Use Class MA prior approval application for 57-59 Leicester Road, Wigston, LE18 1NR

Daylight Report

Change of Use – Daylight Report
Mar 2024

Revision Schedule

Daylight within development
Feb 2024

Rev	Date	Details	Prepared by	Reviewed by	Approved by
01	Mar 2023	Final	P Giesberg	S. Bamford	P Giesberg

Planning for Sustainability
124 City Road
London
EC1V 2NX

Tel. +44(0)207 112 7590
www.planningforsustainability.co.uk

Table of Contents

1 Introduction

It is proposed to convert the first floor of an existing retail building at 57-59 Leicester Road, Wigston, LE18 1NR to 2 independent flats.

Figure 1 gives a site overview showing the building and its direct vicinity.

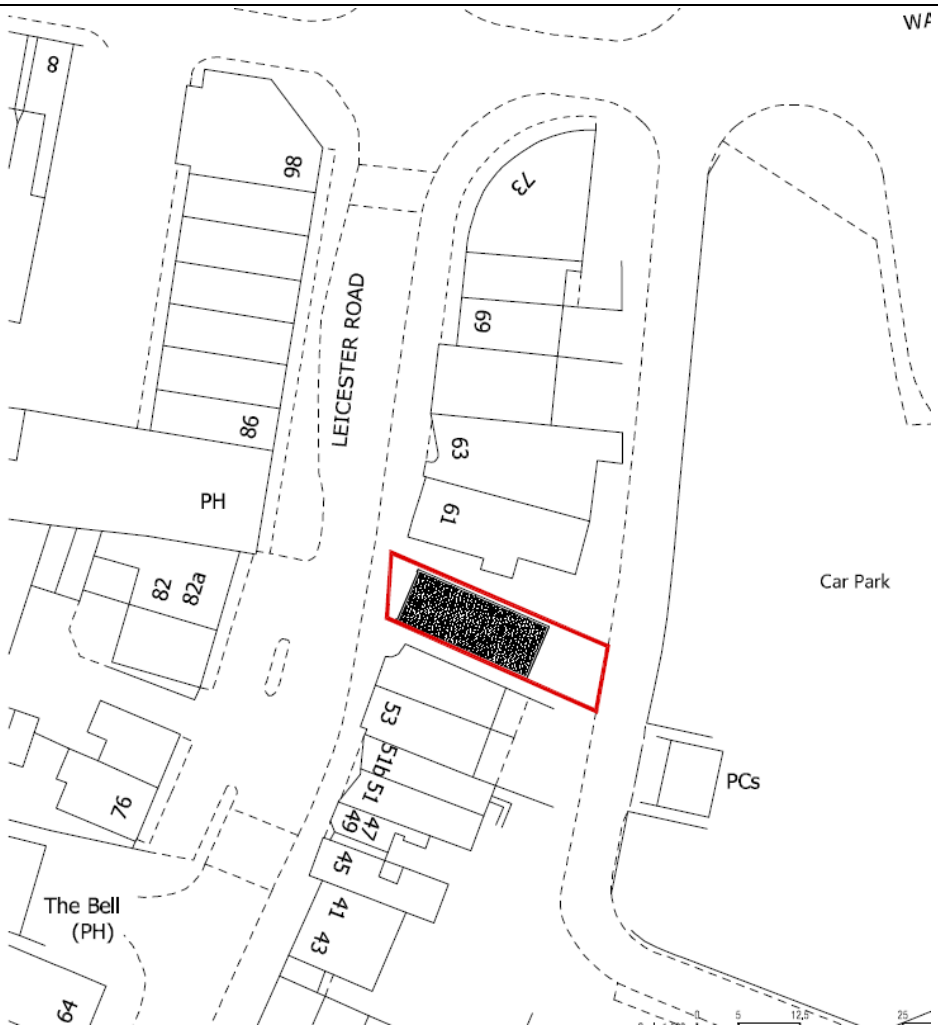


Figure 1. Site location

The drawings in appendix 2 provide the details of the proposed internal layout of the building. The conversion is under permitted development, but requires prior approval.

2 Policy and legislation

2.1 General Permitted Development (England) Order 2015

Attainment of adequate natural light in habitable rooms, is a condition of the change of Dwellinghouses (Use Class C3) under the General Permitted Development (England) Order 2015 (GPDO 2015). The GDPO 2015 defines habitable rooms as any rooms used or intended to be used for sleeping or living which are not solely used for cooking purposes, but does not include bath or toilet facilities, service rooms, corridors, laundry rooms, hallways or utility rooms.

2.2 Site Layout Planning for Daylight and Sunlight

The order does not define adequate natural light it self. In the UK the document that is often used in planning matters as guidance to daylight and sunlight matters is Building Research Establishment (BRE) guide 'Site Layout Planning for Daylight and Sunlight: a guide to good practice" (BRE209). A new European standard BS EN 17037 'Daylight in Buildings' was published in May 2019. An addendum to the standard was published in 2021, proving more specific guidance for the UK on daylight levels within dwellings (BS EN 17037:2018+A1:2021).

A revised version of BRE209 was published in June 2022. This revision incorporates the provisions of BS EN 17037.

With regard to daylight levels within buildings a major change in approach occurred. Previously, the parameter of average daylight factor of a room was used in the UK to express the amount of daylight available. This parameter is no longer in use. Instead, the new approach is focussed on absolute light levels within a set area of the rooms under evaluation.

"*A space is considered to provide adequate daylight if a target illuminance level is achieved across a fraction of the reference plane within a space for at least half of the daylight hours*."

Both the guidelines and the standard focus on new buildings. Existing buildings often have existing constraints that can be difficult or impossible to address in terms of daylight. The BRE guidance document allows for flexibility where the design process takes is informed by the daylight parameters.

For instance it specifically makes an exception for kitchens in certain buildings, allowing the target values to be ignored, provide the kitchen is adjacent another well lit space.

Other adjustments can be addressing the layout or dedicating specific spaces to less light sensitive uses, such as bedrooms.

In addition to the BRE guidance on daylight and sunlight, there are two standards in the UK that are often used: BREEAM domestic refurbishment for existing buildings that are either being refurbished or where a change of use is planned and The Home Quality Mark for new built housing. These two BRE **standards** both exclude bedrooms as part of the daylight element in the standards, in contrast to the site layout guidance.

3 Methodology and assessment criteria

3.1 Data acquisition

Architect's drawings of the building and the proposed layout were used. The resulting model is shown in appendix 1.

3.2 Effects within proposed development

Daylight Provision Calculations

BS EN 17037:2018+A1:2021 recognises two methods to assess daylight provision to the interior. Both should be determine using specific software.

Method 1: Calculation method using daylight factors on the reference plane
Method 2 Calculation method of illuminance levels on the reference plane using climatic data for the given site and an adequate time step.

The central requirement of the standard is set out in table 1 below.

Table 1: Recommendations of daylight provision by daylight openings in vertical and inclined surface.

Level of recommendation for vertical and inclined daylight opening	Target illuminance E_T lx	Fraction of space for target level $F_{plane,\%}$	Minimum target illuminance E_{TM} lx	Fraction of space for minimum target level $F_{plane,\%}$	Fraction of daylight hours $F_{time,\%}$
Minimum	300	50 %	100	95 %	50 %
Medium	500	50 %	300	95 %	50 %
High	750	50 %	500	95 %	50 %
NOTE Table A.3 gives target daylight factor (D_T) and minimum target daylight factor (D_{TM}) corresponding to target illuminance level and minimum target illuminance, respectively, for the CEN capital cities.					

Using method 2 will directly provide these values. The daylight factor is a measure of the amount of daylight relative to the external daylight available. When using method 1, the requirement for the daylight factor will vary with the geographical location of the development site. So for instance to achieve a target of 300 Lux in Athens a Daylight Factor of 1.5% is required, whereas the same 300 Lux target would require a Daylight Factor of 2.6 in Reykjavik, Iceland.

There are some specific recommendations for dwellings in the UK. These are set out in the UK National Annex to the standard. The UK committee on BS EN 17037: 2018 believes that the recommendations as stated in the table 1 are not always achievable in all rooms of a dwelling. This could be the case for instance for rooms in basements, dwellings in dense urban areas or where existing buildings are being converted into dwellings.

The UK National Annex gives guidance on minimum daylight provision in all UK dwellings. The recommendations are 100 lux for bedrooms, 150 lux for living rooms and 200 lux for kitchens to be achieved in 50% of the time that daylight is available for 50 % of the assessment grid. The recommendations for 95% of the assessment grid do not apply for to dwellings in the UK.

3.3 Building parameters

The analysis that is described in this report was carried out using the Radiance module of the IES VE software suite, which is widely used internationally to analyse daylight in buildings. For this study the Annual Dynamic Illuminance analysis was used, which is a Climate Based Daylight Modelling approach.

The daylight in a room is determined by a wide range of factors. These factors can be external, such as nearby objects that provide both blocking of daylight and reflections. Other factors are internal and include size and shape of rooms as well as the light reflecting characteristics of walls, ceilings and floors. Finally, the light transmittance of the glazing is a determinant of the daylight levels in a building.

BRE209 provides guidance on the transmittance values of glazing as well as the light reflectance of internal and external surfaces.

In this study, we have modelled the glazing panes using the standard 0.8 framing factor. A maintenance factor for windows in an urban area, without overhand was applied to the transmittance value (0.92).

The light reflectance values of the internal surfaces were assumed: interior walls, 0.8, ceilings, 0.8, floors 0.5. which is consistent with modern light finishes. External surfaces were assumed to have a reflectance value of 0.2.

The available daylight hours were considered over the year for the full day.

As recommended in the BRE209 guidance document, an “Area of Interest” was defined as the internal room space offset by 30 cm from the inside of the walls. The working plane was set at 0.85m and the distance between points in the assessment grid was 0.25m.

4 Results

4.1 Illuminance levels

The illuminance level available in the rooms was determined. The results are shown in table 2 below and shown in Appendix 3.

Table 2 Area of working plane receiving stated illuminance levels for 50% of the available daylight hours by band

Flat Ref	Room Use	Room Area	Effective Area	Median Lux	Area Compliant	% of Area Compliant	Req Lux	Test
Flat 1	Kitchen/ living room	24.11	17.26	377	15.09	87%	150	YES
Flat 1	Bedroom	15.17	10.37	340	10.37	100%	100	YES
Flat 2	Kitchen/ living room	14.92	10.05	474	10.05	100%	100	YES
Flat 2	Bedroom	15.32	10.87	107	5.78	53%	150	YES

5 Discussion and conclusion

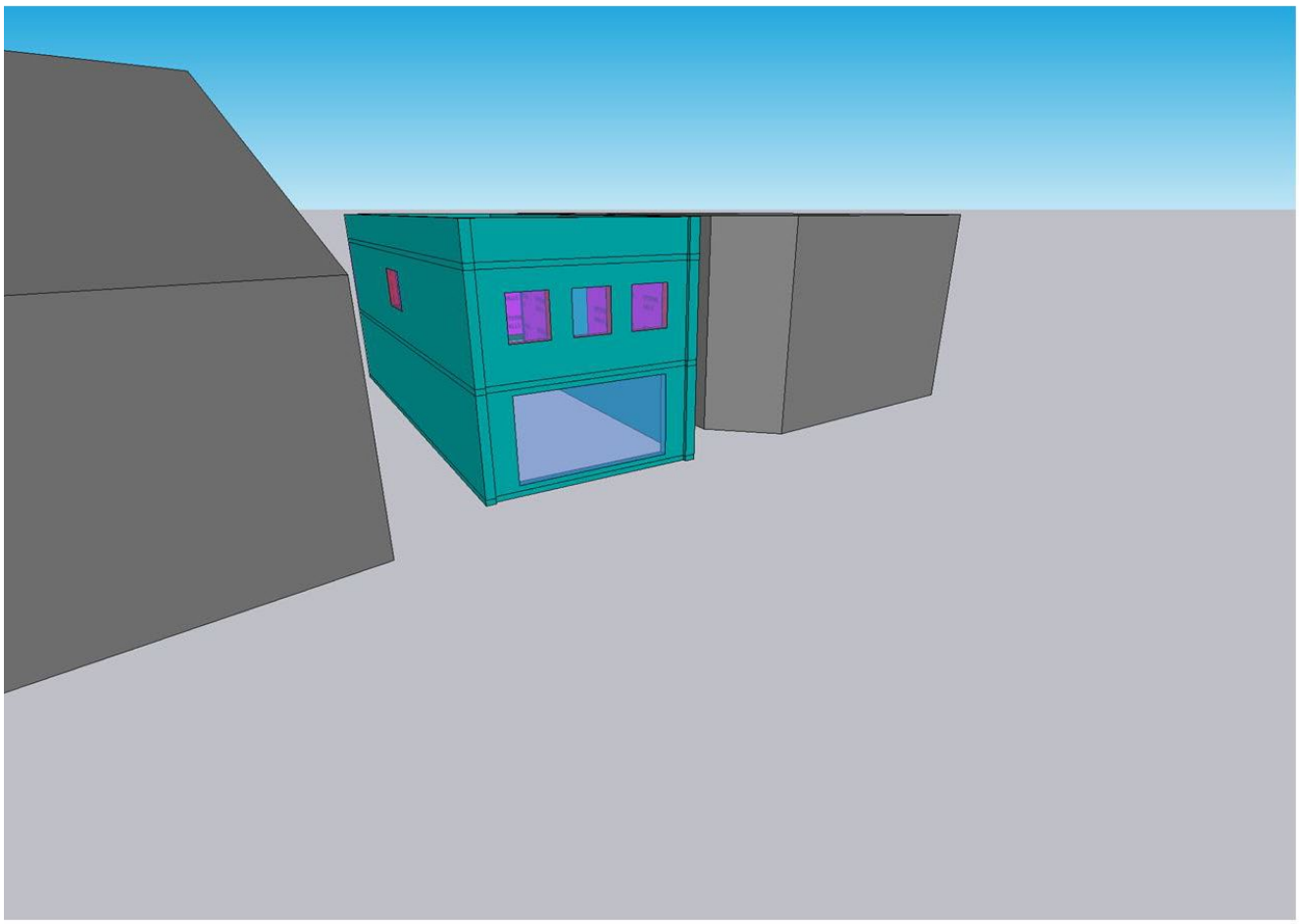
A daylight and sunlight assessment was carried out to support a prior approval application for the conversion of workshop space to residential use.

The parameters described in BS EN 17037:2018+A1:2021 “Daylight in Buildings” were used to determine the level of daylight available in the rooms on the ground floor of the building.

All the rooms assessed achieved the recommended value of 50% of the floor areas achieving the target Lux value for 50% of the time.

It is therefore concluded that the proposed development does comply with the requirements in GPDO 2015.

Appendix 1. Model Overview

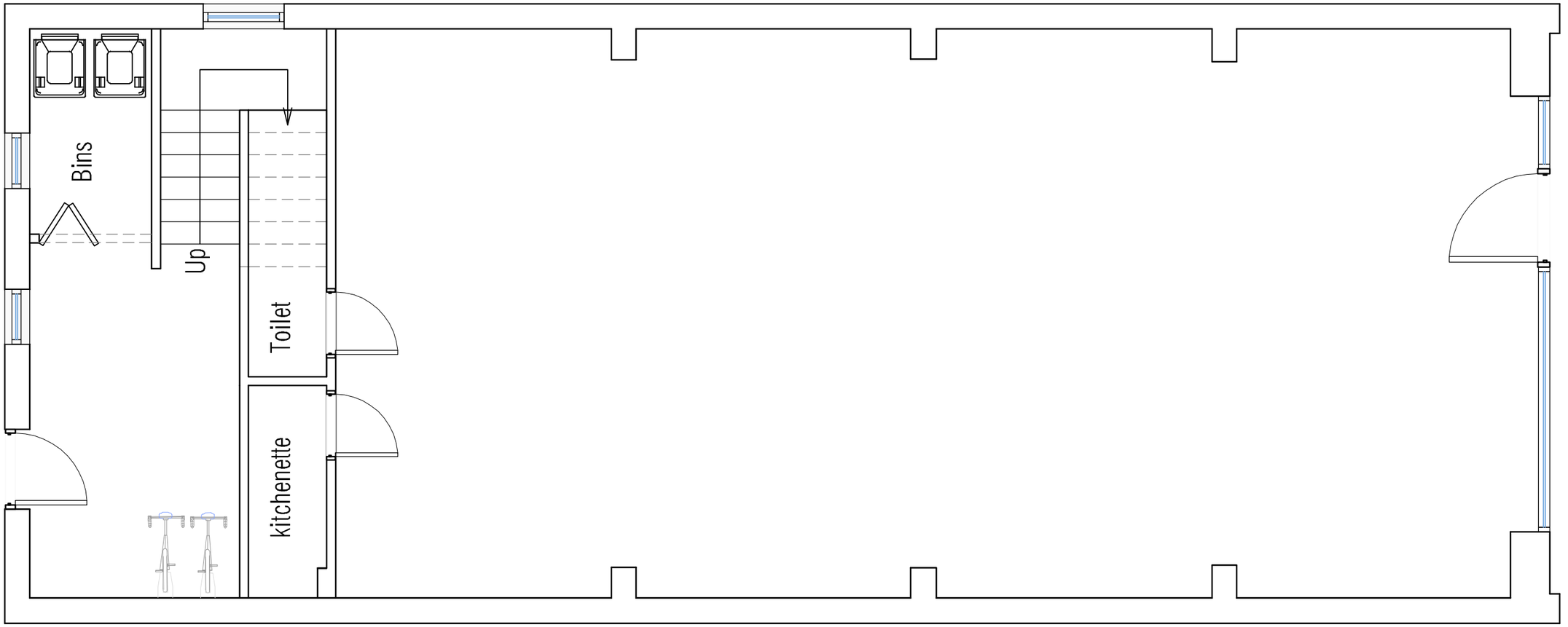


Appendix 2. Plans and elevations

GENERAL NOTES

Do not scale from this drawing.

This drawing has been prepared solely for planning purpose only.



PROPOSED GROUND FLOOR PLAN

Scale 1:50 0 0.5 1.5 3 5m

No.	Description	Date
A	First issue	28.02.2024

architecture 365

+447983399646
Architecture365 Ltd
contact@architecture365.co.uk
www.architecture365.co.uk
20 Lynmouth Road
Leicester
LE5 1NA

Project

57-59 LEICESTER ROAD LE18 1NR

Drawing Title

PROPOSED GROUND FLOOR PLAN

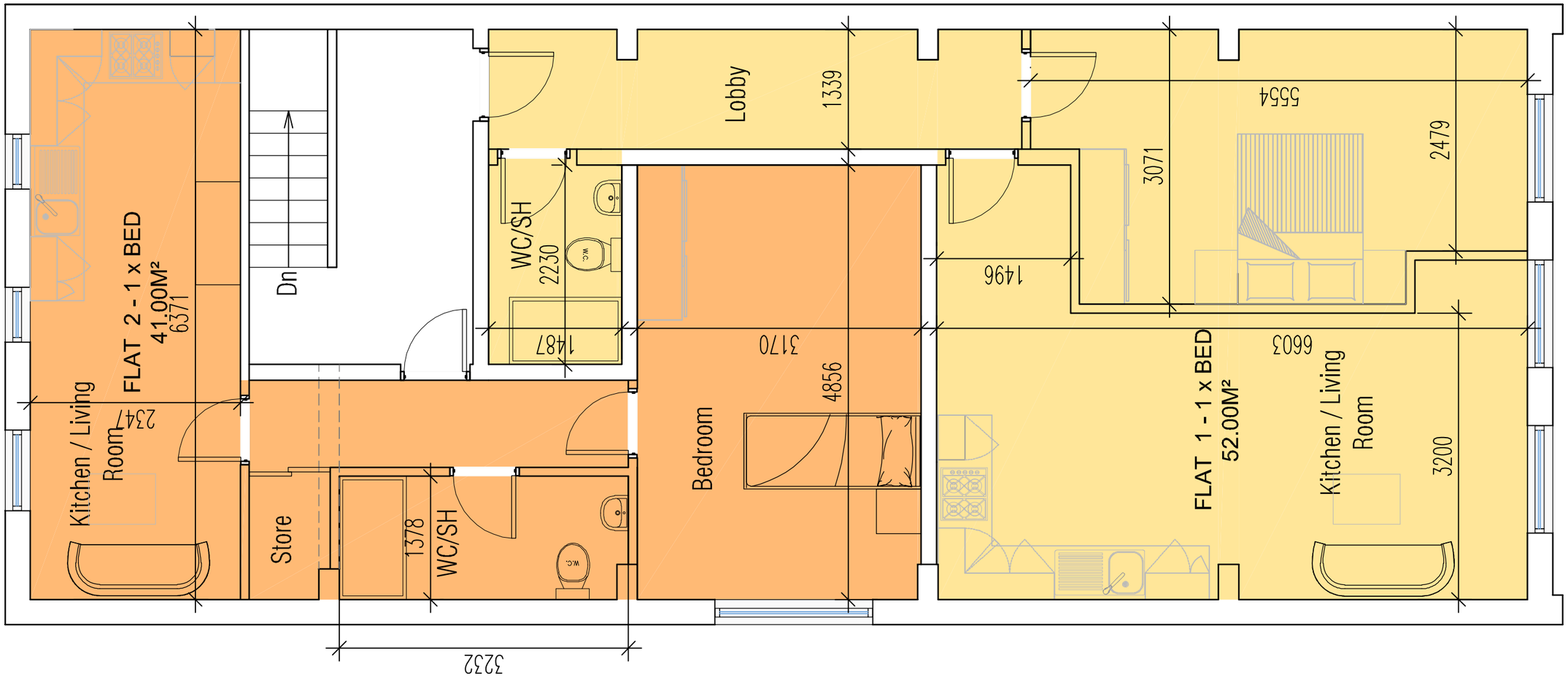
Drawing No.	**Rev**
PL57-59 A200	A

Scale @ A3 1:50

GENERAL NOTES

Do not scale from this drawing.

This drawing has been prepared solely for planning purpose only.



PROPOSED FIRST FLOOR PLAN

Scale 1:50 0 0.5 1.5 3 5m

No.	Description	Date
A	First issue	28.02.2024

arc hitecture 365

+447983399646
Architecture365 Ltd
contact@architecture365.co.uk
www.architecture365.co.uk
20 Lynmouth Road
Leicester
LE5 1NA

Project

57-59 LEICESTER ROAD LE18 1NR

Drawing Title

PROPOSED FIRST FLOOR PLAN

Drawing No. PL57-59 A201

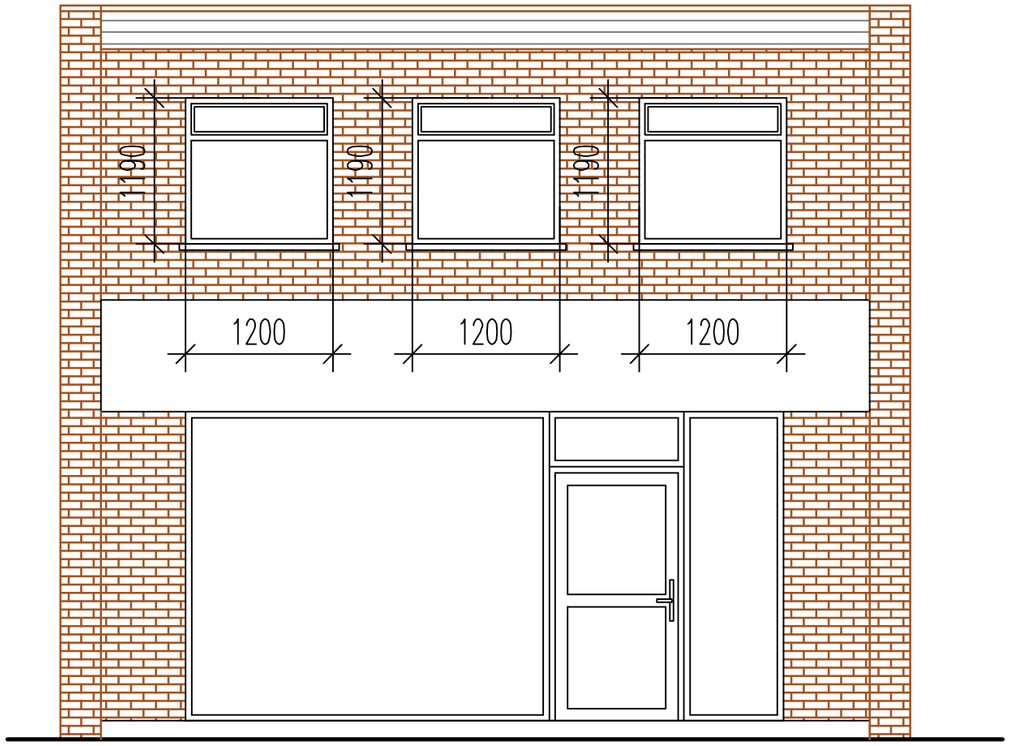
Rev A

Scale @ A3 1:50

GENERAL NOTES

Do not scale from this drawing.

This drawing has been prepared solely for planning purpose only.



PROPOSED FRONT ELEVATION

Scale 1:50 0 0.5 1.5 3 5m

No.	Description	Date
B	Drawing updated	07.08.2023
A	First issue	28.02.2024

architecture 365

+447983399646
Architecture365 Ltd
contact@architecture365.co.uk
www.architecture365.co.uk
20 Lynmouth Road
Leicester
LE5 1NA

Project

57-59 LEICESTER ROAD LE18 1NR

Drawing Title

PROPOSED FRONT ELEVATION

Drawing No. PL57-59 A203

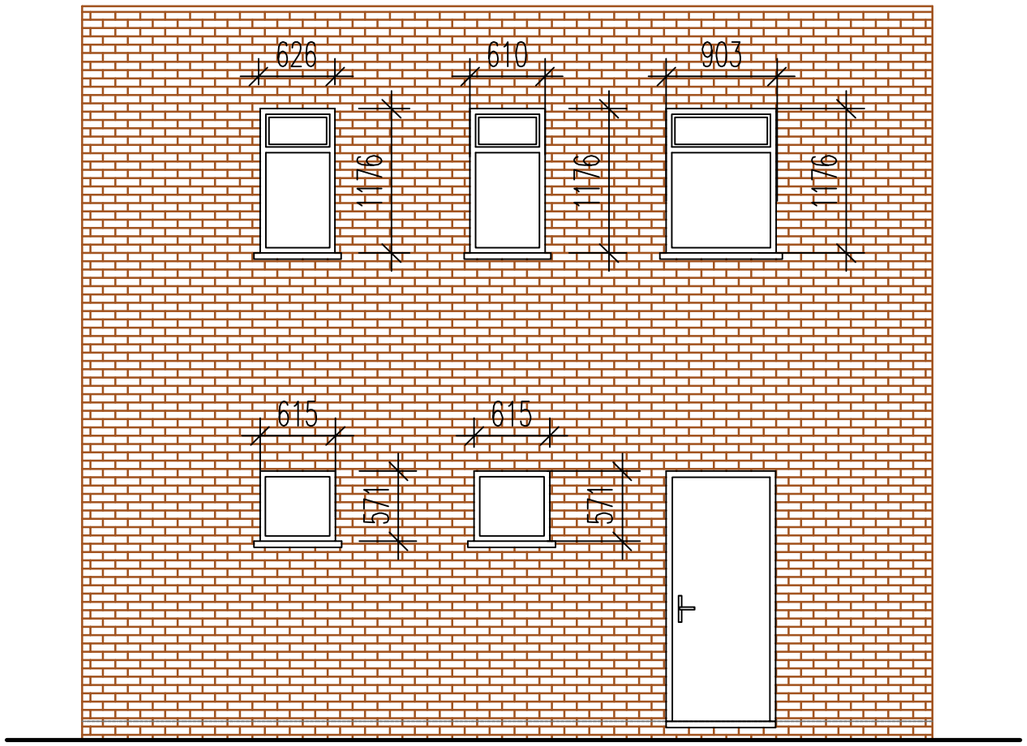
Rev B

Scale @ A3 1:50

GENERAL NOTES

Do not scale from this drawing.

This drawing has been prepared solely for planning purpose only.



PROPOSED REAR ELEVATION

Scale 1:50 0 0.5 1.5 3 5m

No.	Description	Date
B	Drawing updated	07.08.2023
A	First issue	28.02.2024

architecture 365

+447983399646
Architecture365 Ltd
contact@architecture365.co.uk
www.architecture365.co.uk
20 Lynmouth Road
Leicester
LE5 1NA

Project

57-59 LEICESTER ROAD LE18 1NR

Drawing Title

PROPOSED REAR ELEVATION

Drawing No. PL57-59 A204

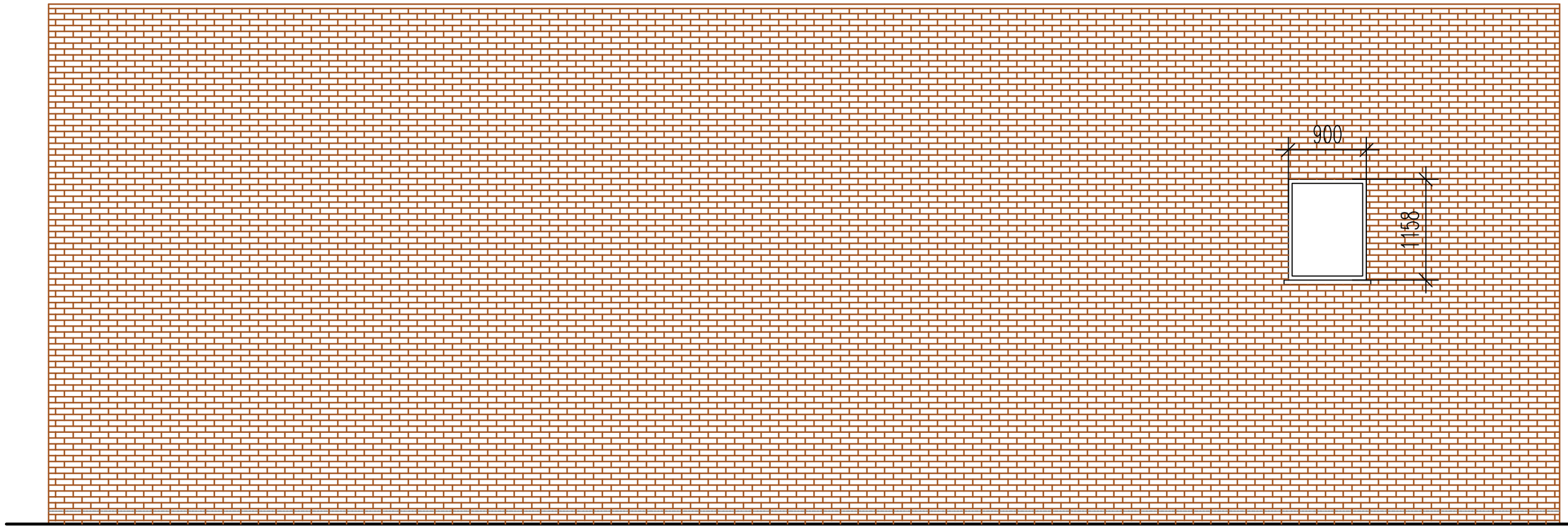
Rev B

Scale @ A3 1:50

GENERAL NOTES

Do not scale from this drawing.

This drawing has been prepared solely for planning purpose only.



PROPOSED SIDE ELEVATION - A

Scale 1:50 0 0.5 1.5 3 5m

No.	Description	Date
A	First issue	28.02.2024

arc hitecture 365
+447983399646
Architecture365 Ltd
contact@architecture365.co.uk
www.architecture365.co.uk
20 Lynmouth Road
Leicester
LE5 1NA

Project
57-59 LEICESTER ROAD LE18 1NR

Drawing Title
PROPOSED SIDE ELEVATION - A

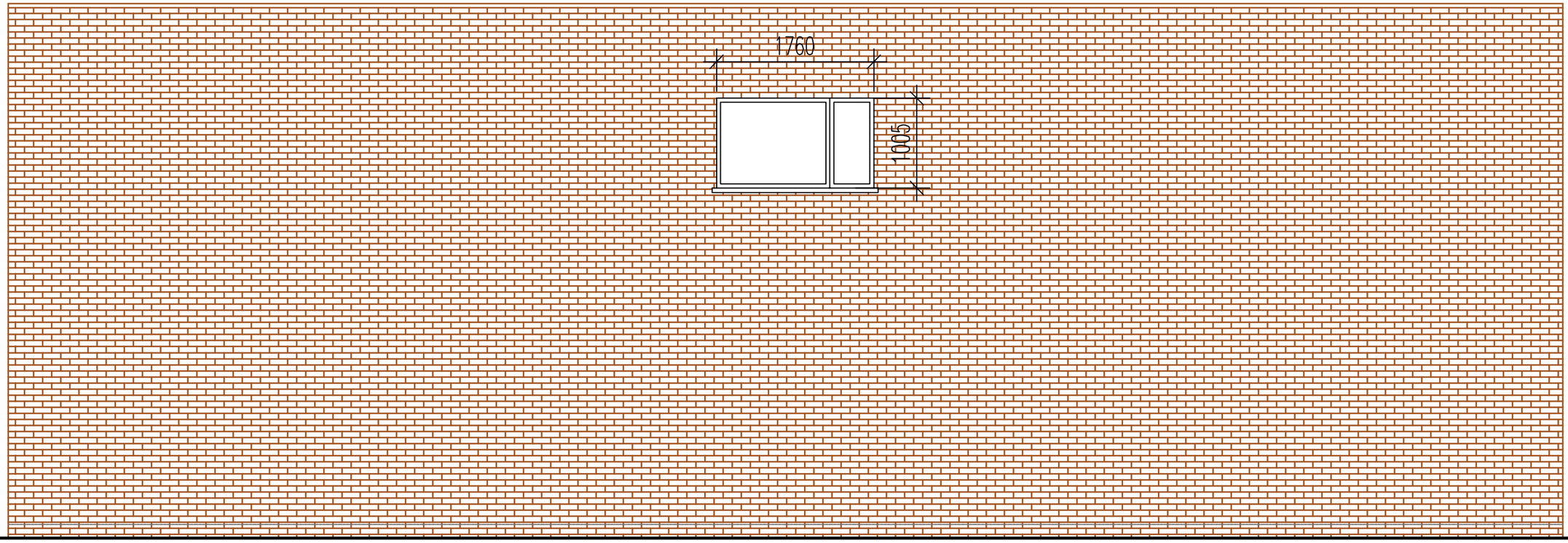
Drawing No. PL57-59 A205
Rev B

Scale @ A3 1:50

GENERAL NOTES

Do not scale from this drawing.

This drawing has been prepared solely for planning purpose only.



PROPOSED SIDE ELEVATION - B

Scale 1:50

0 0.5 1.5 3 5m

No.	Description	Date
A	First issue	28.02.2024

architecture 365
+447983399646
Architecture365 Ltd
contact@architecture365.co.uk
www.architecture365.co.uk
20 Lynmouth Road
Leicester
LE5 1NA

Project
57-59 LEICESTER ROAD LE18 1NR

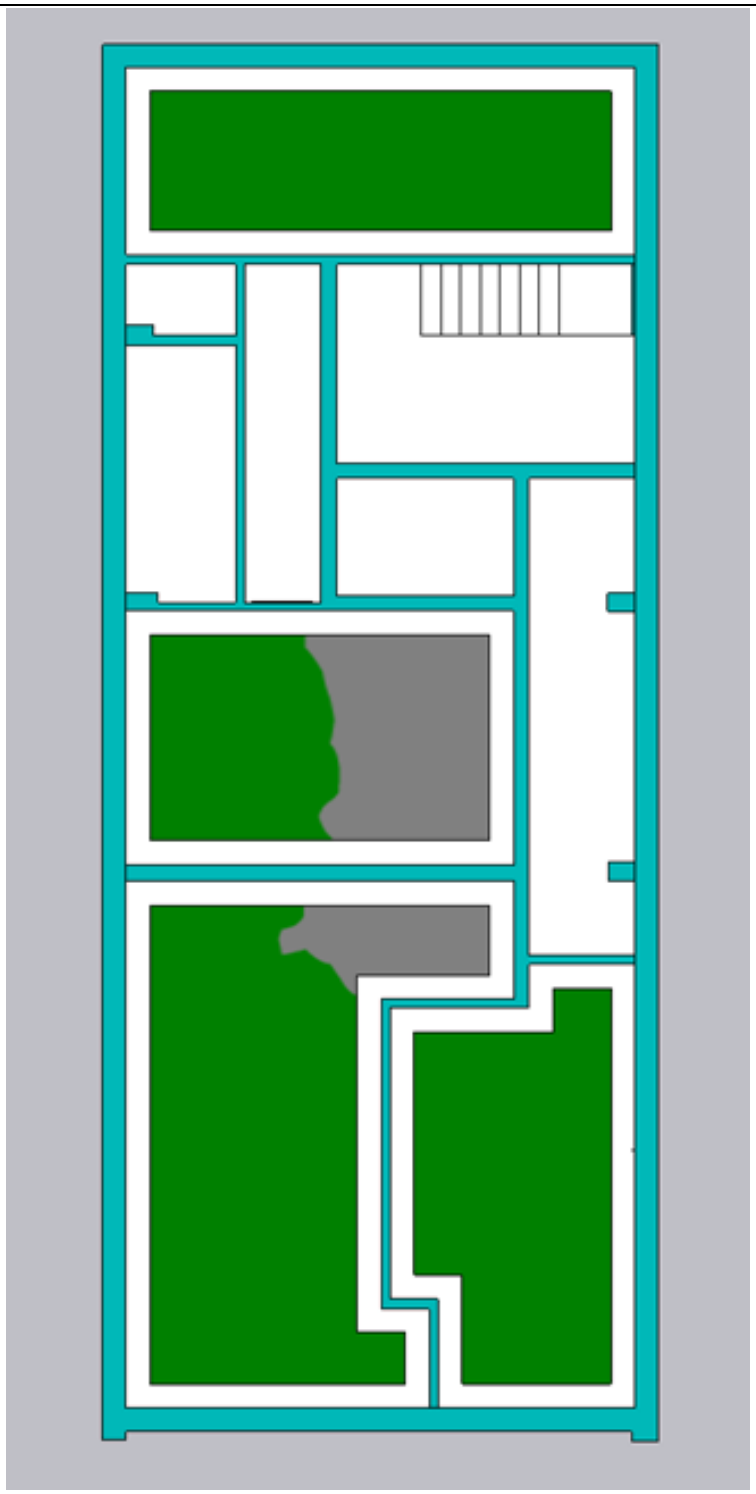
Drawing Title
PROPOSED SIDE ELEVATION - B

Drawing No. PL57-59 A206

Rev B

Scale @ A3 1:50

Appendix 3 Results



First Floor results