



Flood Consequences Assessment (FCA) For:

68 High Street,
Merthyr Tydfil,
CF47 8AE

Prepared for: Mr Arian Aram

June 2025





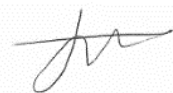
Document Control

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Client	Arian Aram
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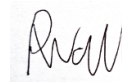
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Signed:



Checked By: P Wall

Signed:



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Contents

1	LIMITATIONS	3
1.1	PURPOSE OF THE REPORT	3
1.2	RELEVANT DOCUMENTS	3
2	INTRODUCTION	4
2.1	SITE LOCATION	4
2.2	PROPOSED DEVELOPMENT	5
3	FLOOD ASSESSMENT FOR PLANNING	6
3.1	FLOOD ZONE DEFINITION	6
3.2	FLOOD ZONE RESULTS	7
3.3	DEVELOPMENT VULNERABILITY CATEGORIES	8
4	JUSTIFYING THE LOCATION OF DEVELOPMENT	9
4.1	JUSTIFICATION TEST – TAN 15 DEFENDED ZONES	9
5	ACCEPTABILITY OF FLOOD ONSEQUENCES	10
5.1	CONSEQUENCE TEST	10
6	SOURCES OF FLOODING AND PROBABILITY	11
6.1	FLUVIAL	11
6.2	TIDAL	11
6.3	SURFACE WATER	11
6.4	SEWER FLOODING	11
6.5	GROUNDWATER FLOODING	12
6.6	ARTIFICIAL SOURCES OF FLOODING	12
7	MITIGATION & RECOMENDATIONS	13
7.1	FLOOD ALLEVIATION & MITIGATION MEASURES	13
7.2	EVACUATION PROCEDURE	14
7.3	ACCESS AND EGRESS	14
7.4	SAFE REFUGE AREA AND FLOOD PROCEDURE	15
8	TAN15 ASSESSMENT SUMMARY	16

Appendices

APPENDIX A: EXISTING SITE PLAN AND PROPOSED DEVELOPMENT PLANS	17
APPENDIX B: NRW FLOOD MAPS AND FLOOD DATA	18
APPENDIX C: M3FLOODTEC AIR BRICK	19



1 LIMITATIONS

The FCA is prepared in support of a planning application and is for exclusive benefit of The Client. It may not be assigned to or relied upon by third party without agreement in writing.

All comments and proposals contained in this report, including any conclusions, are based on information available during investigations. The conclusions drawn below, could therefore differ if the information is found to be inaccurate or misleading. Lutra Consultancy accepts no liability should this be the case, nor if additional information exists or becomes available with respect to this scheme.

Except as otherwise requested by the client, Lutra Consultancy is not obliged to and disclaims any obligation to update the report for events taking place after: -

The date on which this assessment was undertaken, and the date on which the final report is delivered.

All the Natural Resources Wales (NRW) mapping data used is under special license. Data is current as of the issue date of this report and is subject to change.

The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. The study provides no guarantee against flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates and associated probabilities.

All the Natural Resources Wales (NRW) mapping data used is under special license. Data is current as of the issue date of this report and is subject to change. The most current information for the areas is reviewed using QGIS software calibrated to Ordinate Survey mapping and is considered accurate for the purposes of this report.

The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. The study provides no guarantee against flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates and associated probabilities.

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1.1 Purpose of the Report

The purpose of this report is to outline the potential flood risk to the site, the impact of the proposed development on flood risk elsewhere, and the proposed measures which could be incorporated to mitigate the identified flood risk. The report has been prepared in accordance with the guidance contained in Planning Policy Wales (PPW) and Technical Advice Note 15 (TAN15): Development and Flood Risk. This report has been prepared in consultation with Natural Resources Wales (NRW).

1.2 Relevant Documents

- The FCA has been informed by the following documents:
- Planning Policy Wales Technical Advice Note 15: DEVELOPMENT AND FLOOD RISK
- Welsh Government Consultation Document Technical Advice Note 15: Development, flooding coastal erosion.



2 INTRODUCTION

Lutra Consultancy has been instructed by Bright Vision Holdings Ltd on behalf of Mr Adrain Aram "The Client" to undertake a Flood Consequences Assessment (FCA) for the proposed development at 67-68 High Street, Merthyr Tydfil, CF47 8AE.

Easting: 304965 Northings: 206207

The existing Brownfield site is a 3 storey 1960's town property, with retail space on the ground floor and residential space on the floors above. Pedestrian access for the property is set back of the footpath of High Street. Vehicular access to the rear of property is available via Temple Street. Refer to Existing Site Plan, **Appendix A**.

2.1 Site Location

The site is located off High Street in Merthyr Tydfil town centre. 240m west of the site is the River Taff. Merthyr Tydfil train station is 200m to the south. **Refer to Figure 1.**

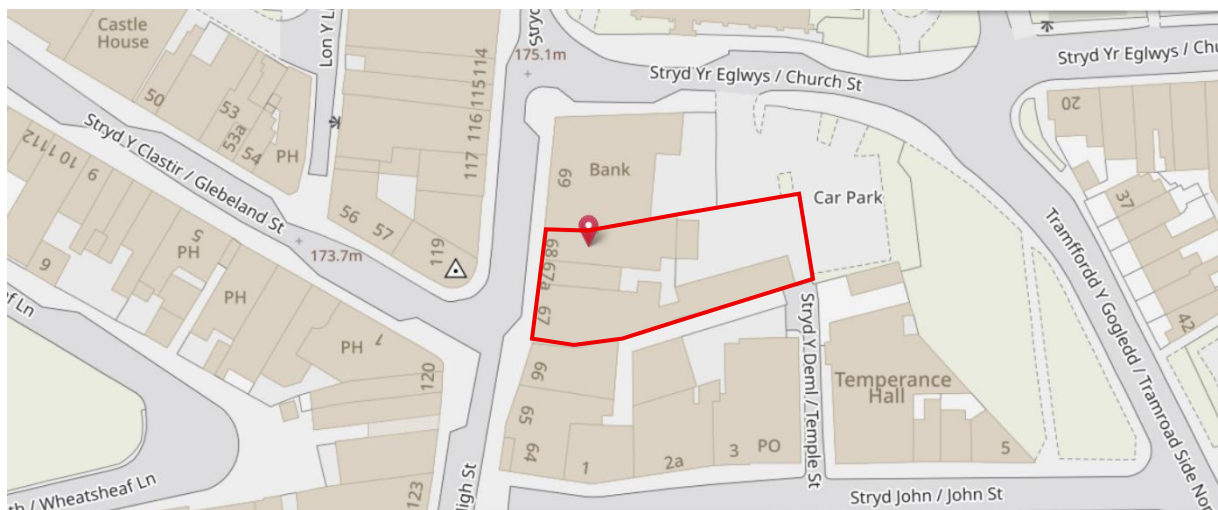


Figure 1: Site Location Satellite Plan



Figure 2: Google Street View showing no. 68 (on the left) viewed from High Street.



2.2 Proposed Development

The proposed development seeks to renovate the first and second floors of the existing building to 12 No. 1-bedroom apartments. Access to the properties will be via the existing stairs off High Street with and an external metal stairwell leading to the rear parking lot and bike store.

The only alternations to the ground floor will be the addition of 6 parking lots, a bike storage room and a bin store. These will be located at the rear of the site, accessible from Temple Street

Refer to Figure 3 below for the existing and proposed ground floor layout.

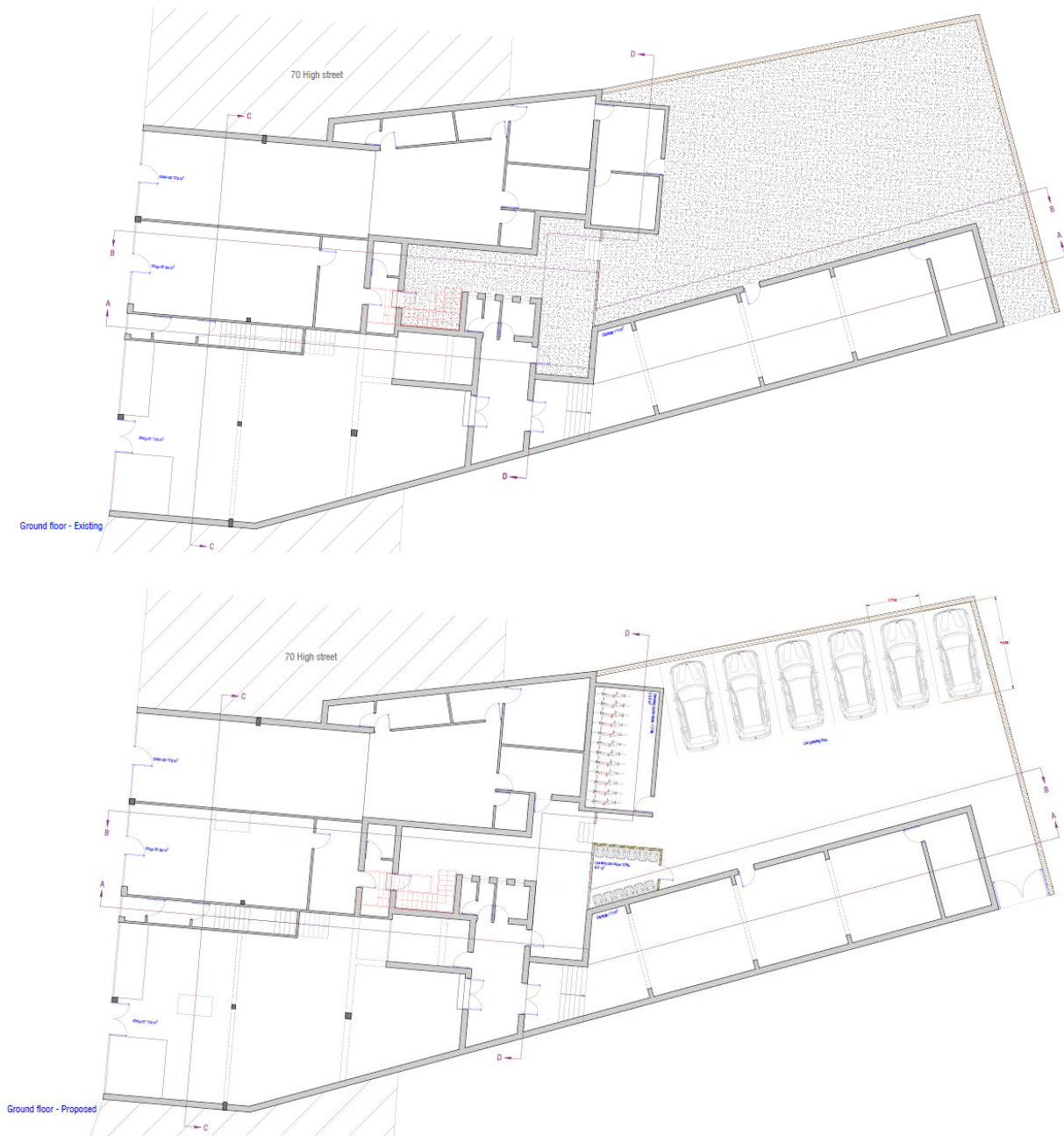


Figure 3: Existing and proposed ground floor

Refer to Appendix A for ground floor lay out.



3 FLOOD ASSESSMENT FOR PLANNING

3.1 Flood Zone Definition

The Flood Map for Planning (FMfP) (<https://flood-map-for-planning.naturalresources.wales/>) have been interrogated for all events using the detailed view and the results have been added to **Appendix B NRW Flood Maps and Flood Data**.

These maps are separated into Flood zones defined in the TAN 15 section 5 figure 2, described in Table 1 below.

Zone	Flooding from Rivers	Flooding from the Sea	Flooding from Surface Water & Small Watercourses
1	Less than 1 in 1000 (0.1%) (plus climate change) change of flooding in a given year.		
2	Less than 1 in 100 (1%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change	Less than 1 in 200 (0.5%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change	Less than 1 in 100 (1%) but greater than 1 in 1000 (0.1%) chance of flooding in a given year, including climate change
3	A greater than 1 in 100 (1%) chance of flooding in a given year, including climate change	A greater than 1 in 200 (0.5%) chance of flooding in a given year, including climate change	A greater than 1 in 100 (1%) chance of flooding in a given year, including climate change
TAN 15 Defended Zones	Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from rivers of 1:100 (plus climate change and freeboard)	Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from the sea of 1:200 (plus climate change and freeboard)	Not applicable

Table 1: TAN 15 "Figure 2 - Definition of Flood Map for Planning flood zones"



3.2 Flood Zone Results

The site entrance off High Street is located within a **River & Sea Flood Zone 3**, this Flood Zone then lowers (reduces) and is **flood free to the rear**.

There is also **Surface Water Flood Zone 3** shown in part of the rear external area and Flood Zone 2 in other parts. The entrance to Temple Street and the parking bays is flood free.

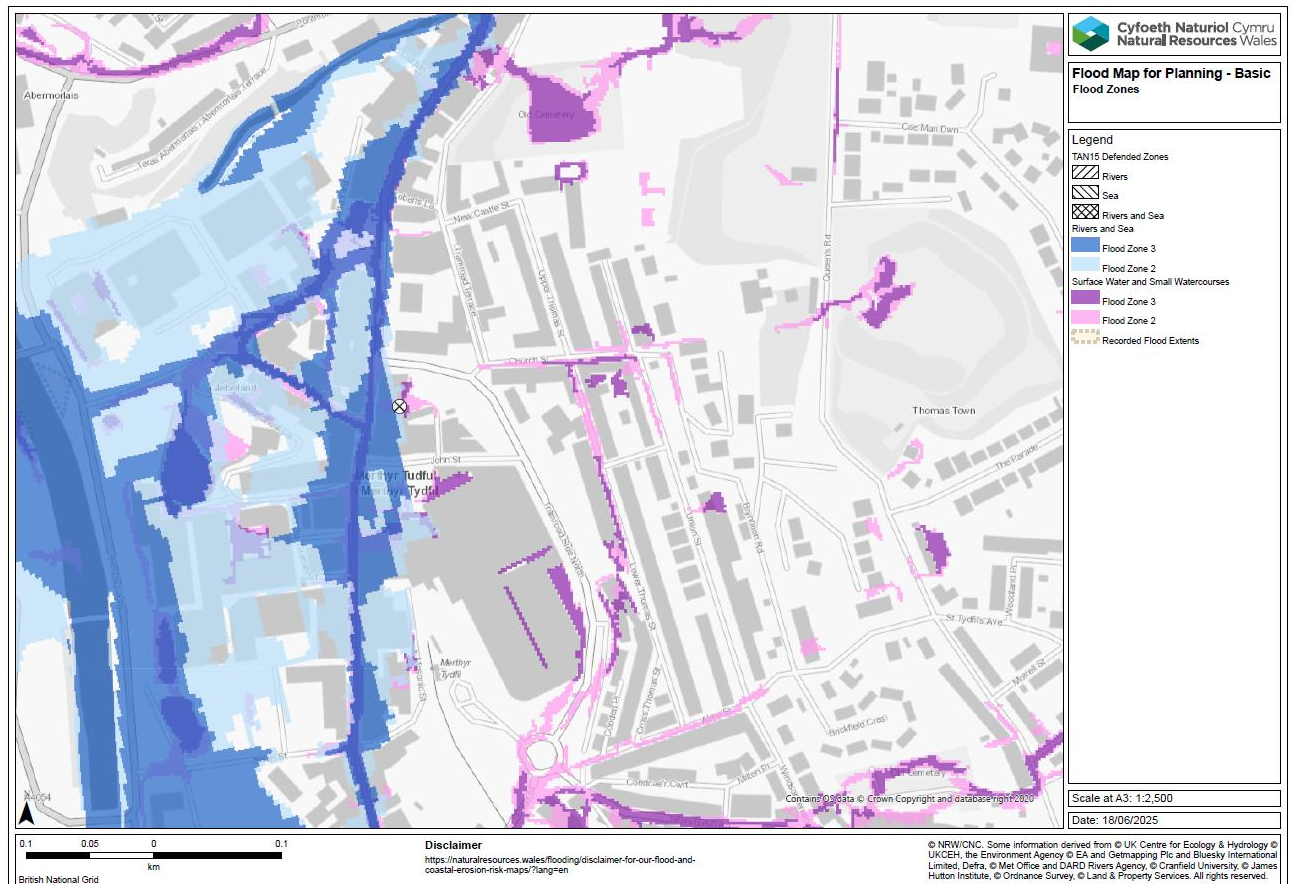


Figure 4: FMfP with proposed property represented by crossed black circle



3.3 Development Vulnerability Categories

The proposed development is a residential dwelling, classified as a '**Highly vulnerable development**' in accordance with Section 6 Figure 3 – Development vulnerability categories, of the Welsh Government's TAN15.

TAN 15 Section 4 Figure 1 – Summary of national policy requirements for new developments, of the TAN 15 defines the following River and Sea – Flood Zone 3 for 'Highly vulnerable developments'. Refer to Table below.

Development Types	<i>Highly vulnerable developments.</i>
Development Advice	Plan allocations and applications for all development can only proceed subject to justification in accordance with section 6 and acceptability of consequences in accordance with section 7 and Appendix 1.
Planning Requirements	• Application of justification test (section 6), including acceptability of consequences (section 7 and appendix 1) • Refer to surface water requirements
Acceptability Criteria	• Acceptable consequences for nature of use • Flood defences adequate • Agreement for construction and maintenance costs secured • Occupiers aware of flood risk • Escape/evacuation routes present • Effective flood warning provided • Flood emergency plans and procedures • Flood resistant design • No increase in flooding elsewhere

Table 2: Rivers and Sea – Flood Zone 3 “Summary of policy requirements”



4 JUSTIFYING THE LOCATION OF DEVELOPMENT

Welsh Government TAN 15 defines the requirements for new development located within flood zones, so that planning authorities can be satisfied that the location is justified.

Where possible lower risk development zone should be prioritised over higher risk locations.

4.1 Justification Test – TAN 15 Defended Zones

Development will be justified in TAN 15 Defence Zones if;

1. *Its location meets the definition of previously developed land*

And

2. *The potential consequences of flooding events for the particular type of development have been considered and found to be acceptable in accordance with the criteria contained in section 11 (consequences test).*

The site is a residential development in a part of Merthyr Tydfil which is currently undergoing significant renovation works and now acts as a young professional hub for the city. The proposed renovation of first and second floor will increase the habitable space offering much needed affordable properties in the area, retaining the residential statute of the land.

Therefore, the proposed development meets the definition of the previously developed land. Refer below for consequence test.

See Section 6 for Flood Results & 7 for Mitigations and Recommendations.



5 ACCEPTABILITY OF FLOOD ONSEQUENCES

It is the purpose of this report to identify and quantify all these risks to inform the planning authority, in its decision making and determine if there is acceptable consideration is given to the consequences to allow the development to be proceed. Whether a development should proceed or not will depend upon whether the consequences of flooding can be safely managed, including its effects on flood risk elsewhere. It is not appropriate to permit new development in areas subject to significant flood depths or velocities or where safe access or egress cannot be achieved.

It is the purpose of this Flood Consequence Assessment to establish if suitable avoidance and mitigation measures can be incorporated. Any measures must be in line with local planning policies and sympathetic to emergency services and local authority measures.

5.1 Consequence test

The consequence test can be separated down into two main criteria which need to be met for any new development to be permitted. These are set out in the Welsh Government TAN 15 in Figures 6 & 7

Vulnerability Categories		Flooding Event Type	
		Rivers	Sea
Highly vulnerable development	Emergency services (command centres and hubs)	0.1% + CC (1 in 1,000 years)	0.1% + CC (1 in 1,000 year)
	All other types	1% + CC (1 in 100 years)	0.5% + CC (1 in 200 year)
Less vulnerable developments Water compatible development (limited to those build elements of development that may be occupied by people)		1% + CC (1 in 100 years)	0.5% + CC (1 in 200 year)

Table 3: TAN 15 "Figure 6 – Flood events in which development must be flood-free"

Types of development	Maximum depth of flooding (mm)	Maximum velocity of flood waters (m/sec)
Highly vulnerable development	600	0.15
Less vulnerable developments Infrastructure associated with highly vulnerable developments e.g car parks, access, paths and roads Water compatible development (limited to those build elements of development that may be occupied by people)	600	0.3

Table 4: TAN 15 "Figure 7 – Tolerable conditions in an extreme flood event. 0.1%"

The proposed site is a "highly vulnerable development" and therefore needs meet the following criteria set out in table 3 & 4. Refer to Section 6 below for flooding assessment and criteria results.



6 SOURCES OF FLOODING AND PROBABILITY

6.1 Fluvial

Flooding of the River Taff or blockages to key infrastructure along the river can result in multiple different flood events that area simulated and monitored. Flooding along High Street is shown on the Flood Maps for Planning which results in the main entrance to the new development being at risk of a flooding.

Alternatively access to the apartments is available to the rear of the property which is accessible via a metal stairwell. From here vehicle access is possible onto Temple Street.

Additionally, the proposed development on the first and second floor as well as the parking and storage improvement on the ground floor all occur within unaffected area and will remain floor free. The existing ground floor retail areas will remain unchanged.

It can be concluded that the site has a **low risk of fluvial flooding**.

6.2 Tidal

The site is located over 30km in land at an elevation of around 174m AOD with the River Taff also benefiting from the Cardiff Barrage protection.

It is considered that the site has a **very low risk of tidal flooding**.

6.3 Surface Water

Flood Maps for Planning show a small area of Flood Zone 3 in the external areas to the rear of the site and a Flood Zone 2 for almost half of the remain areas. The parking bays appear to be outside of any flood risk.

No flooding will reach the proposed first floor or second floor and only minor amendments to the external areas are proposed which will not be affected by this low level flooding. With 2 points of access to the property should surface water flooding is unlikely to prevent access for long periods of time and is unlikely to pool along high street.

Surface water flooding is a risk to the existing ground floor retail spaces which are to remain unchanged.

It can be concluded that the site has a **low risk of surface water flooding**.

6.4 Sewer Flooding

DCWW records have not been made available for this review.

Should the sewer block or collapse then the potential flood waters are likely to pond. Private drainage within the property will be of similar age to the houses and will be combined systems adopted by DCWW when the council assets were privatised.

Due to the age and size of the property and dense urban location sewer flooding is more likely to occur in this area.

It can be concluded that the site has a **low risk of sewer flooding**.



6.5 Groundwater Flooding

Groundwater flooding can occur when subterranean water levels rise above ground or normal levels. Prolonged heavy rainfall or flash flooding following droughts can result in abnormal ground water flows and flooding. The existing site is comprised mostly of impermeable surfacing and has no recorded flood events.

It can be concluded that the site has a **very low risk of ground water flooding**.

6.6 Artificial Sources of Flooding

NRW 'Risk of Flooding from Reservoirs' map show the site at risk of flooding from Pontsticill reservoir. The flooding event mimics the fluvial flooding in a similar manner. The reservoir Pontsticill feeds into the River Taff upstream of Merthyr Tydfil, approximately 6km northeast of the site.

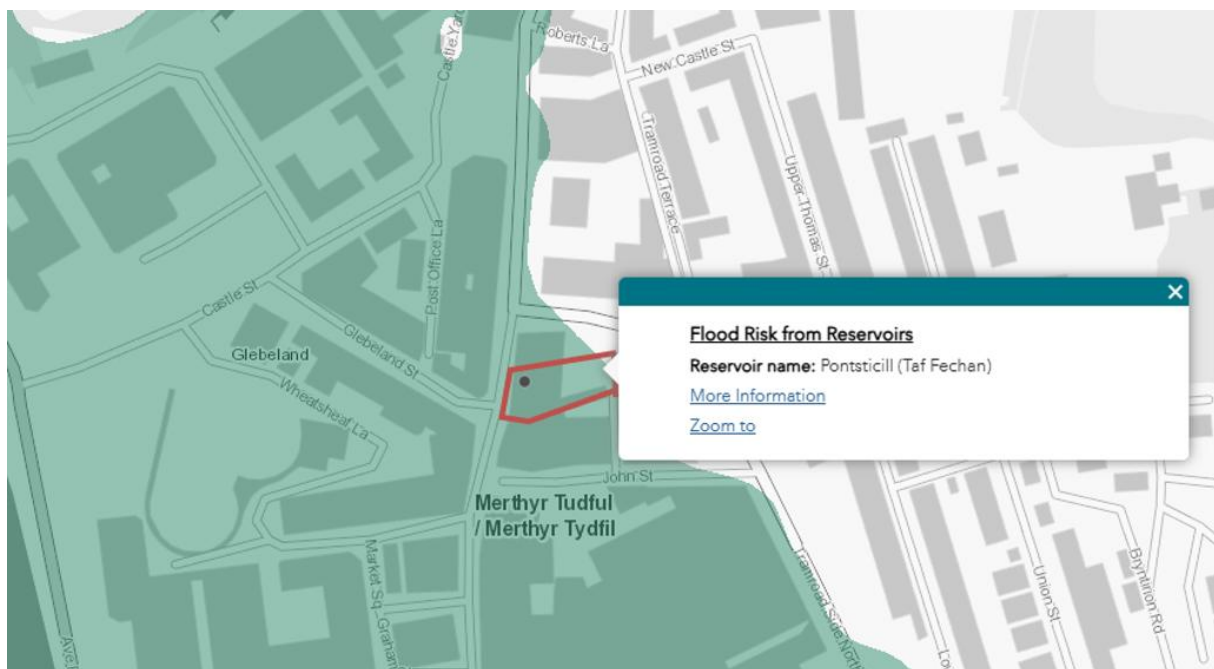


Figure 5: Reservoir Flood Map

All large reservoirs must be inspected and supervised by a reservoir panel of engineering. It is the responsibility of the enforcement agency to ensure regular inspection, essential repairs and maintenance are carried out. In the most unlikely event of an immediate collapse of the reservoir, the proposed site would be given suitable warning due to the distance from the reservoirs.

It can be concluded that the site has a **very low risk of Artificial flooding**.



7 MITIGATION & RECOMENDATIONS

Any mitigation methods need to be sensitive to and where possible avoid increasing flood risk off site. Due care should also be given to operations of the mitigation systems maintenance and managed requirements.

7.1 Flood Alleviation & Mitigation Measures

The proposed developments on the first and second floor of the properties will be flood free. However, access to the property can be affected by multiple forms of flooding, which are likely to be short term and high velocity due to the nature of the flooding combined with the natural topography of the area. As such flood alleviation and mitigations are recommended around the stairs and access, which include but are not limited to the following improvements:

- Emergency lighting in the stairwell and externally within the rear of the property to ensure that there is a visibility even in a power outing which is more likely during extreme weather events.
- Anti slip surfacing on the external steps to prevent trips when existing a wet area.
- Hand railing for all stairwells.
- Signage for escape routes and any designated safe refuge.
- Emergency contact information displayed by the entrances.

A flood resistant design is suggested for the existing ground floor retail area and can be implemented via the suggested mitigations below. Additional internal alterations that should be introduced where practically possible to the development include:

- Air bricks as required. Such as M3AFA supplied by M3floodtec (*see Appendix C*).
- Solid floors, preferably tiles or resin - *for easy removal of flood waters and internal repairs*
- Use plastic and stainless-steel fixtures and fittings and avoid wooden alternatives.
- Raised electronic control units and sockets (by a minimum 350mm above FFL).
- Ensure that with the time afforded by advance warning, evacuation of property via safe egress and removal of valuables from the building can be implemented.
- Clearance of the existing surface water drainage system to improve drainage of the site and follow necessary maintenance procedures (to new & existing SW drainage) to ensure that the system functions to optimum capacity.

Additionally, the property owners and tenants should register to receive flood alerts and where possible, Flood Warnings. Flood Warnings Direct is a free service that provides prior warnings of a fluvial flood event. Areas at risk of flooding from rivers (fluvial) are warned, which relies on direct measurements of rainfall, river levels, tide levels, in-house predictive models, rainfall data and information from the Met Office. This service operates 24 hours / day 365 days a year. If flooding is forecast, warnings are issued using a set of easily recognisable codes.



7.2 Evacuation Procedure

The evacuation procedure should be a written document which should outline the course of action for an extreme flood event. It should be produced by the property owner and be a supplementary document to this FCA, address the following topics:

- Details on how to sign up or log in information for the local flood warning systems.
- A list of important contacts, building services, suppliers and evacuation contacts for officers and users.
- A description or plan showing the direction of evacuation to the rear of the property towards Temple Street and service shut-off points such as the water stop valve and fuse boards.
- Basic strategies for protecting property and assisting recovery.
- Checklist of procedures that can be quickly accessed by users during a flood.
- Safe exit route to higher ground outside the flood risk area (building and site).

7.3 Access and Egress

Parking spaces to the rear of the property are flood free in all events with access to Temple Street, however there is only space for 6 bays which is not sufficient for all 12 apartments, as such bicycle storage has also been allotted. Due to the location of the site and proximity to the train station it is assumed that most residents will be traveling by foot or cycling (as a bike park is on the plans). As such should transport out of the town be needed, the residents are likely to be directed towards public transport links by the train station (see Fig 6).

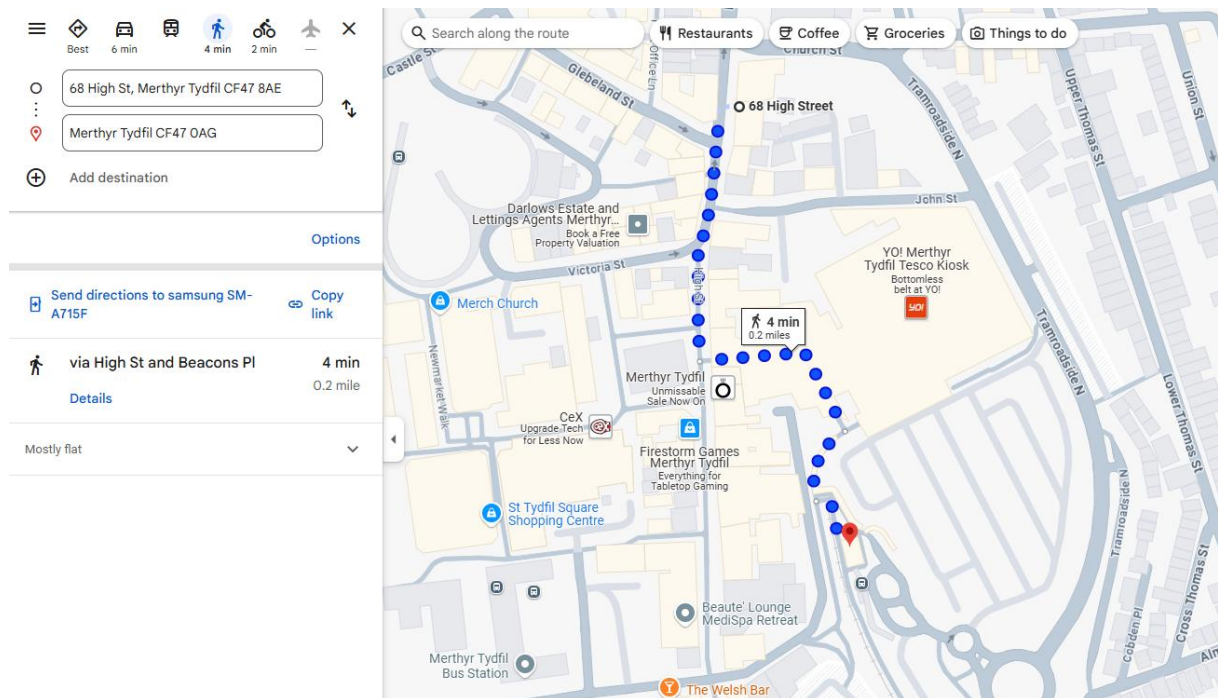


Figure 6: Egress Route to train station, 4min walk.

Suitable warning and advice on egress will be managed by the local authority and should only be used in emergencies.



7.4 Safe Refuge Area and Flood Procedure

Flood Alerts and Flood Warnings cover this area, the local warning authority is the NRW who will offer advice on potential flood events, excluding blockages of key infrastructure such as bridges.

When a flood is expected Merthyr Tydfil, and the local emergency services will be responsible for public care and safety. In light of this should a severe flood event be foreseen it is likely the property will be informed to seek safe refuge which all the new apartments will have, being located on the first and second floor. Flooding events in this area are likely to have short duration but higher velocities which can be a danger to all. As such travel is not expected to be the preferred response to allow for high vulnerability locations and residence to be evacuated first and not overwhelm the limited first response services availability.

Should the extent of flooding pose a risk to the structure of the property or risk taking out services that prevent the building from being habitable then the flood evacuation procedure should be followed. Refer to section 7.2.



8 TAN15 ASSESSMENT SUMMARY

The existing brownfield site is a 3 storey 1960's town property with retail space on the ground floor and residential space on the floors above. The proposed development seeks to renovate the first and second floors of the existing building in 12 No. 1-bedroom apartments. Access to the properties will be via the existing stairs off High Street with and an external metal stairwell leading to the rear parking lot and bike store accessible from Temple Street.

The highly vulnerable development has a range of flood zones from a level 3 of High Street to a level 1 at the rear entrance leading to Temple Street. **All proposed renovation works fall within a river flood zone 1.**

Surface water flood zones 3 & 2 are shown around all the entrances of the property. These events will impact the existing retail space and access for short periods. These events will likely be shallow and have a low-risk impact on the property.

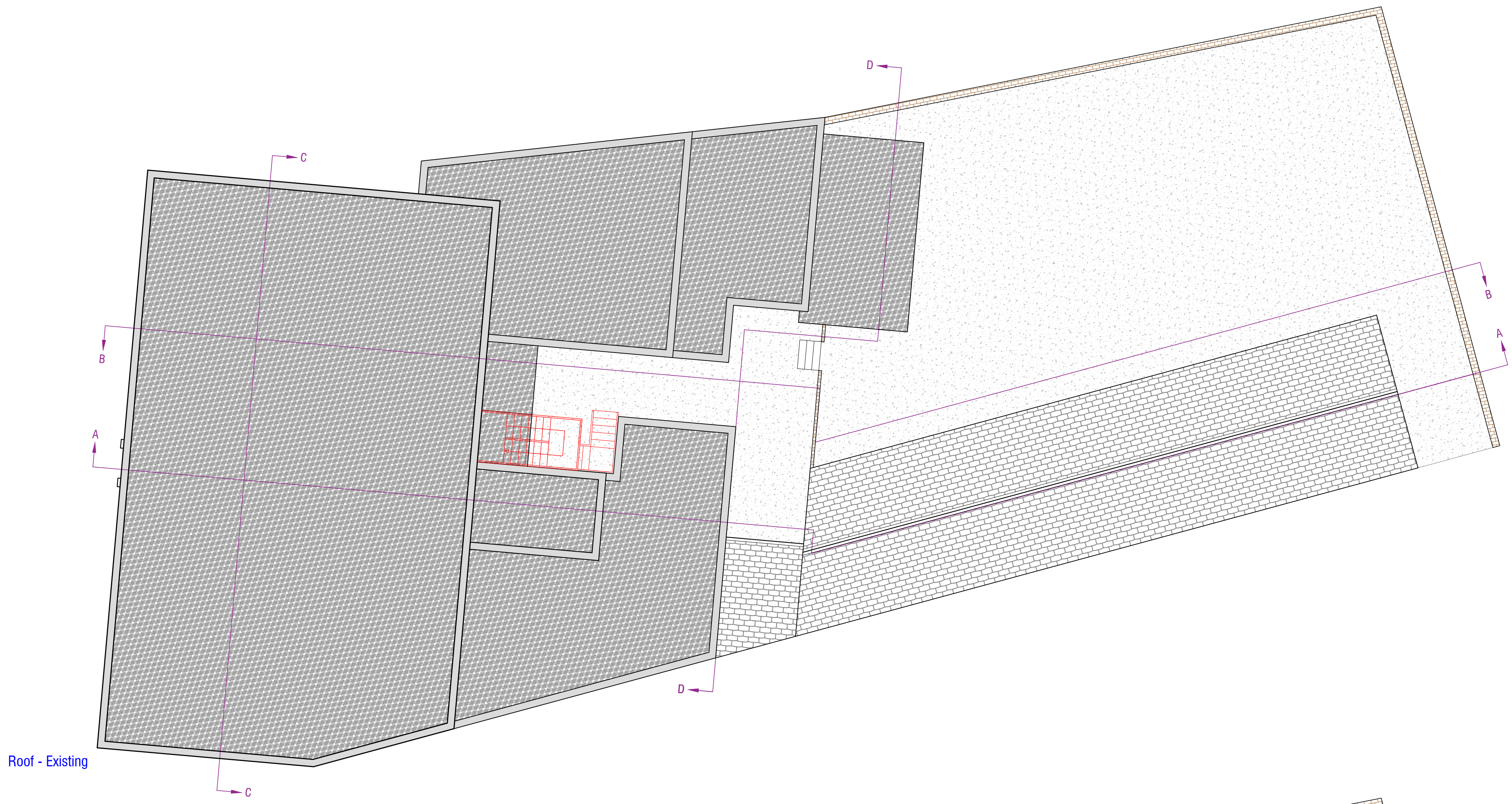
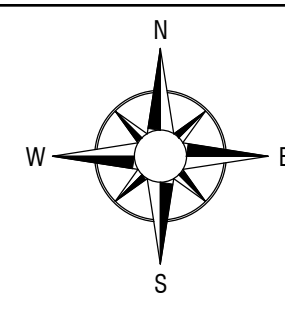
Due to the access from High Street to the property falling within flood zones 3 the TAN 15 justification test and acceptability criteria have been applied to the development and found to meet the requirements for both.

Flood resilience works are proposed for the ground floor and entrances to ensure that safe access is clearly shown with sufficient lighting and accessibility such as anti-slip surfaces and handrails. This will allow for a flood free evacuation if needed and safe refuge for all residents.

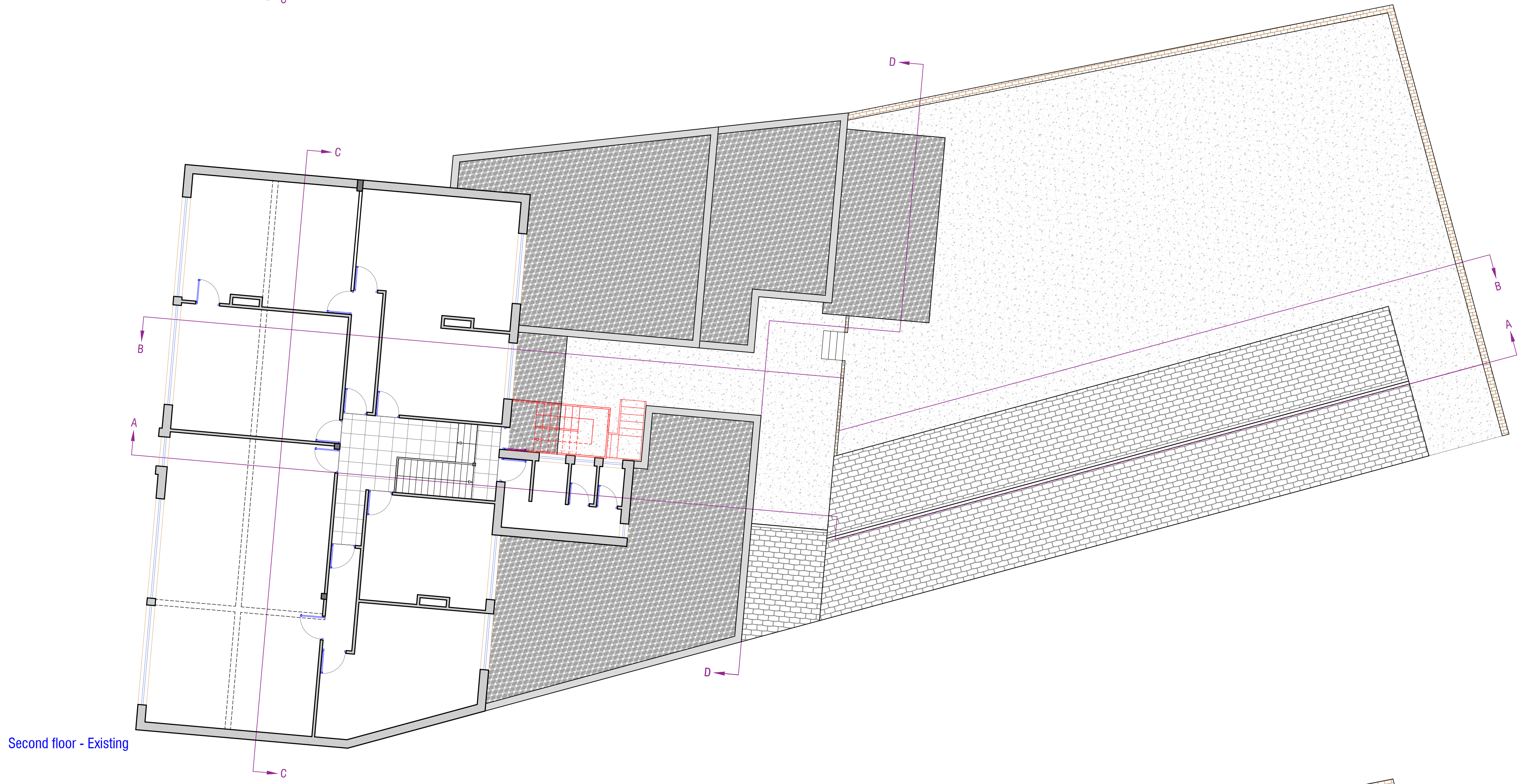
Therefore, the following FCA considers the proposed site and mitigation works to be acceptable methods of flood management that will benefit the area and residence to a level that **should be granted for planning.**



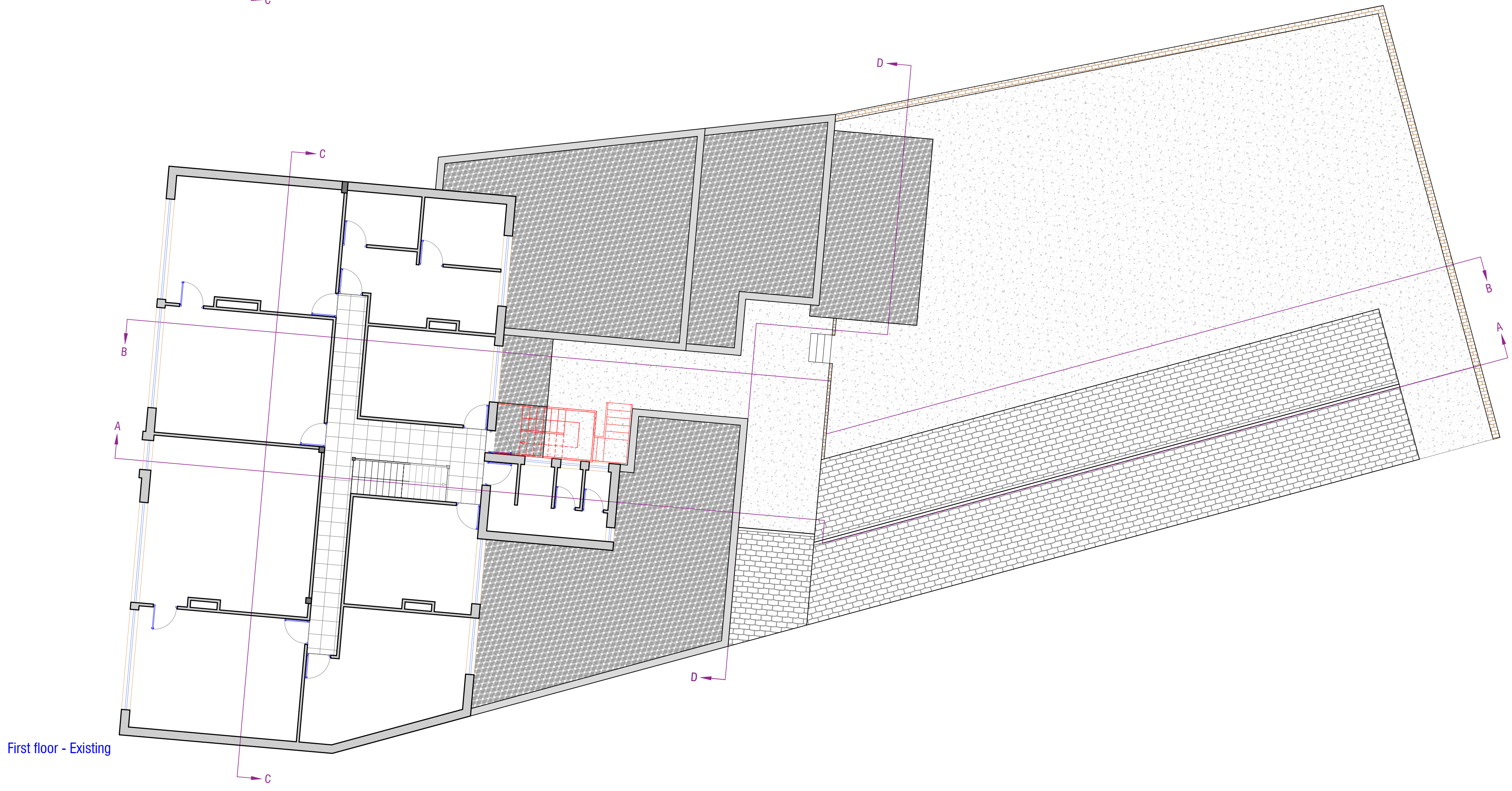
APPENDIX A: Existing Site Plan and Proposed Development Plans



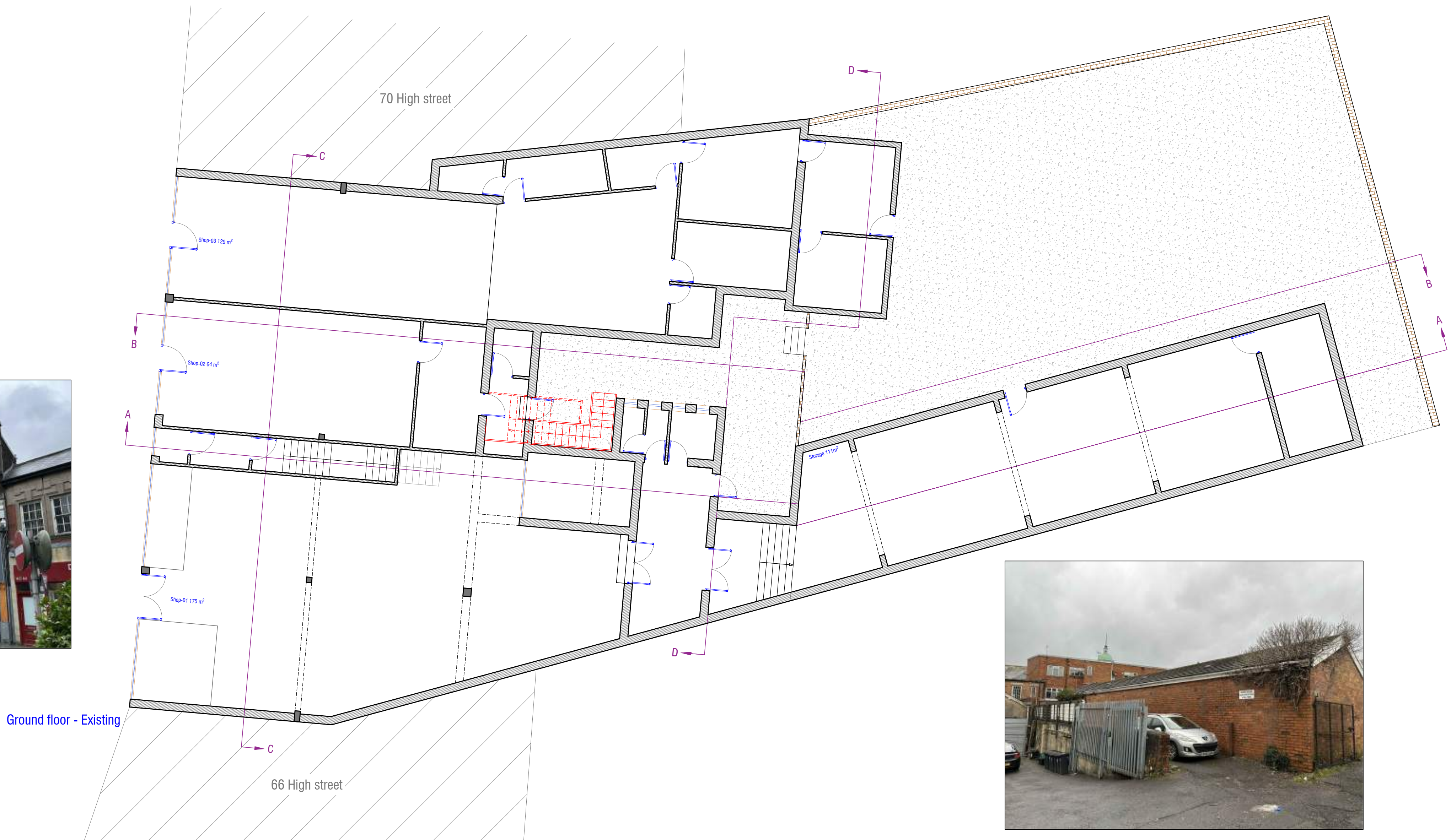
Roof - Existing



Second floor - Existing

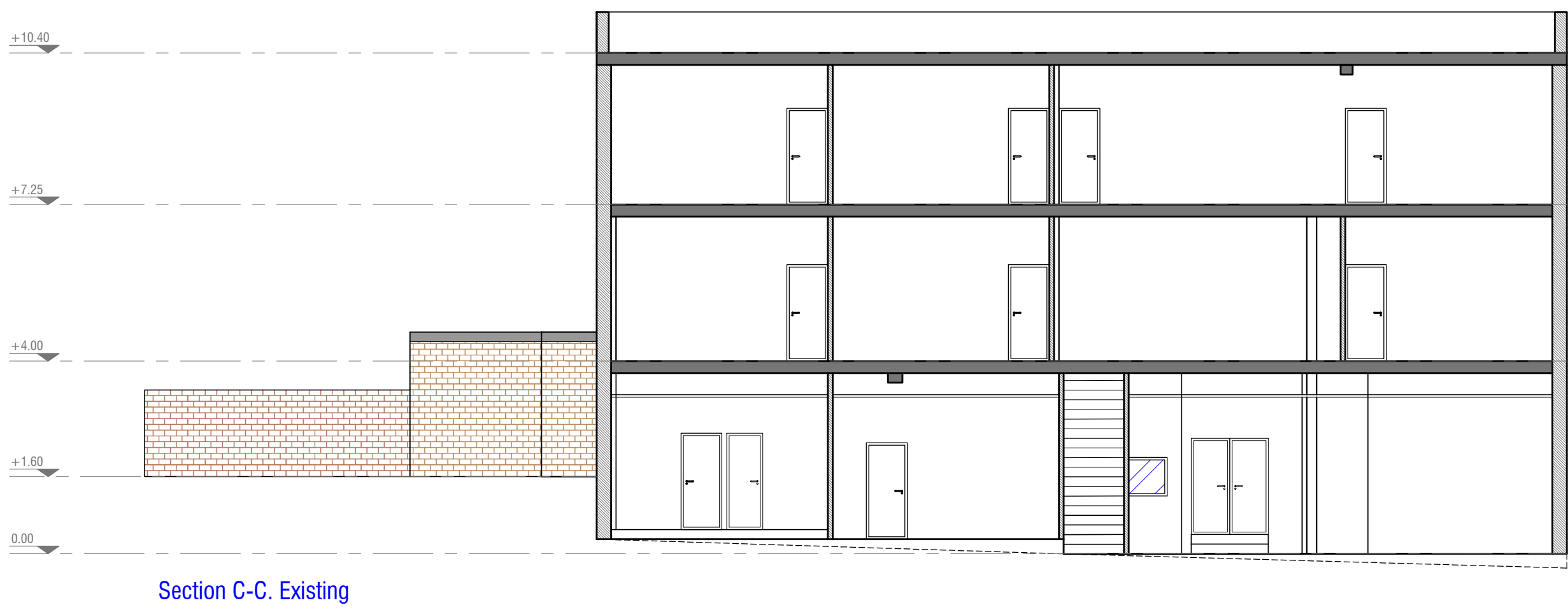


First floor - Existing

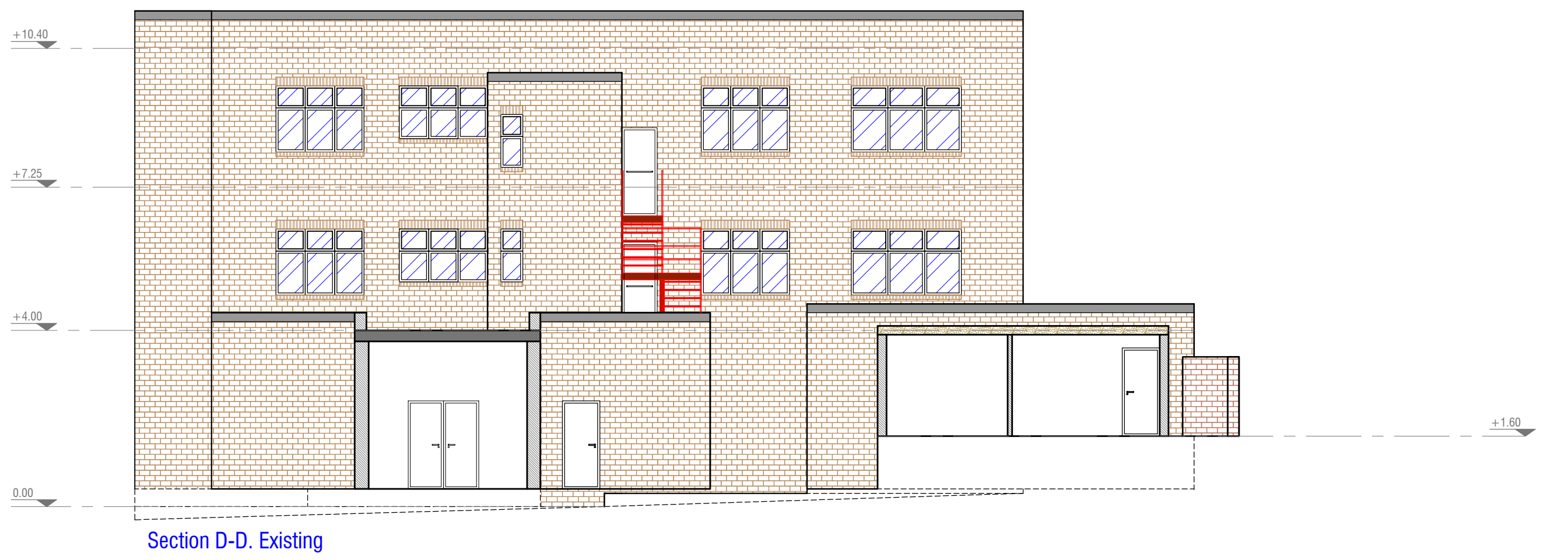


Ground floor - Existing

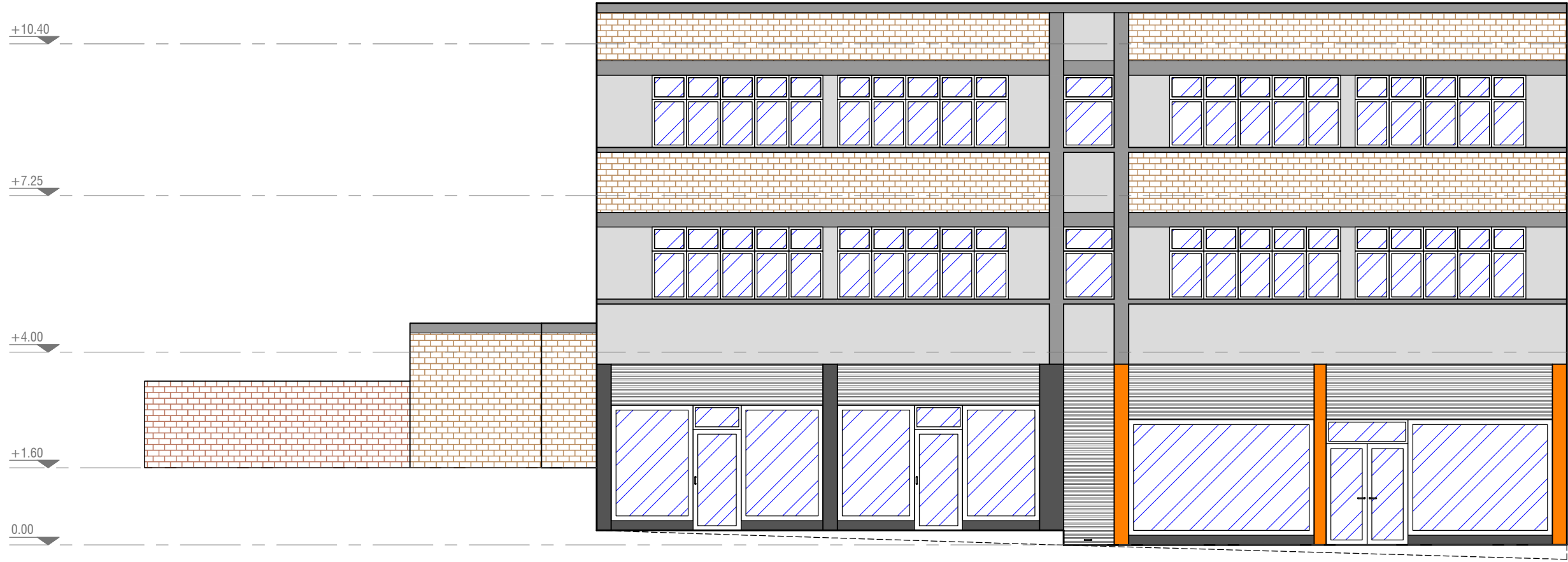




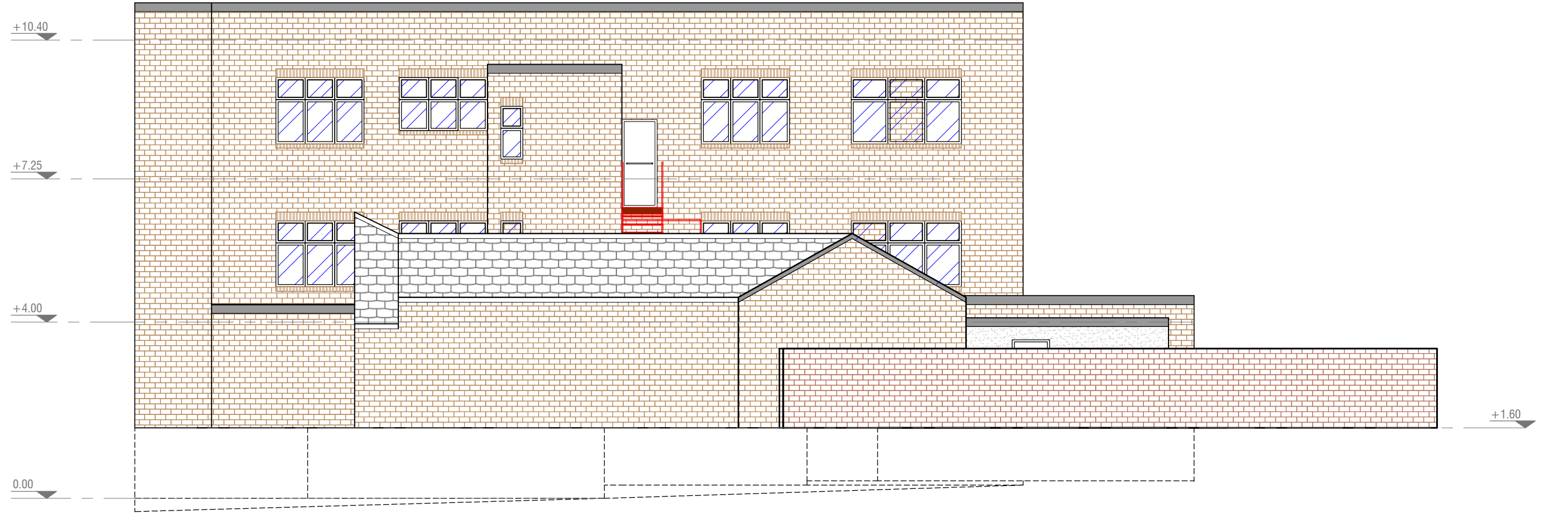
Section C-C. Existing



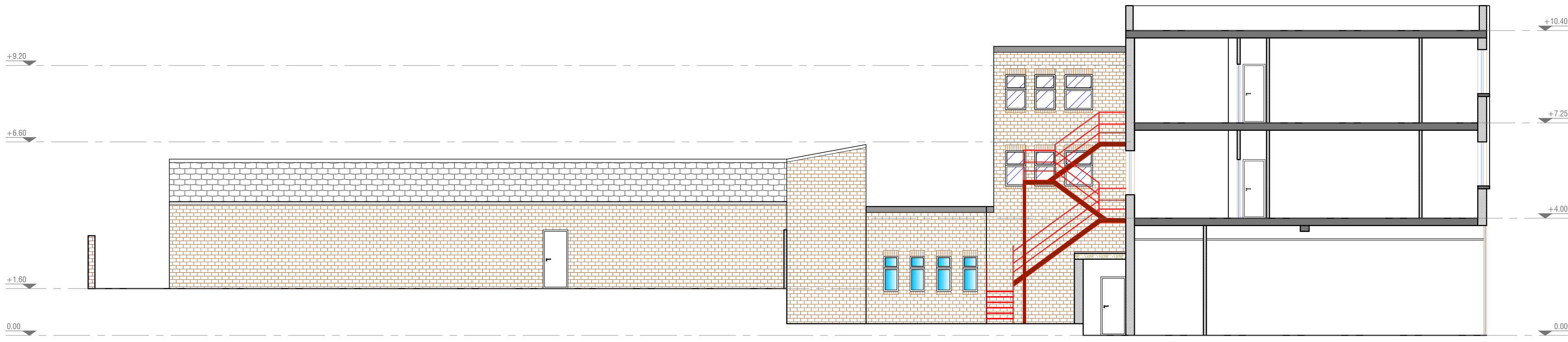
Section D-D. Existing



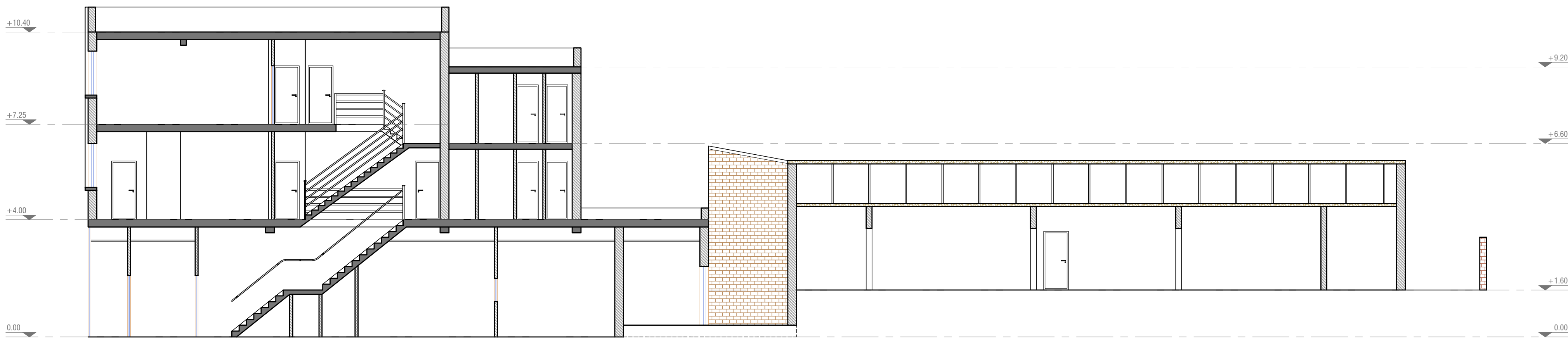
Front view - West. Existing



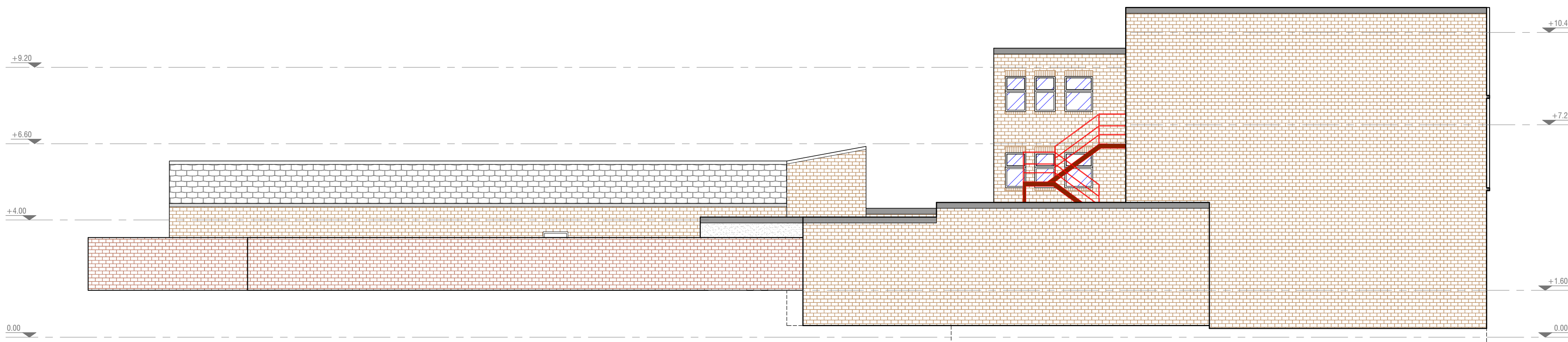
Rear view - East. Existing



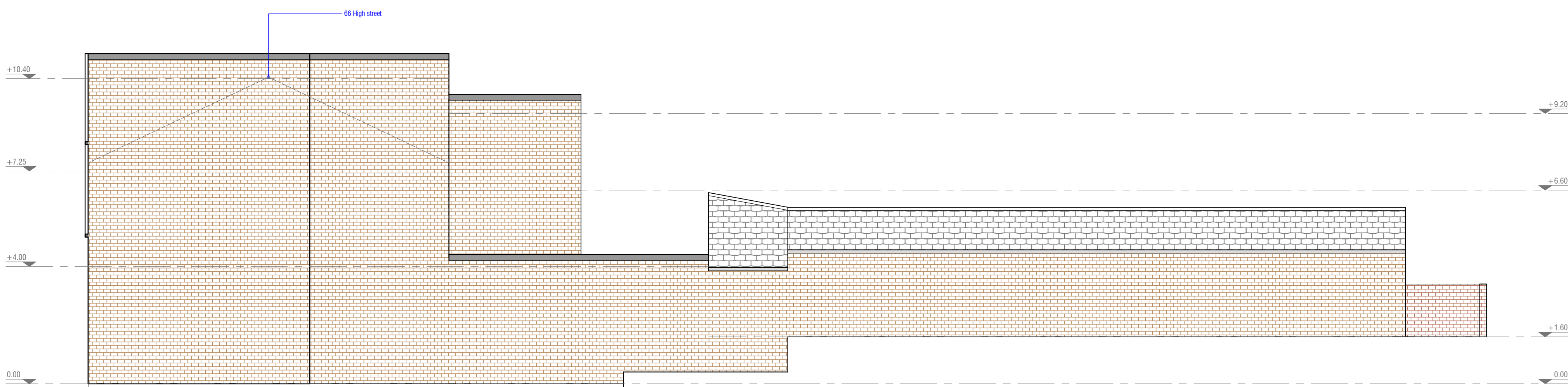
Side view B-B. Existing



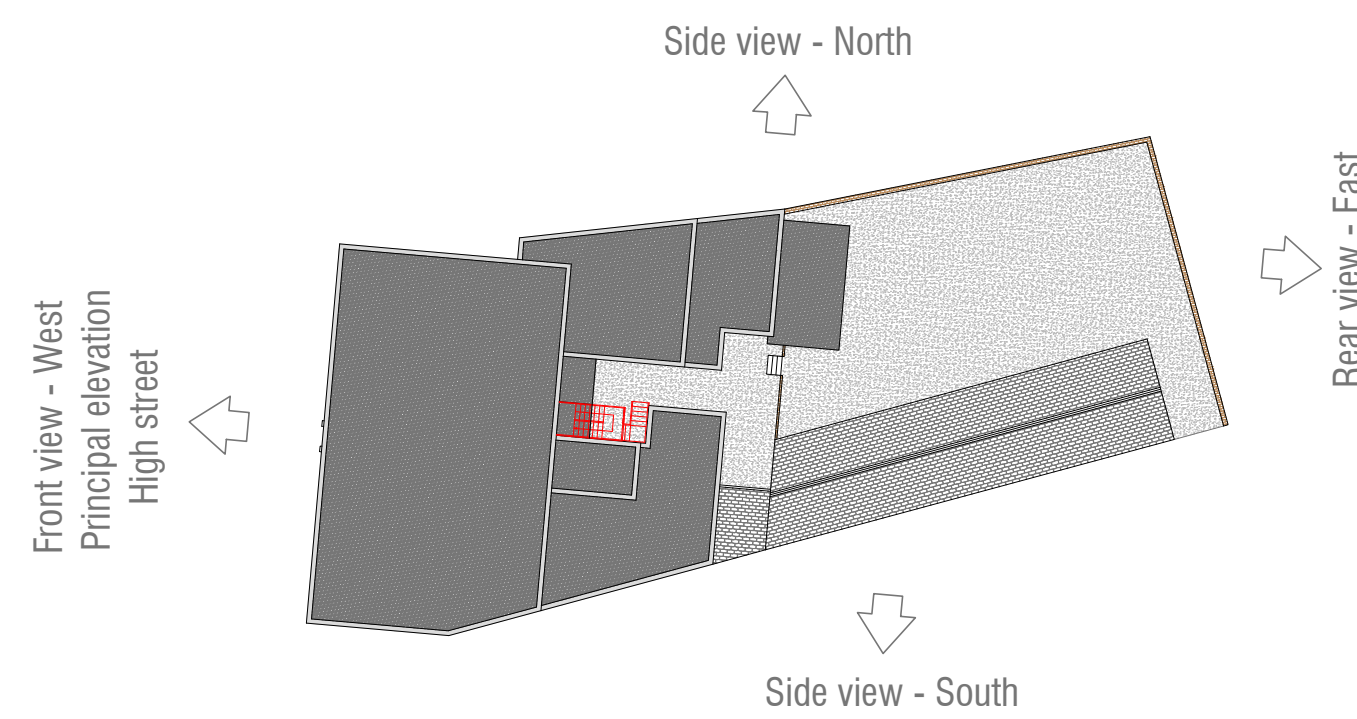
Section A-A. Existing

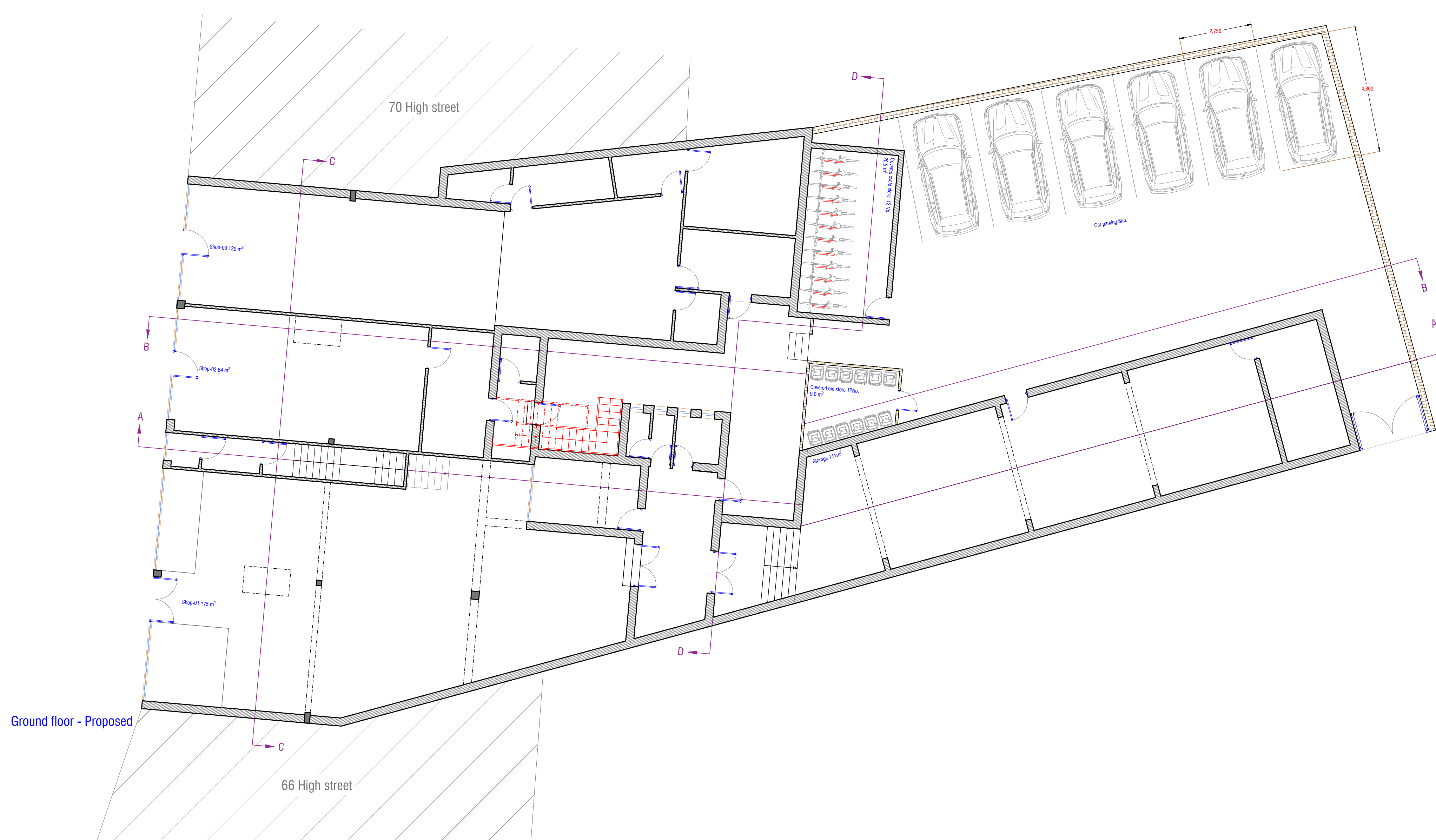
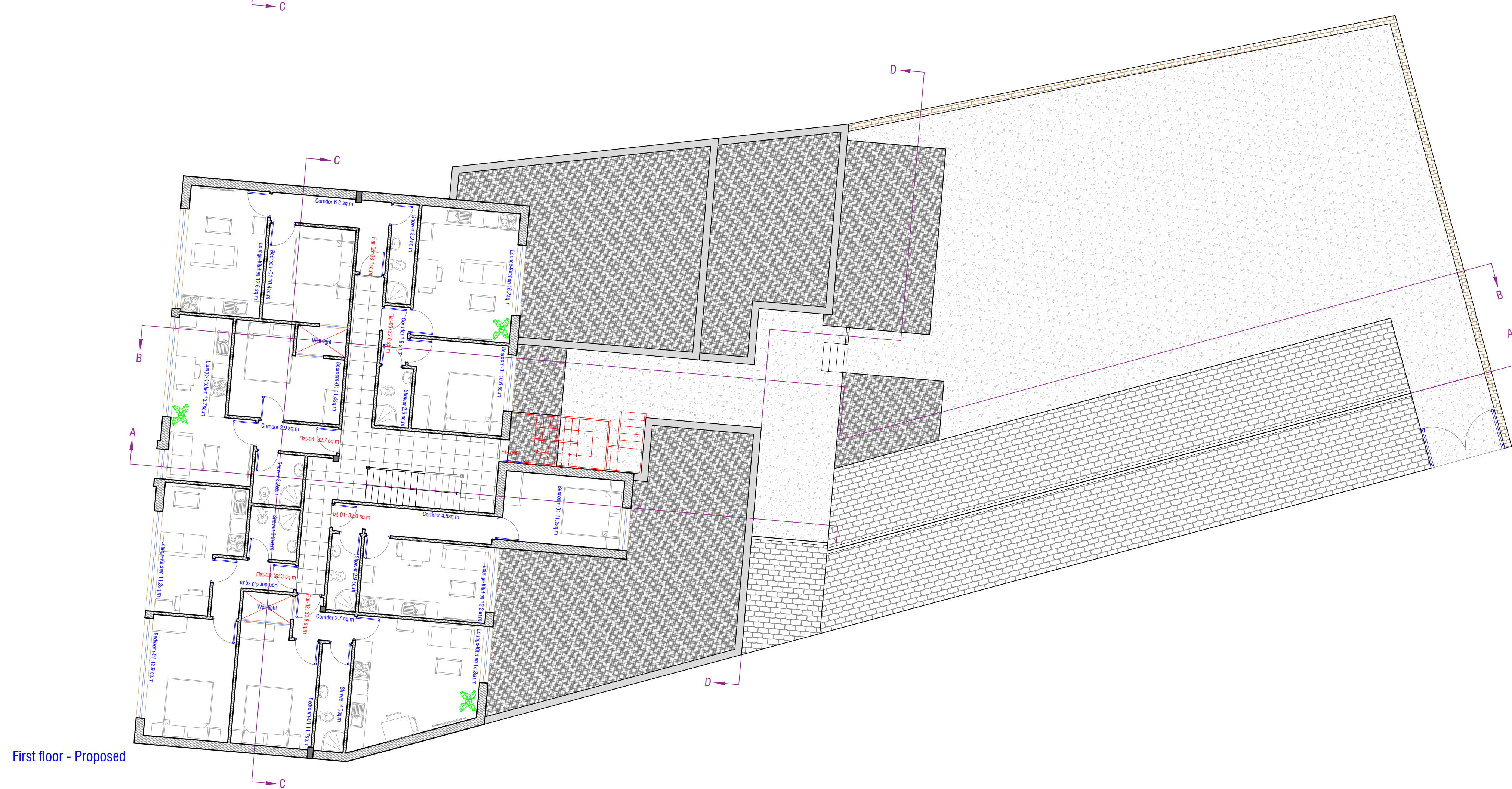
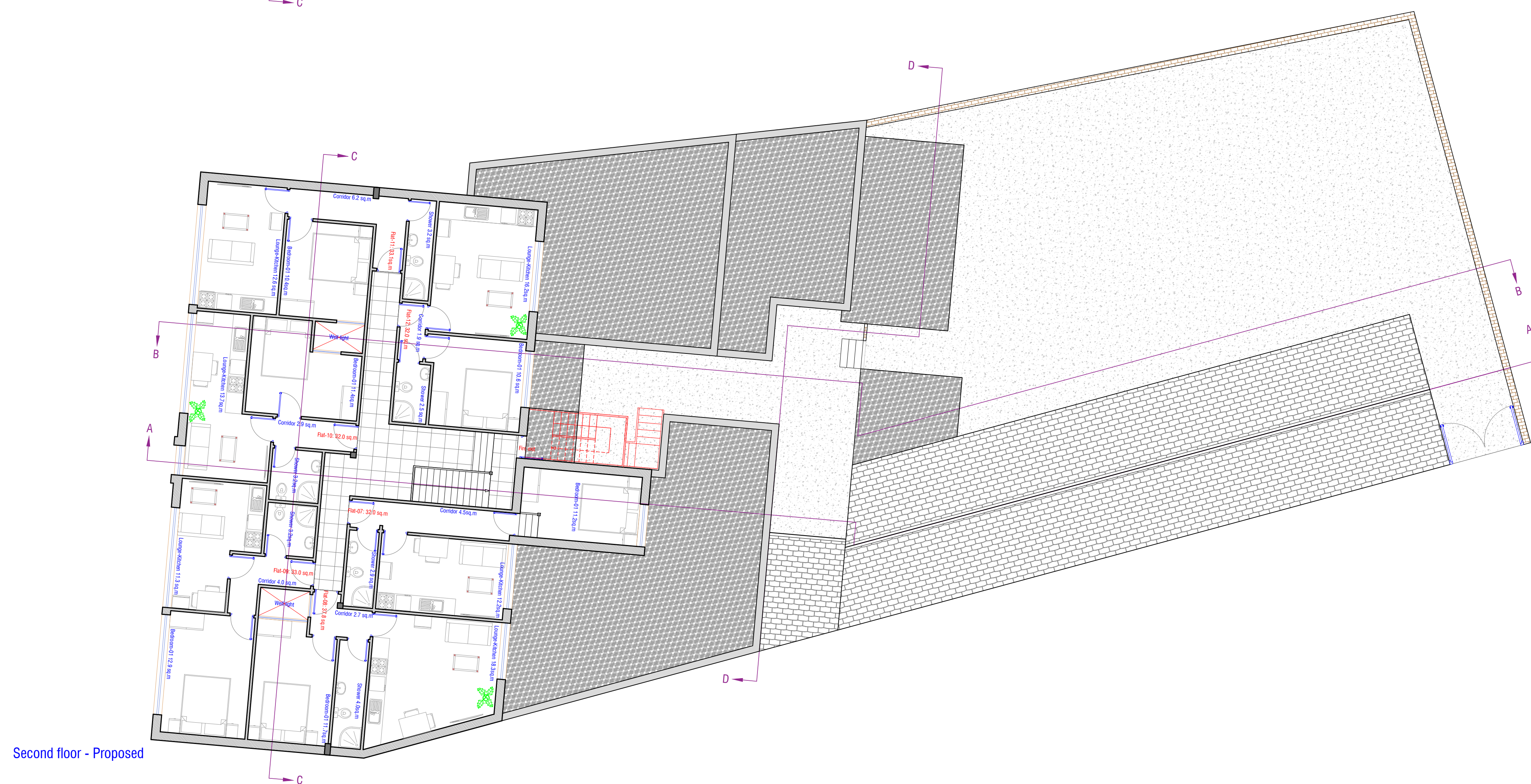
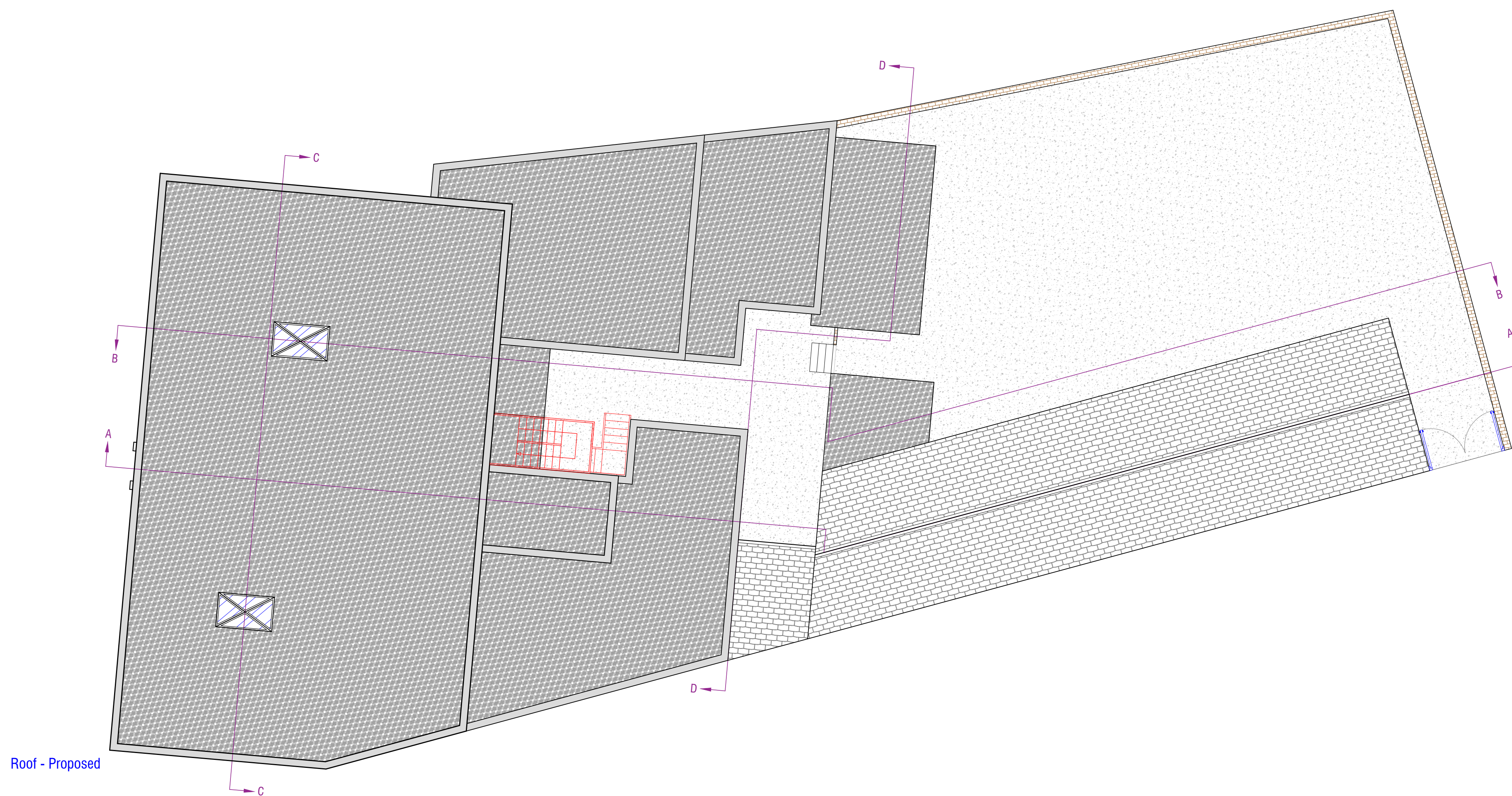


Side view - North. Existing



Side view - South. Existing







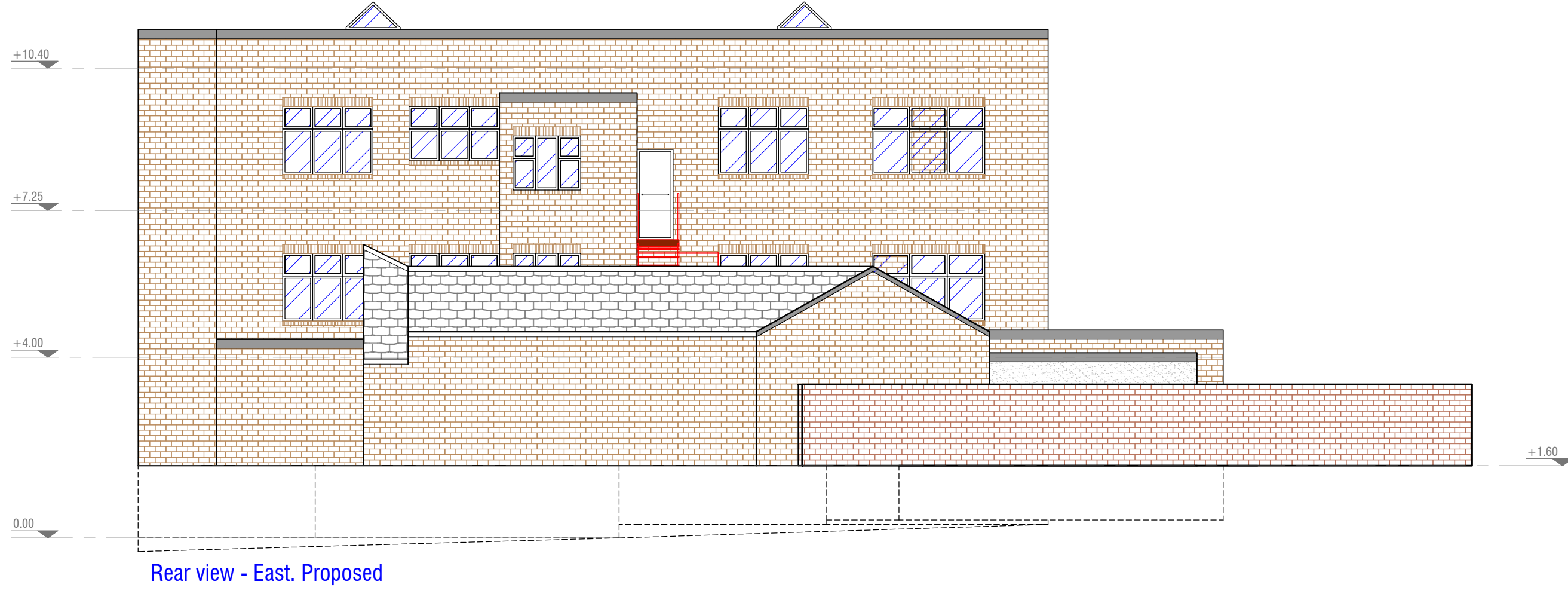
Section C-C, Proposed



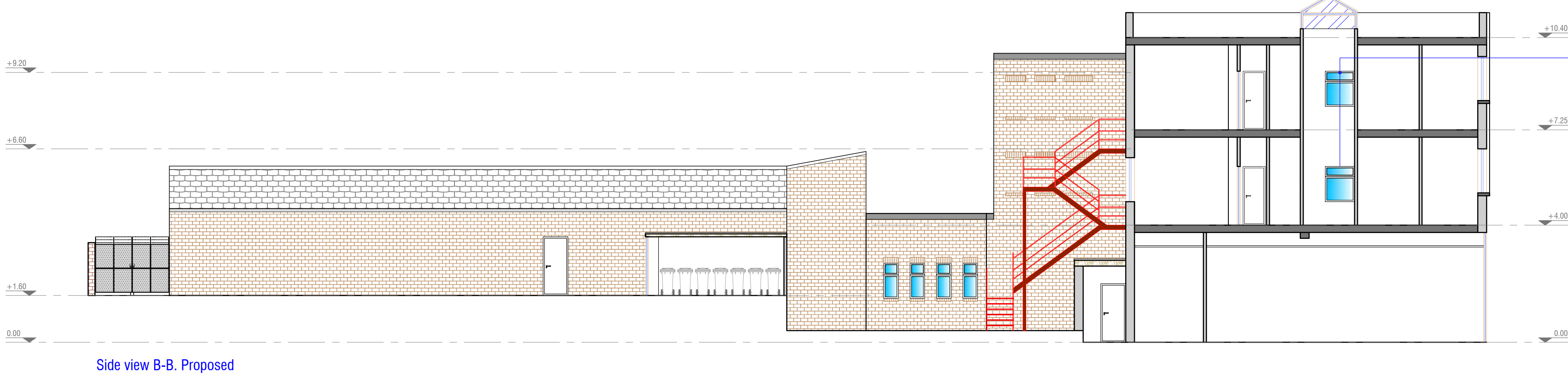
Section D-D, Proposed



Front view - West, Proposed

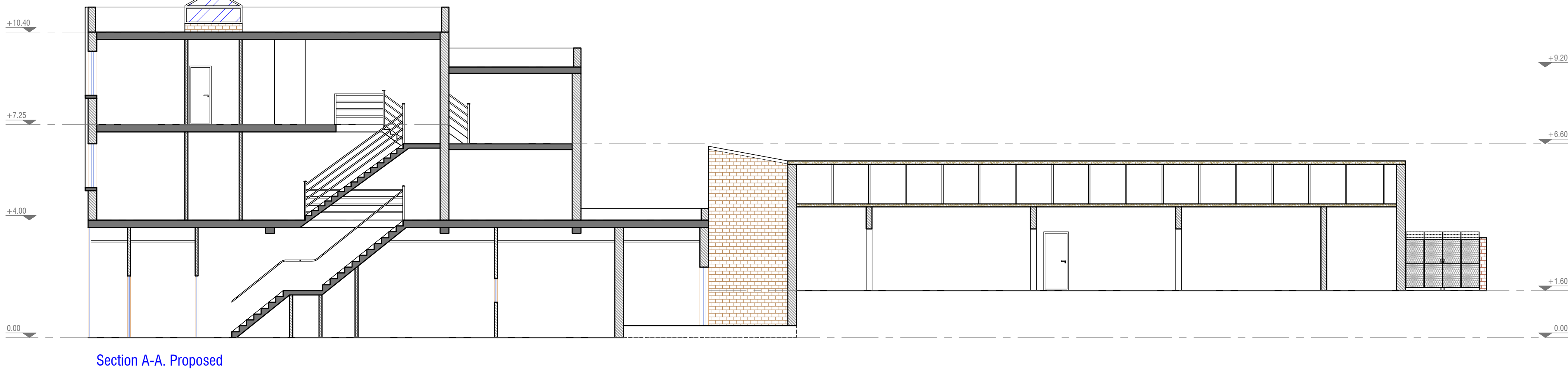


Rear view - East, Proposed

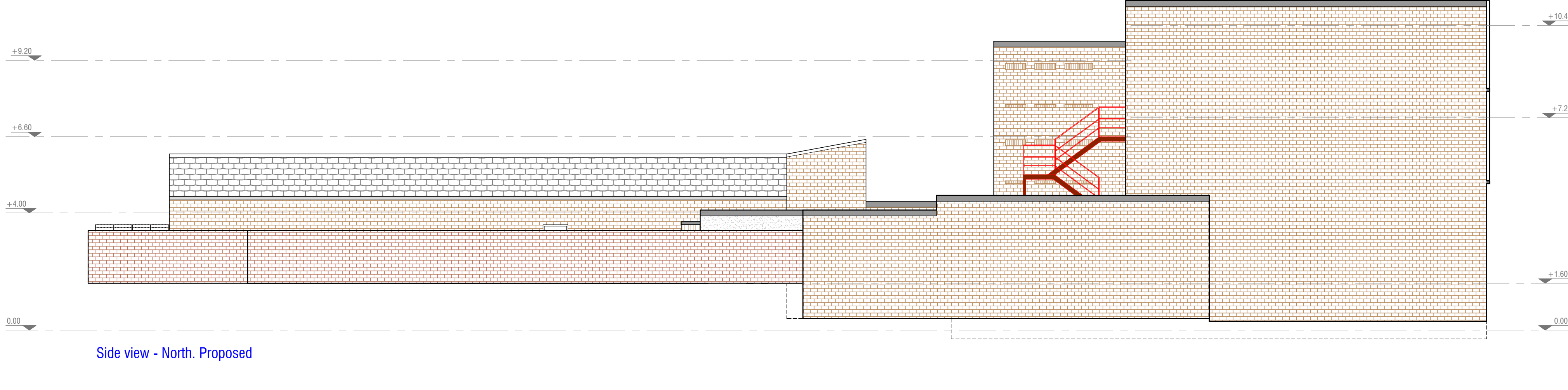


Side view B-B, Proposed

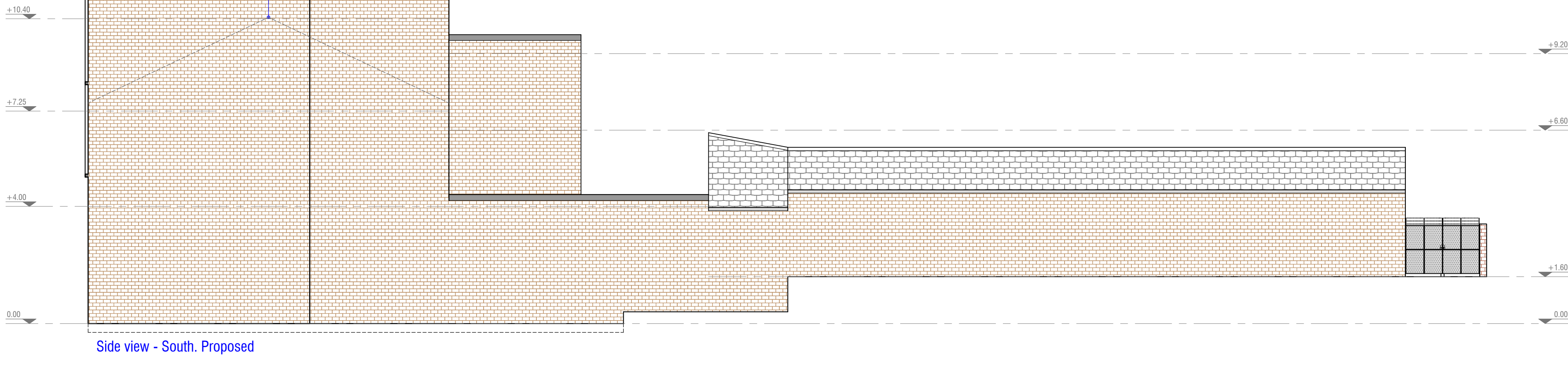
Window Privacy Design Specifications:
To prevent overlooking between units while maintaining compliance with Regulation A.3, the following measures will be implemented:
- Fixed Glazing Requirement
- Glazing Standard
- Window Alignment
- Window Privacy Design Specifications:
To prevent overlooking between units while maintaining compliance with Regulation A.3, the following measures will be implemented:
- Fixed Glazing Requirement
- Glazing Standard
- Window Alignment
- Window Privacy Design Specifications:
To prevent overlooking between units while maintaining compliance with Regulation A.3, the following measures will be implemented:
- Fixed Glazing Requirement
- Glazing Standard
- Window Alignment



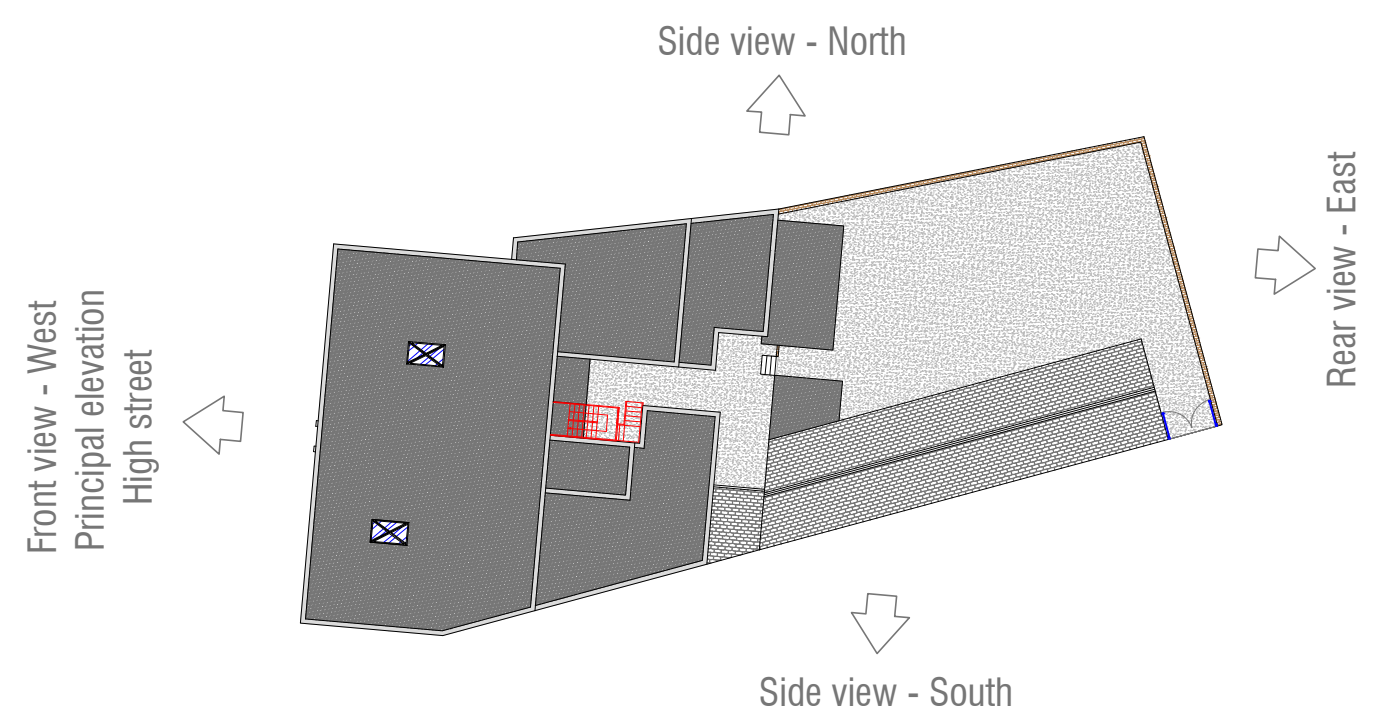
Section A-A, Proposed

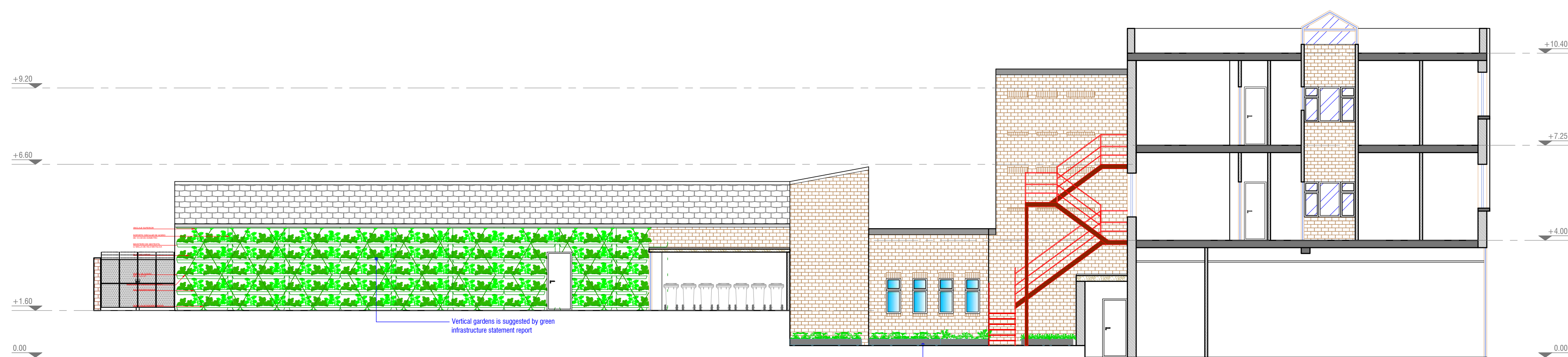


Side view - North, Proposed

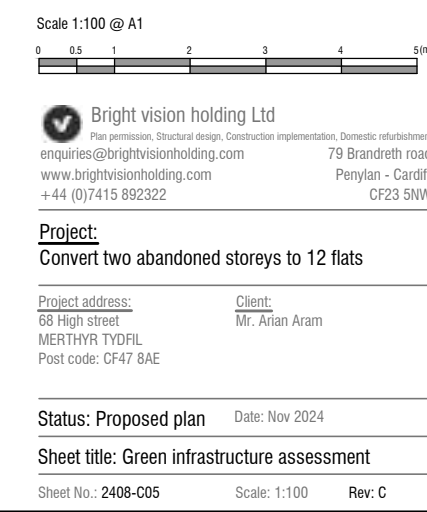


Side view - South, Proposed





- Plant pots is suggested by green infrastructure statement report

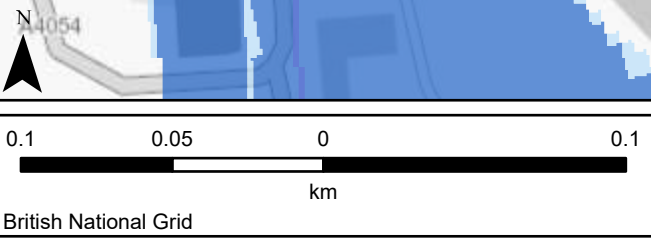
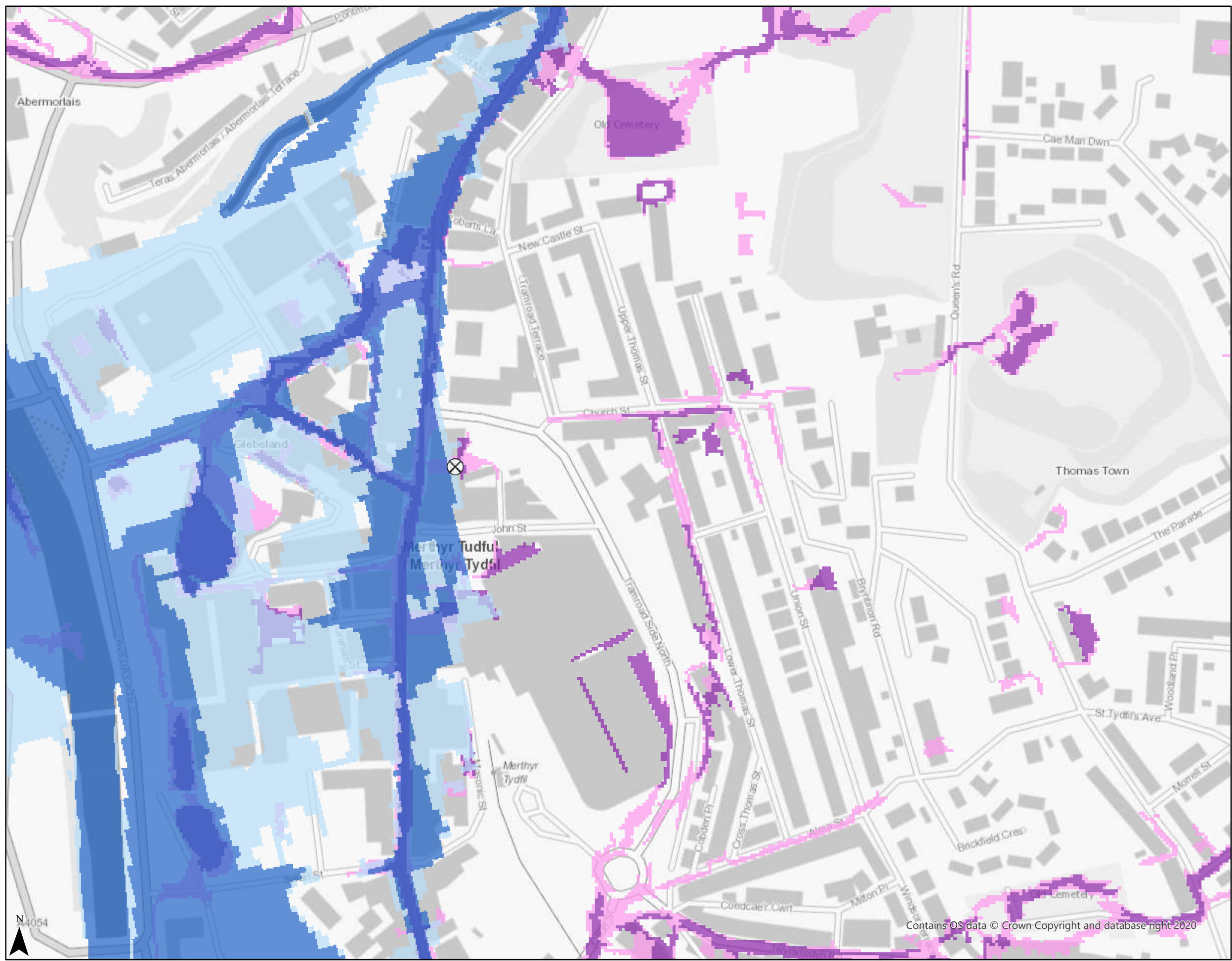




APPENDIX B: NRW Flood Maps and Flood Data

Flood Map for Planning - Basic Flood Zones

- Legend**
- TAN15 Defended Zones
-  Rivers
 -  Sea
 -  Rivers and Sea
- Rivers and Sea
-  Flood Zone 3
 -  Flood Zone 2
- Surface Water and Small Watercourses
-  Flood Zone 3
 -  Flood Zone 2
 -  Recorded Flood Extents



Disclaimer
<https://naturalresources.wales/flooding/disclaimer-for-our-flood-and-coastal-erosion-risk-maps/?lang=en>

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Scale at A3: 1:2,500

Date: 18/06/2025

Flood Map for Planning - Detail
Reservoirs Flooding

Legend

TAN15 Defended Zones



Rivers



Sea



Rivers and Sea



Flood Risk from Reservoirs



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Scale at A3: 1:2,500

Date: 18/06/2025

Disclaimer

<https://naturalresources.wales/flooding/disclaimer-for-our-flood-and-coastal-erosion-risk-maps/?lang=en>

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0.1 0.05 0 0.1
km

British National Grid



APPENDIX C: M3FloodTec Air Brick



Available in
5 standard
colours

Anti-Flood Airbrick

The Anti-flood Airbrick is the world's first BSI Kitemark™ Certified airbrick to protect against flooding.

It is the most efficient and effective airbrick replacement on the market. Its superior design is passive and it is self-activated by only one moving part. Designed to replace a standard airbrick it allows air to freely pass through, but under flood conditions its self-activating gate will automatically shut off.

- Suitable for use in listed buildings
- Can be retro fitted or used in new build construction
- Made from recycled polypropylene
- Allows air to freely pass through complying with BS493:1995
- Easy to install
- Integrated mesh unit stops insects and debris entering

