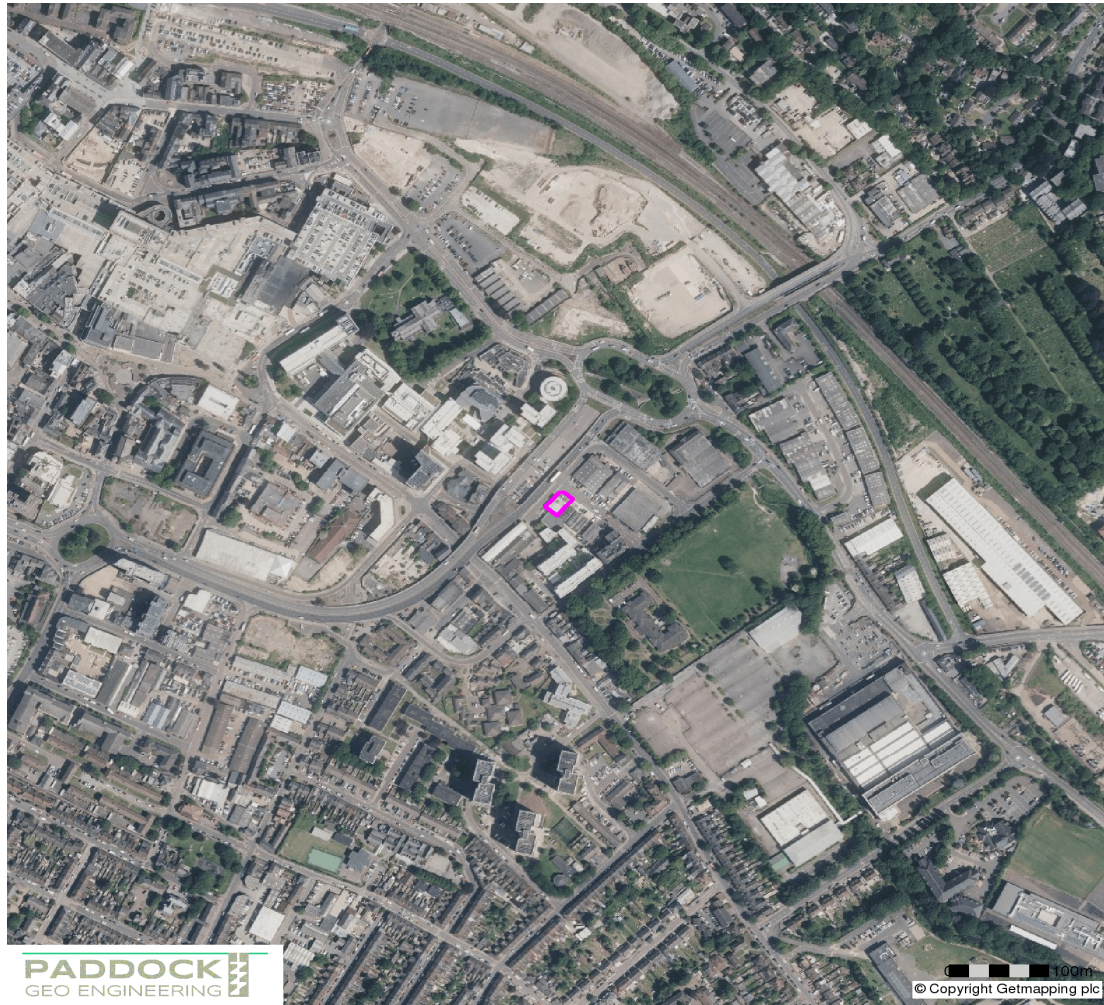


CLIENT: Mr. Amir Jaffer
PROJECT No: P23-137
PROJECT TITLE: 2 Gloucester Road,
Luton, LU1 3HX

SITE PLAN



AERIAL PHOTOGRAPH



PADDOCK
GEO ENGINEERING

PADDOCK
GEO ENGINEERING

CLIENT: Mr. Amir Jaffer
PROJECT No: P23-137
PROJECT TITLE: 2 Gloucester Road,
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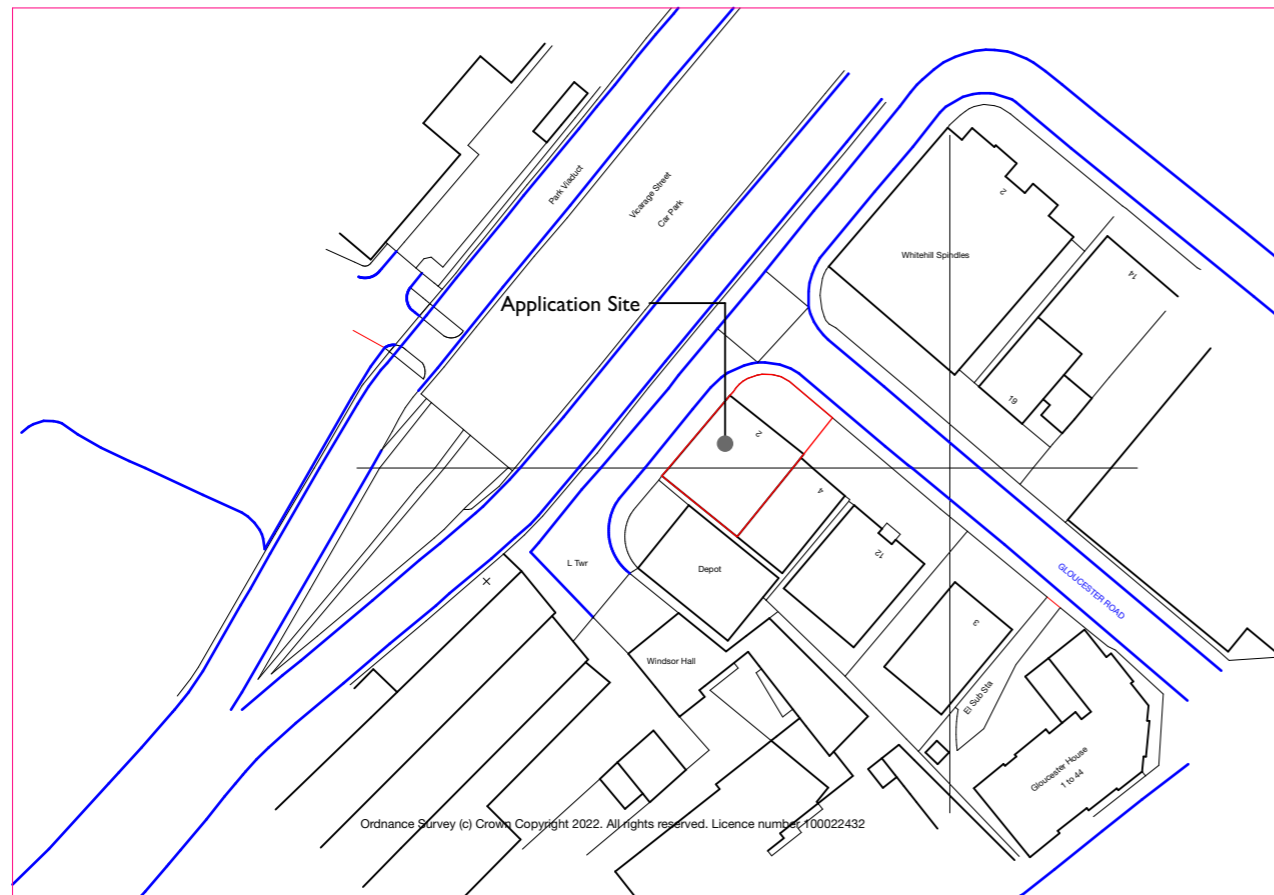
Mixed Use Development

2 GLOUCESTER ROAD LUTON LUI 3HX LUI 3HX

Owner: Amir Jaffer

Architect: Florian Winkler Architect

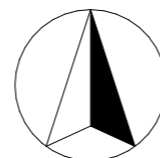
Statutory Authority: Luton Borough Council



SITE LOCATION PLAN

0 10 20 30 40

N



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2 GLOUCESTER ROAD

LUTON LUI 3HX

SITE LOCATION PLAN

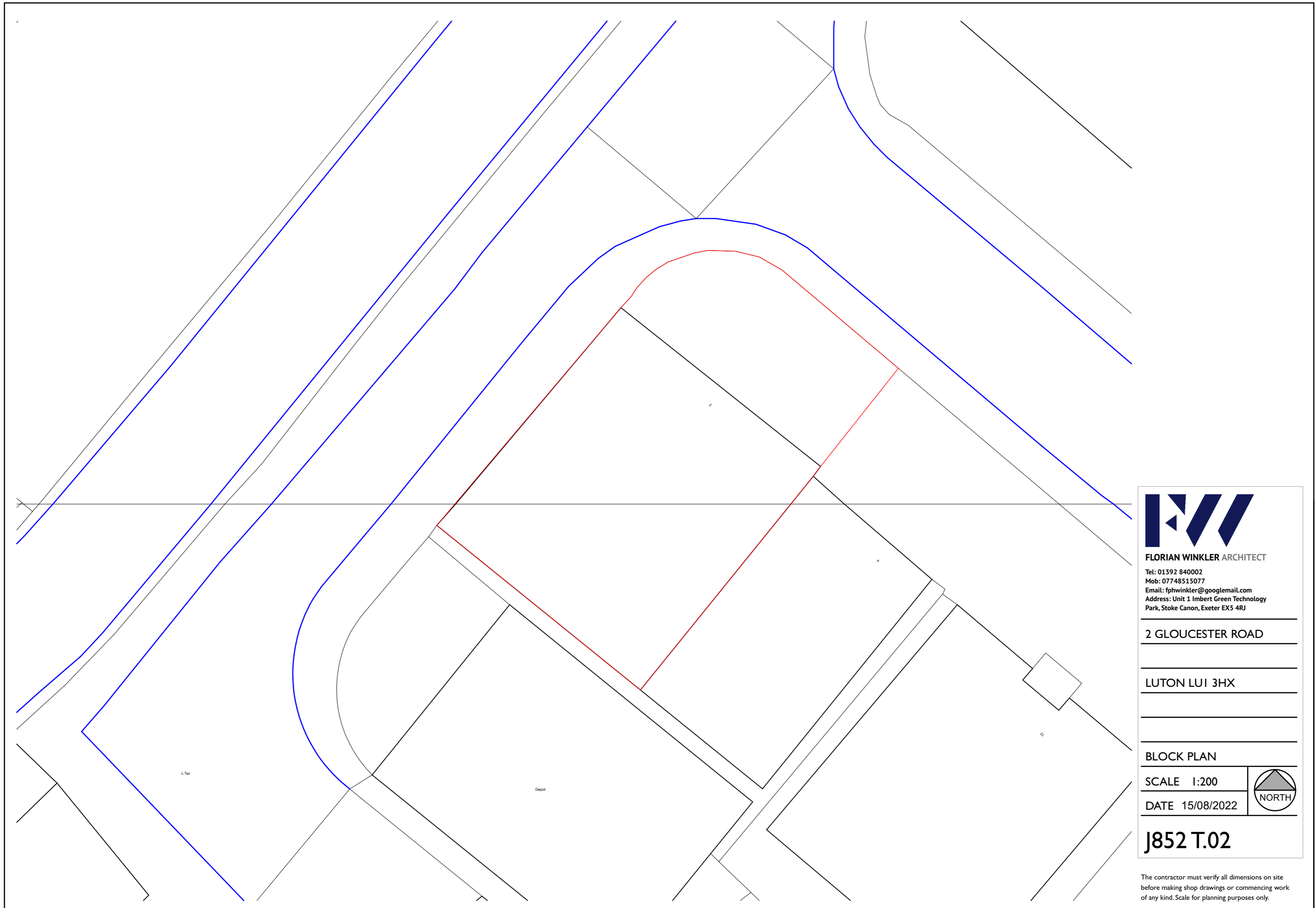
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DATE 15/08/2022



J852 T.01

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LUTON LUI 3HX

BLOCK PLAN

SCALE 1:200

DATE 15/08/2022



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VIEW FROM GLOUCESTER ROAD SHOWING NEIGHBOURING BUSINESS UNIT



VIEW FROM GLOUCESTER ROAD SHOWING 2 GLOUCESTER ROAD BUSINESS UNIT



VIEW FROM GLOUCESTER ROAD SHOWING 2 GLOUCESTER ROAD BUSINESS UNIT



VIEW FROM BOLTON ROAD SHOWING 2 GLOUCESTER ROAD BUSINESS UNIT



VIEW FROM BOLTON ROAD SHOWING 2 GLOUCESTER ROAD BUSINESS UNIT



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2 GLOUCESTER ROAD

LUTON LU1 3HX

PHOTOS OF EXISTING SITE

SCALE

DATE 16/08/2022

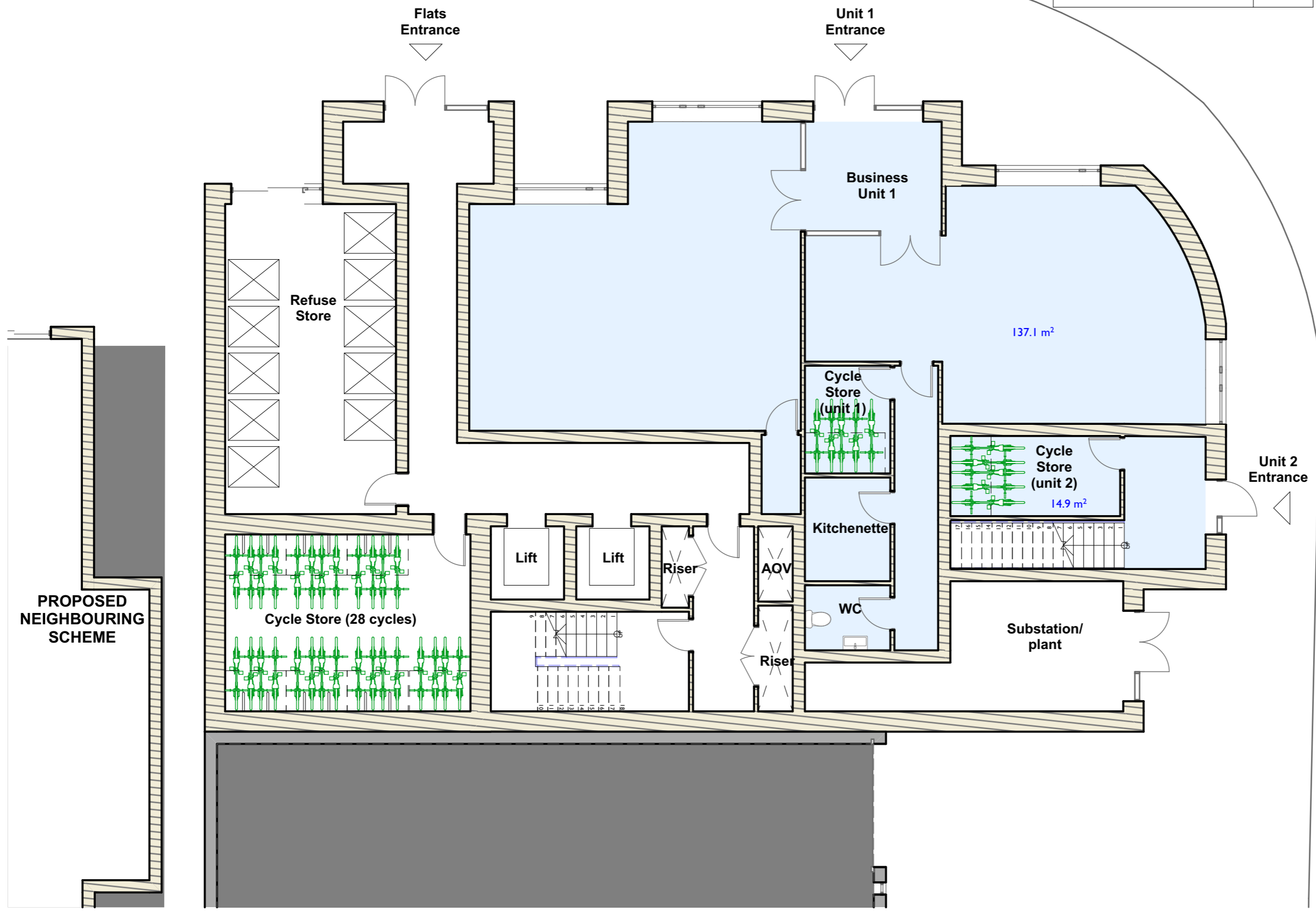
J852 SU I

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5no. 1-bed (33.3%)
 4no. 2-bed (26.7%)
 6no. 3-bed (40%)
 15 total

ACCOMMODATION SCHEDULE COMMERCIAL GIA (M ²)	
BUSINESS UNIT 1	137.1
BUSINESS UNIT 2	190.3
TOTAL PROPOSED	327.4
TOTAL EXISTING SPACE	327

ACCOMMODATION SCHEDULE RESIDENTIAL GIA (M ²)	
FLAT 1 (1 BED)	53.7
FLAT 2 (3 BED)	97.2
FLAT 3 (2 BED)	68.2
FLAT 4 (1 BED)	55.3
FLAT 5 (3 BED)	97.2
FLAT 6 (2 BED)	68.2
FLAT 7 (1 BED)	55.3
FLAT 8 (3 BED)	97.2
FLAT 9 (2 BED)	68.2
FLAT 10 (1 BED)	55.3
FLAT 11 (1 BED)	53.7
FLAT 12 (2 BED DUPLEX)	95
FLAT 13 (3 BED)	96
FLAT 14 (3 BED)	96
FLAT 15 (3 BED)	116.1
TOTAL	1172.6



PROPOSED
NEIGHBOURING
SCHEME



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LUTON LU1 3HX

PROPOSED
GROUND FLOOR PLAN

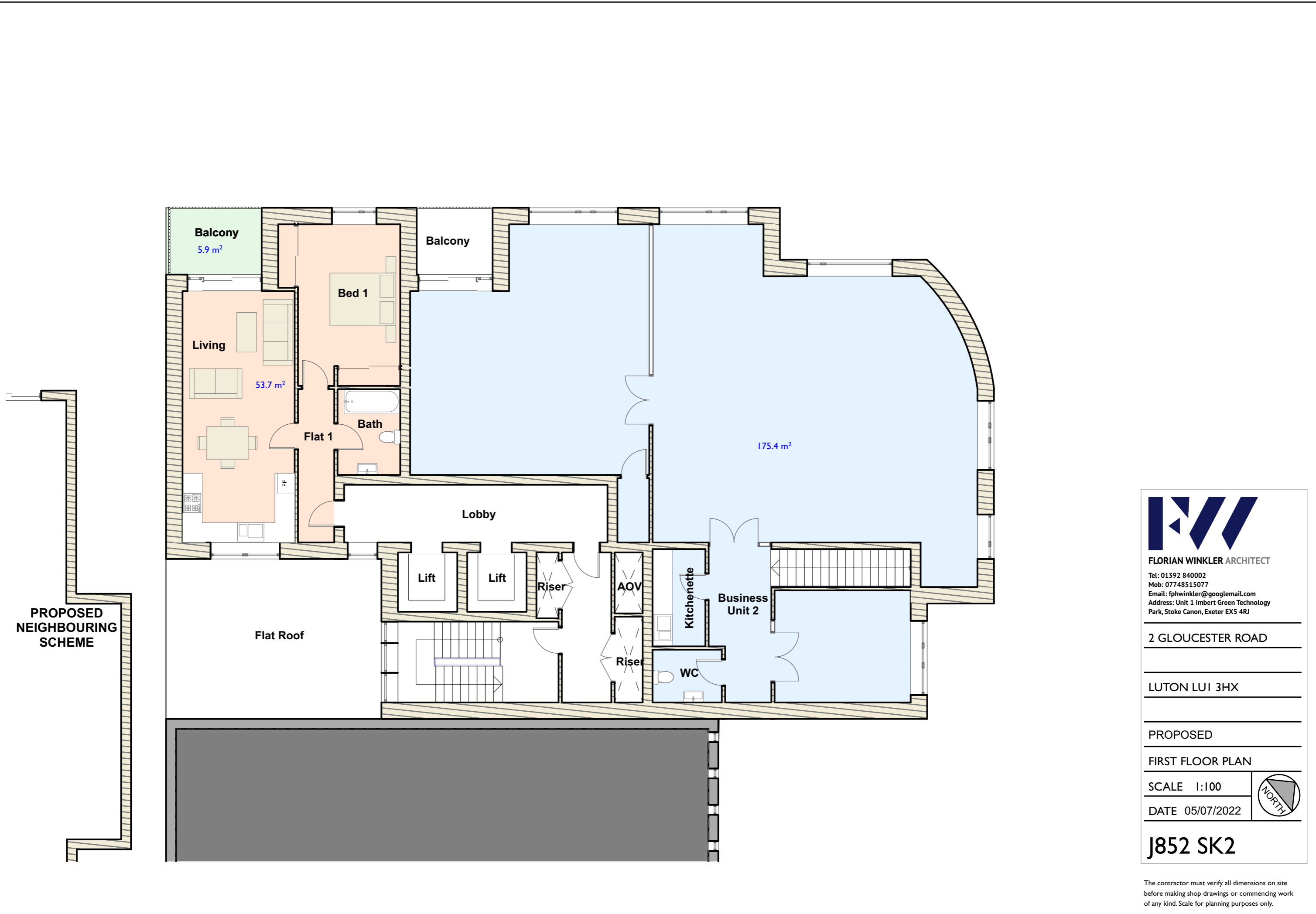
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LUTON LU1 3HX

PROPOSED

FIRST FLOOR PLAN

SCALE 1:100

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LUTON LU1 3HX

PROPOSED

SECOND FLOOR PLAN

SCALE 1:100

DATE 11/07/2022

J851 SK3



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LUTON LU1 3HX

PROPOSED

THIRD FLOOR PLAN

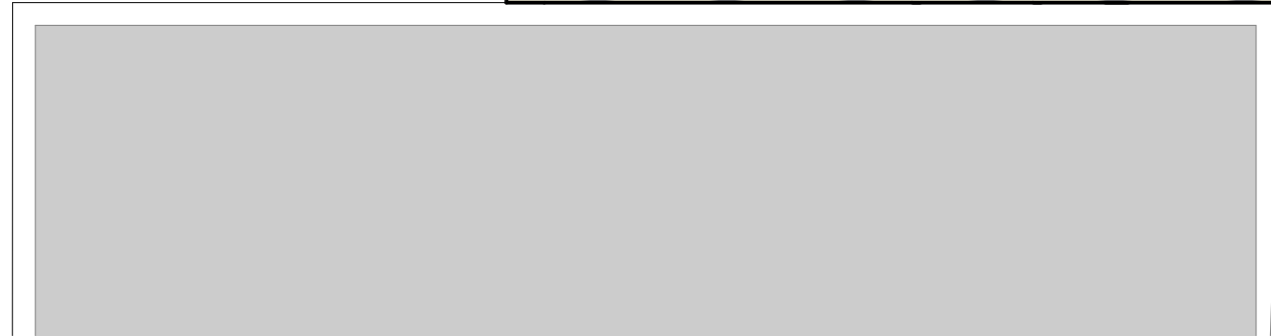
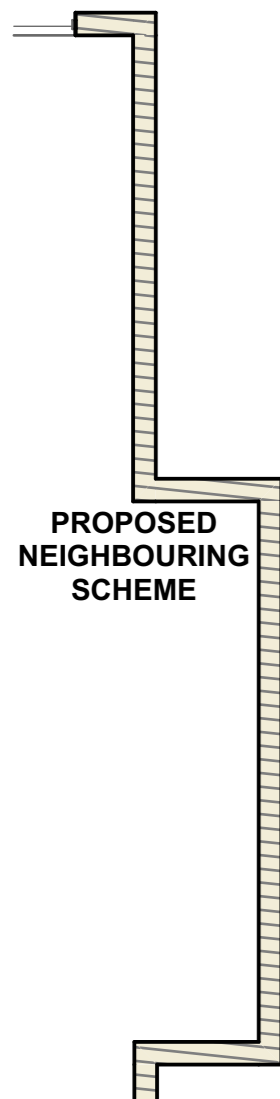
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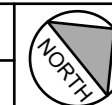
LUTON LU1 3HX

PROPOSED

FOURTH FLOOR PLAN

SCALE 1:100

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SCHEME



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PROPOSED
FIFTH FLOOR PLAN

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SCHEME



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PROPOSED

SIXTH FLOOR PLAN

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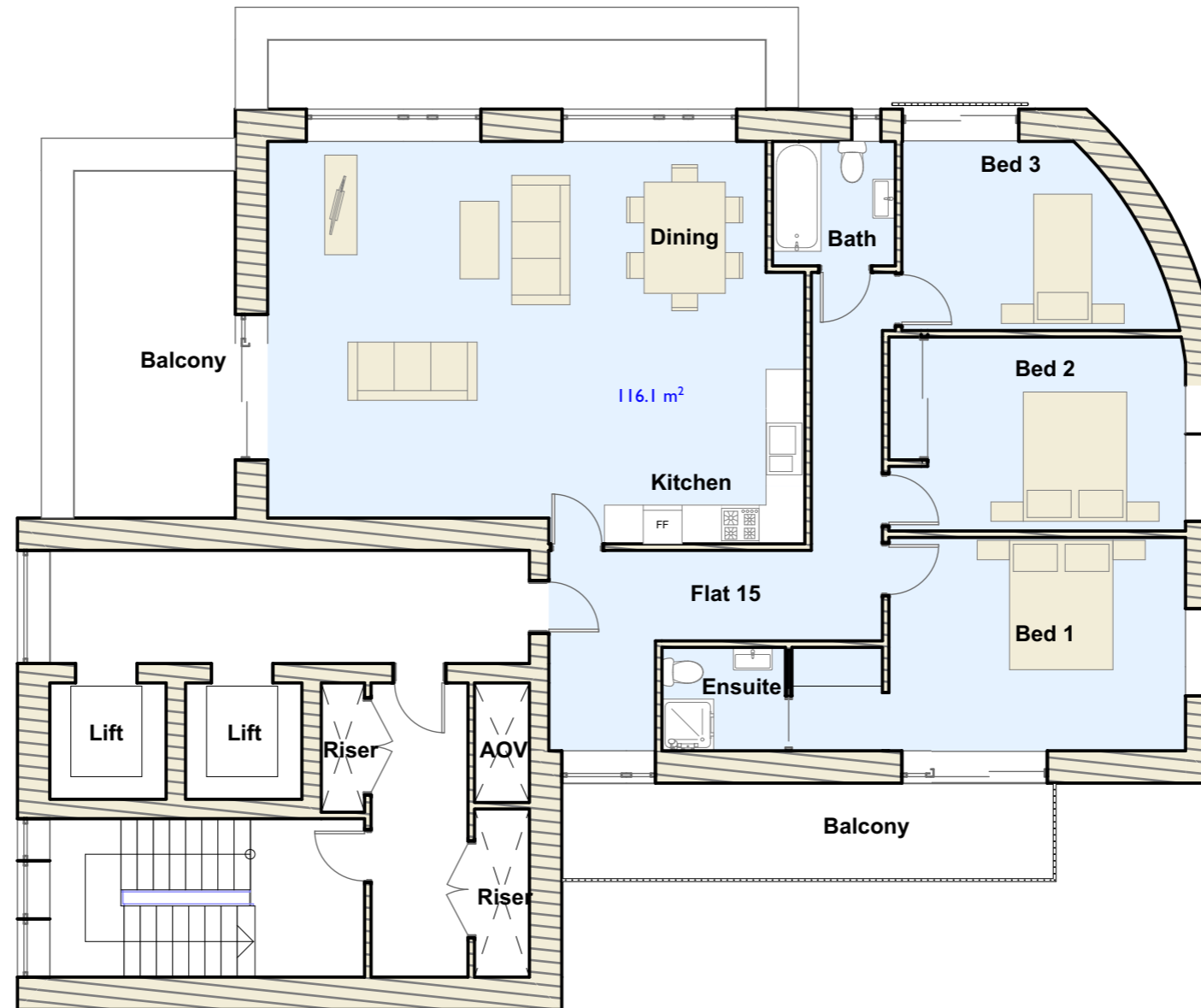
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PROPOSED

SEVENTH FLOOR PLAN

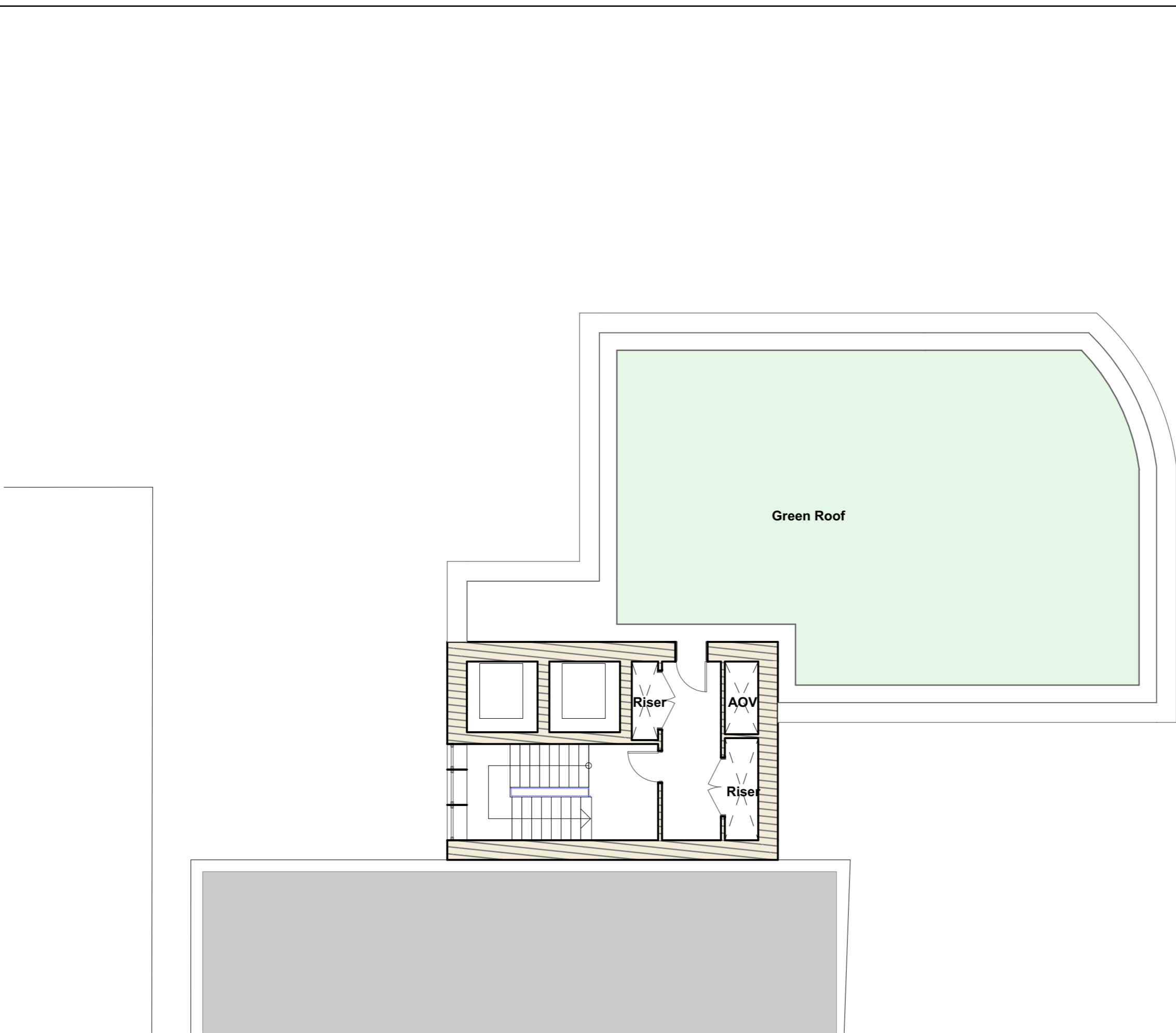
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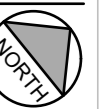
LUTON LU1 3HX

PROPOSED

ROOF PLAN

SCALE 1:100

DATE 11/01/2023



J852 SK9

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NORTHWEST ELEVATION



NORTHEAST ELEVATION



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2 GLOUCESTER ROAD

LUTON LUI 3HX

ELEVATIONS I

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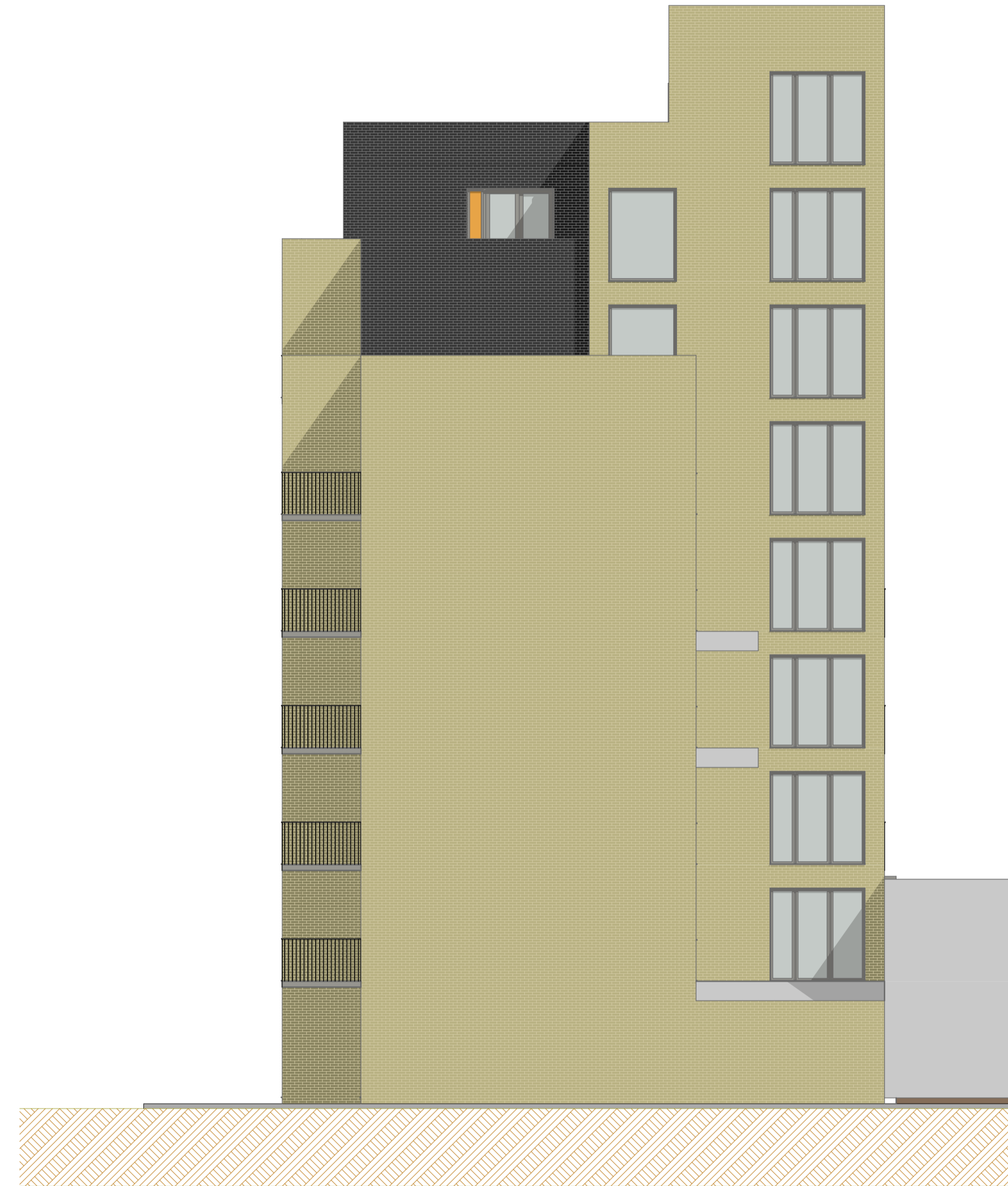
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The contractor must verify all dimensions on site before making shop drawings or commencing work of any kind. Scale for planning purposes only.



SOUTHEAST ELEVATION



SOUTHWEST ELEVATION



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2 GLOUCESTER ROAD

LUTON LU1 3HX

ELEVATIONS 2

SCALE 1:100

DATE

J852 SK 11

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PROPOSED VIEW FROM NORTH



PROPOSAL VIEWED FROM WEST



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LUTON LU1 3HX

PROPOSED

3D VIEWS I

SCALE

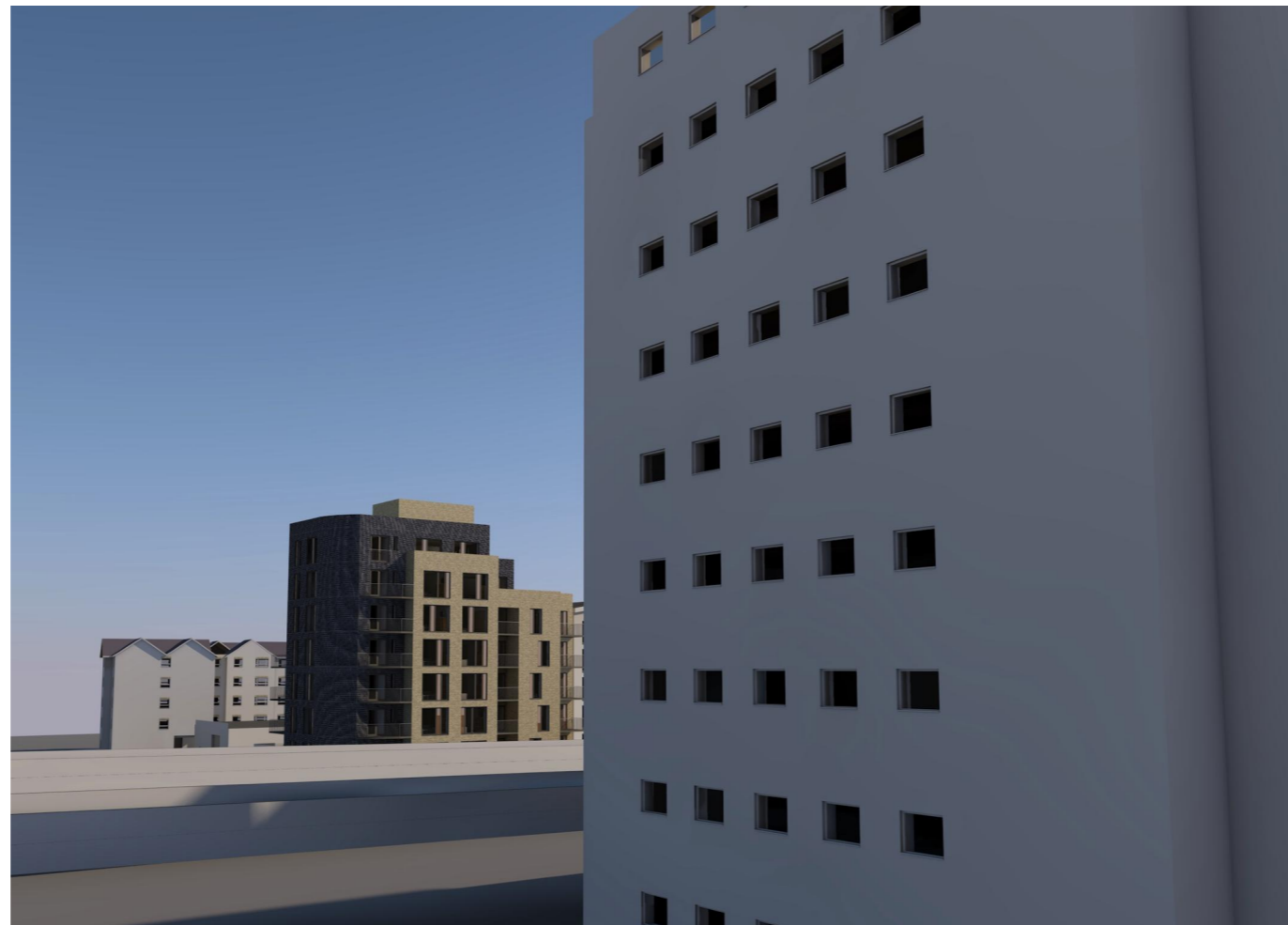
DATE 15/08/2022

J852 SK I2

The contractor must verify all dimensions on site before making shop drawings or commencing work of any kind. Scale for planning purposes only.



PROPOSAL VIEWED FROM WEST



PROPOSAL VIEWED FROM NORTHWEST



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2 GLOUCESTER ROAD

LUTON LU1 3HX

PROPOSED

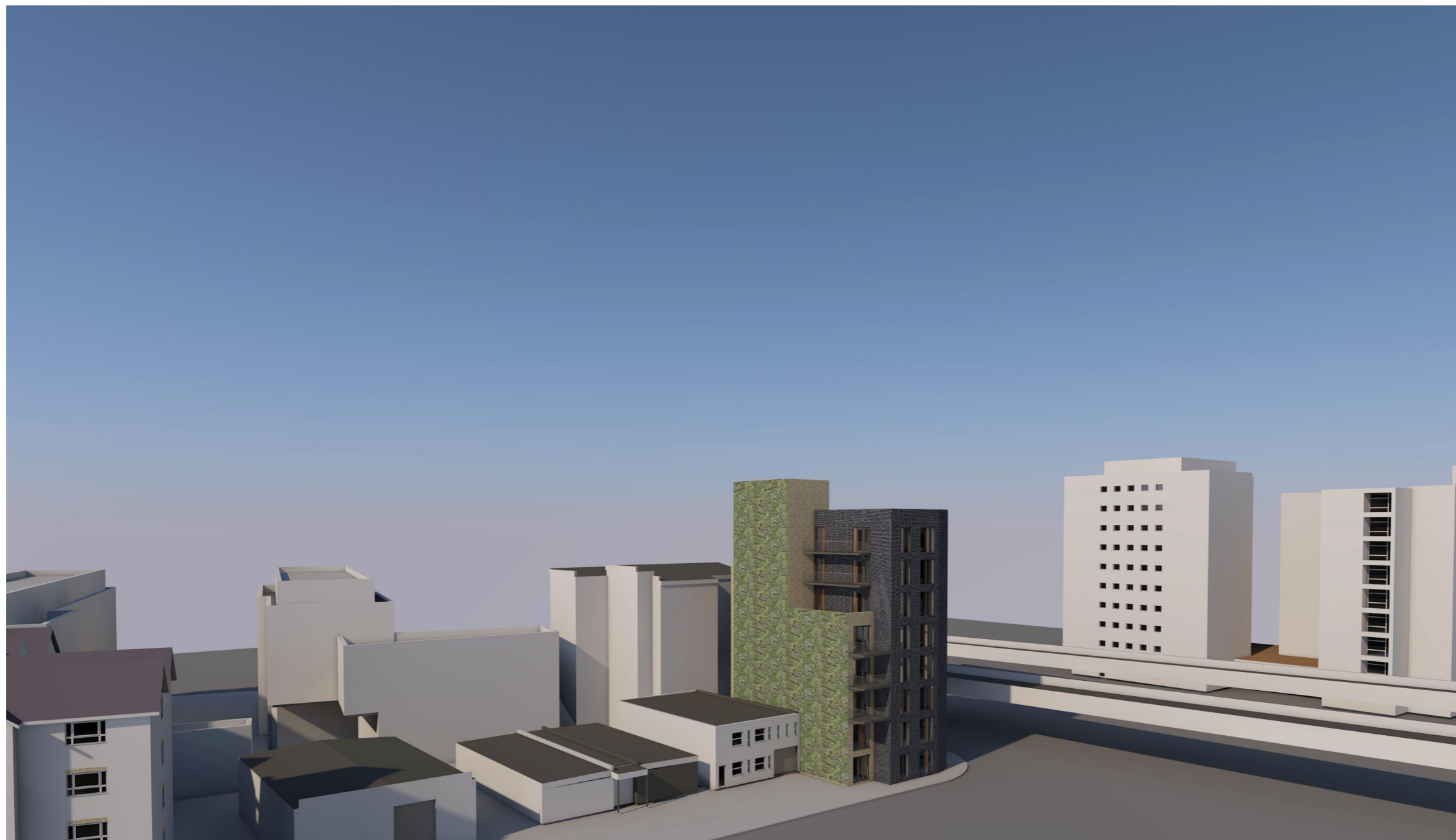
3D VIEWS 2

SCALE

DATE 15/08/2022

J852 SK I 3

The contractor must verify all dimensions on site before making shop drawings or commencing work of any kind. Scale for planning purposes only.



VIEW FROM NORTHEAST



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2 GLOUCESTER ROAD

LUTON LU1 3HX

PROPOSED

3D VIEWS 3

SCALE

DATE 15/08/2022

J852 SK I 4

The contractor must verify all dimensions on site before making shop drawings or commencing work of any kind. Scale for planning purposes only.

APPENDIX B

Site Walkover Survey Plan
Site Photographs