

## **Dovedale Property**

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### **Former Mines Rescue Station, Chesterfield Flood Risk Assessment**

**June 2023**



## Revision Schedule

### Former Mines Rescue Station, Chesterfield

### Flood Risk Assessment

June 2023

Doc Ref: DP-1697-01-FRA-002

Rev	Date	Status	Prepared by	Reviewed by	Approved by
-	8 June 2023	First Issue	Stephen Riley BSc CEng MICE MCIHT	Lee Barnes BSc (Hons) MCIHT	Lee Barnes BSc (Hons) MCIHT
P1					
P2					
P3					

#### Revision Notes

P1	
P2	
P3	

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Appendix 2 – Yorkshire Water Sewer Records

## DRAWINGS

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A21-01-02-P2	Proposed Floor Plans	1:100 @ A1
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## 1 INTRODUCTION

### 1.1 Instructions

- 1.1.1 This Flood Risk Assessment report is prepared in accordance with instructions from Dovedale Property to support a planning application to Chesterfield Borough Council for a change-of-use to residential at the former Mines Rescue Station, Infirmary Road, Chesterfield, S41 7NF.
- 1.1.2 The purpose of the report is to assess flood risk in accordance with the National Planning Policy Framework (NPPF) and other current guidelines.

### 1.2 Technical Information

#### ***National Planning Policy Framework***

- 1.2.1 The National Planning Policy Framework (NPPF) and associated Planning Practice Guidance (PPG) explains how flood risk should be taken into consideration during the planning and development process. It specifies a *sequential test* and an *exception test* to guide local planning authorities on the suitability of proposed development sites. It categorises flood risk by *flood zone* and defines the types of development *appropriate* to each flood zone according to *vulnerability*. The flood zones are defined as:

Zone 1: Areas with a Low Probability of flooding (annual probability less than 0.1% or 1 in 1000 years).

Zone 2: Areas with a Medium Probability of flooding (annual probability between 0.1% (1 in 1000 years) and 1.0% (1 in 100 years) for rivers, 0.1 – 0.5% (1 in 1000 to 1 in 200 years) for coastal areas).

Zone 3a: Areas with a High Probability of flooding (annual probability greater than 1.0% (1 in 100 years) for rivers, 0.5% (1 in 200 years) for coastal areas).

Zone 3b: The Functional Floodplain (probability as Zone 3a).

#### ***Environment Agency Flood Maps***

- 1.2.2 The Environment Agency (EA) predicts the likelihood of flooding via a national series of indicative flood maps, available via the GOV.UK website.
- 1.2.3 The *Flood Map for Planning* is the principal reference document for the definition of flood zones and the assessment of flood risk in planning applications as stipulated by the NPPF and PPG. It shows the flood zones described above coloured in

different shades of blue - see Appendix 1. The flood zones are mainly derived from either the generalised flood model of 2004 or more recent local detailed river modelling where this is available. In some instances, Flood Zone 2 is based on the records of actual flood events. In areas protected by flood defences, this flood map deliberately neglects their presence so as to present a worst-case scenario. Although it does not represent realistic risk, the *Flood Map for Planning* is the authoritative guidance on flood risk for use in the preparation of flood risk assessments for planning applications.

#### 1.2.4 The *Long Term Flood Risk* maps cover the following topics:

*Flood Risk from Rivers or the Sea.* This map shows the risk of fluvial and tidal flooding in a similar manner to the *Flood Map for Planning*, except that, where they exist, defences are recognised, resulting in the presentation of actual risk as opposed to worst case.

*Flood Risk from Surface Water.* This map shows potential overland flow routes and accumulation of runoff resulting from rainstorm events based on topography, divided into low, medium and high risk scenarios. Although, as noted on the map, *flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast*, it is a useful indicator of the risk of flooding from the accumulation of rainwater in low lying areas. Unlike the modelling used to produce the *Flood Map for Planning*, which is based on river catchments and conveyance, that used for the *Flood Risk from Surface Water* map is based on LIDAR ground level data which identifies depressions where runoff may possibly accumulate.

*Flood Risk from Reservoirs.* This map shows areas which may be subject to flooding from the failure of reservoirs and other water retaining infrastructure, the risk of which is very low.

## **2 SITE INFORMATION**

### **2.1 Existing Site**

2.1.1 The existing site comprises former the Mines Rescue Station building together with surrounding paved areas and rear yard. The building area is about 600 m<sup>2</sup> and the yard area about 950 m<sup>2</sup>, making a total site area of about 1550 m<sup>2</sup>.

2.1.2 The site is bounded to the west by Infirmary Road and to the north, east and south by residential development. Part of the eastern boundary abuts the Chesterfield College car park. The site location is shown on Drawing No A21-01-01-P2, attached, which also shows existing plans and elevations.

#### ***Topography***

2.1.3 The site is practically level at around +71.25m AOD.

2.1.4 Except for about 80 m<sup>2</sup> of landscaping at the front, the site comprises either roof or paved yard, making it about 95% impermeable.

### **2.2 Watercourses**

2.2.1 The River Rother, a main river, flows from south to north about 150m to the east of the site on the far side of the A61 Rother Way dual carriageway.

2.2.2 An un-named tributary of the River Rother flows from west to east in a 750mm/1300mm diameter pipe culvert along Wharf Lane, about 50m north of the site, as shown on the Yorkshire Water (YW) sewer records at Appendix 2.

### **2.3 Sewerage**

2.3.1 According to the YW sewer records at Appendix 2, there is a 900mm diameter public combined sewer running from west to east at the rear of Nos 21 to 25 Infirmary Road, about 20m to the north of the site.

2.3.2 A 300mm diameter public combined sewer runs from south to north along the site frontage on Infirmary Road and connects to the 900mm diameter public combined sewer referred to above.

### **2.4 Ground Conditions**

2.4.1 According to BGS data, the site is located at the edge of an area of Alluvium superficial deposits associated with the River Rother. These deposits of Gravel, Sand, Silt and Clay, overlay Pennine Lower Coal Measures Formation bedrock, comprising Mudstone and Siltstone, which is present at the surface across Infirmary Road.

## **2.5 Development Proposals**

- 2.5.1 It is proposed that the site be developed for residential use with 19 No apartments contained within the existing building and some vertical extensions, as shown on Drawing No A21-01-02-P2 *Proposed Floor Plans*, attached.
- 2.5.2 The existing ground floor level, currently about 0.15m above the surrounding ground level, will be raised by 0.2m, making the proposed finished floor level (FFL) 0.35m above ground level.
- 2.5.3 The existing impermeable area of about 1470 m<sup>2</sup>, will remain unchanged at about 95% of the total site area.
- 2.5.4 Residential development is classified by the PPG as 'more vulnerable'.

### **3 FLOOD RISK**

#### **3.1 Flood History**

3.1.1 The DEFRA Historic Flood Map shows a small area of historic flooding situated to the north of the site – see Appendix 1.

#### **3.2 Potential for Fluvial Flooding**

3.2.1 The EA Flood Map for Planning – see Appendix 1 - shows a similar area to that shown on the Historic Flood Map as Flood Zone 2. As this area is separated from the flood zones associated with the nearby River Rother, it is presumed to be associated with the culverted tributary of the River Rother which is not shown on the flood map.

3.2.2 As can be seen, the area of Flood Zone 2 is situated close to the site boundary but does not overlap it. The site is therefore entirely located in Flood Zone 1 (Low Probability), where ‘more vulnerable’ residential development is appropriate under the PPG and there is no requirement to consider the NPPF Sequential or Exception Tests or to incorporate flood resilience measures or adopt flood emergency planning procedures.

3.2.3 Consequently, it may be concluded that there is no significant risk of fluvial flooding at the site.

#### **3.3 Potential for Surface Water Flooding**

3.3.1 The EA *Flood Risk from Surface Water* map – see Appendix 1 – shows a Low risk of surface water flooding around the building. This Low Risk Scenario has a probability of 1 in 100 to 1 in 1000 Years, the equivalent of Flood Zone 2 on the Flood Map for Planning.

3.3.2 The *Flood Risk from Surface Water Map*, therefore, appears to show flood risk at the development site which does not exist on the *Flood Map for Planning*, namely flooding with a return period of less than 1 in 1000 years (Flood Zone 2) rather than flooding with a return period of greater than 1 in 1000 years (Flood Zone 1).

3.3.3 The following quotation from the EA publication *What is the Risk of Flooding from Surface Water map? – April 2019*, may be helpful in explaining this apparent anomaly. *Due to the modelling techniques used, the mapping picks out depressions in the ground surface and simulates some flow along natural drainage channels, rivers, low areas in floodplains, and flow paths between buildings. Although the maps appear to show flooding from ordinary watercourses, they should not be taken as definitive mapping of flood risk from these as the conveyance effect of ordinary watercourses or drainage channels is not explicitly modelled.*



- 3.3.4 In comparing the data provided by the *Flood Risk from Surface Water* map with that from the *Flood Map for Planning*, therefore, account should be taken of the differences in the modelling methodology which may create differences in the output, particularly close to watercourses.
- 3.3.5 Because of the proximity of the culverted tributary of the River Rother, the indicated surface water flood risk cannot be dissociated from the fluvial flood risk shown by the *Flood Map for Planning* and, as the surface water modelling does not take account of the conveyance of floodwater by the watercourse, it cannot provide as reliable an indicator as the modelling on which the *Flood Map for Planning* is based.
- 3.3.6 Consequently, although there is some degree of surface water flood risk at the site, because the site is entirely located in Flood Zone 1 any risk must be considered as Low. Furthermore, as the proposed development will not create any new impermeable area, there will be no consequent increase in surface water flood risk.
- 3.3.7 By way of mitigation, the existing ground floor level, currently about 0.15m above the surrounding ground level, will be raised by 0.2m, making the proposed finished floor level (FFL) 0.35m above ground level. This is considered to provide an adequate measure of freeboard.

### **3.4 Potential for Flooding from Reservoirs**

- 3.4.1 The EA *Flood Risk from Reservoirs* map shows a risk of flooding from reservoir sources at the site, but only at times when river levels are high. This flood risk emanates from the Linacre Reservoirs which are managed in a responsible manner by Severn Trent Water. Consequently, the risk is considered to be Low.

### **3.5 Potential for Flooding from Sewers**

- 3.5.1 As the sewers around the site are relatively deep, flood risk from sewers is considered to be Low.

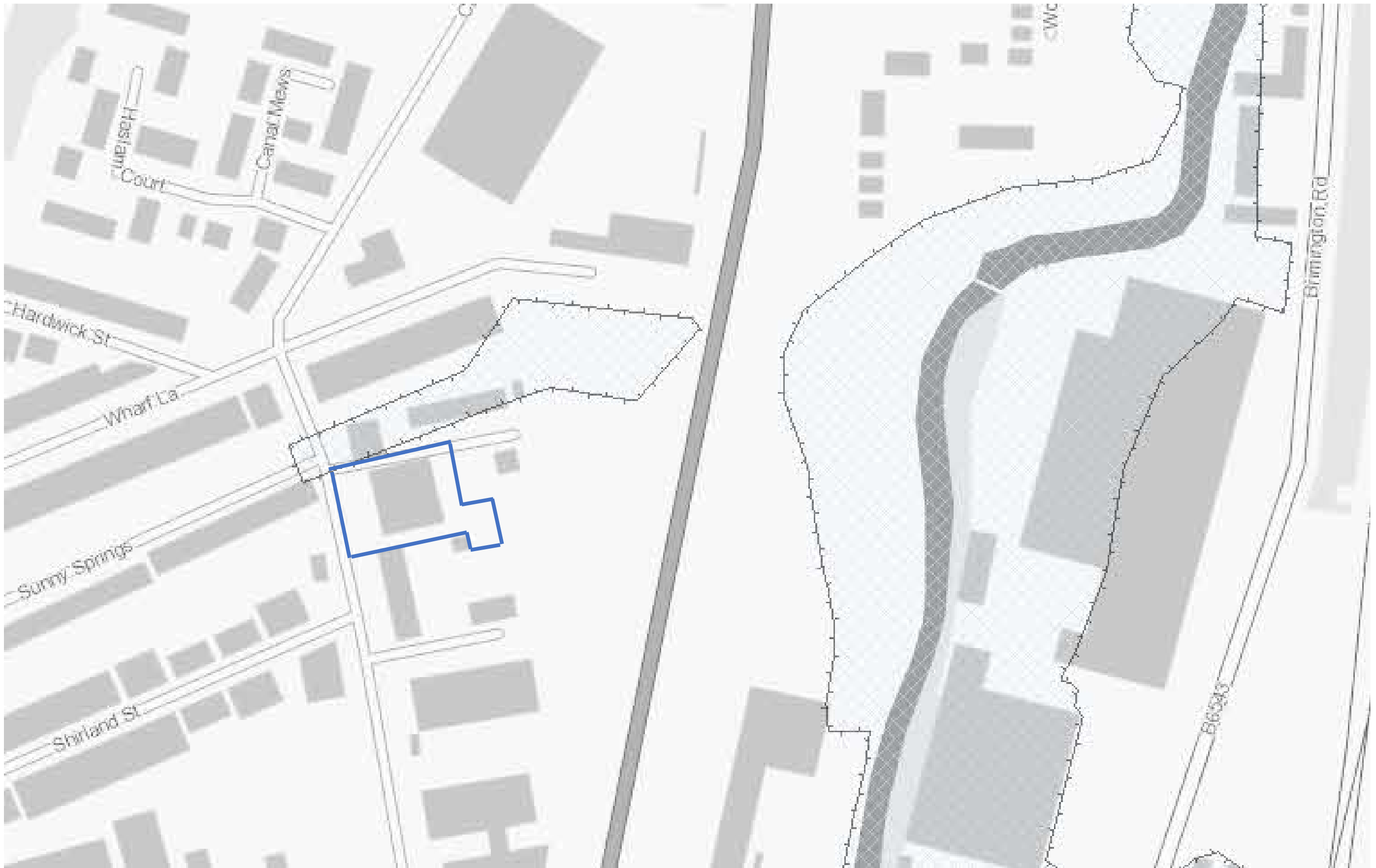
### **3.6 Potential for Flooding from Groundwater**

- 3.6.1 Owing to the impermeable nature of the local Coal Measures geology, flood risk from groundwater is considered to be Low.

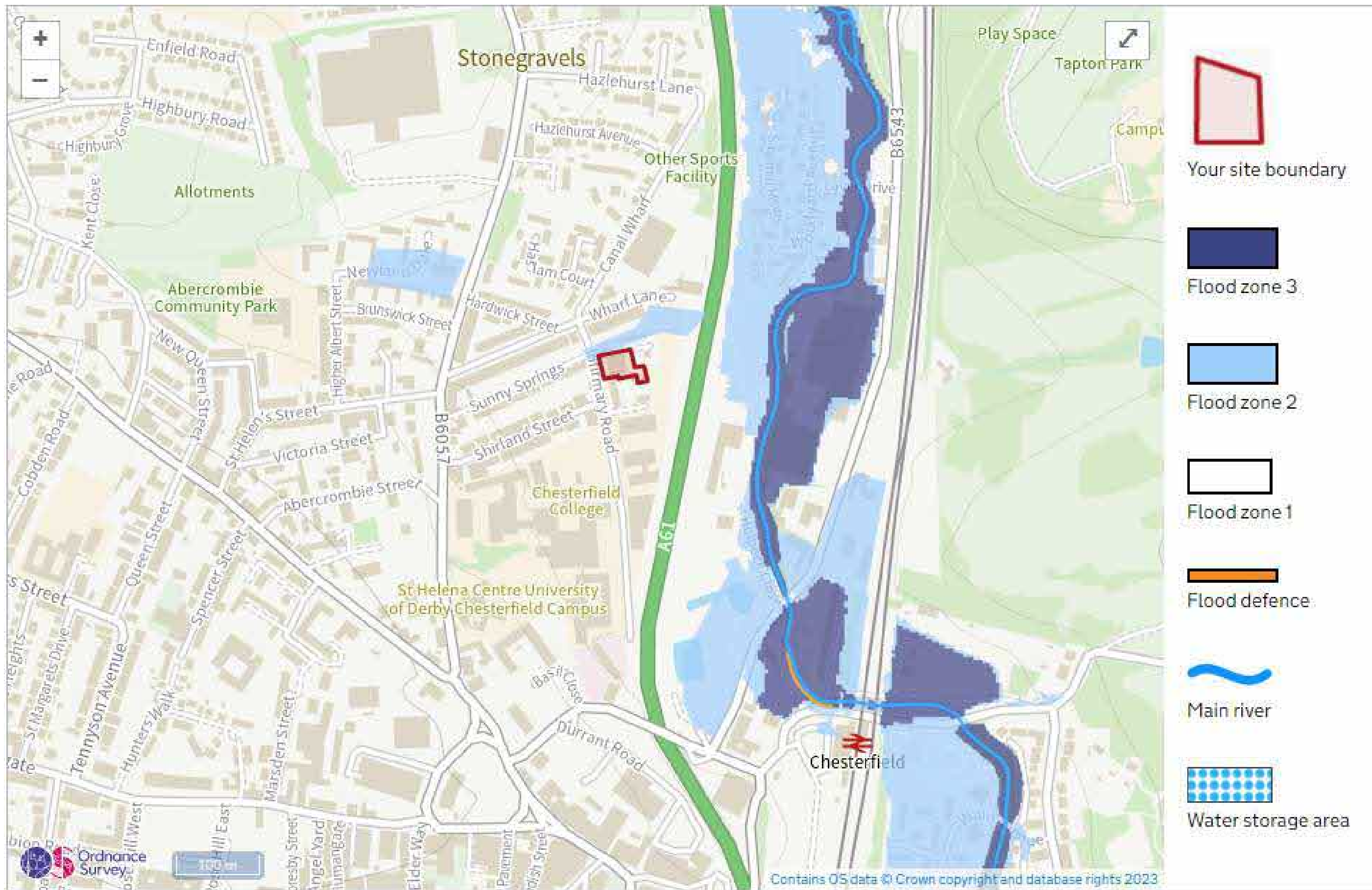
## **4 CONCLUSIONS**

- 4.1.1 The site is entirely located in Flood Zone 1 (Low Probability), where 'more vulnerable' residential development is appropriate under the PPG and there is no requirement to consider the NPPF Sequential or Exception Tests. As there is no significant risk of fluvial flooding, there is no need to incorporate flood resilience measures or adopt flood emergency planning procedures.
- 4.1.2 There is currently a Low risk of surface water flooding on the site, which, as the proposed development will not create any new impermeable area, will not be increased. By way of mitigation, raising the ground floor level will provide adequate freeboard allowance.
- 4.1.3 The risk of flooding from other sources is considered to be Low.
- 4.1.4 With regard to flood risk, therefore, the site is suitable for the proposed use and may be occupied safely.

**APPENDIX 1**  
**ENVIRONMENT AGENCY FLOOD MAPS**



**DEFRA Historic Flood Map**

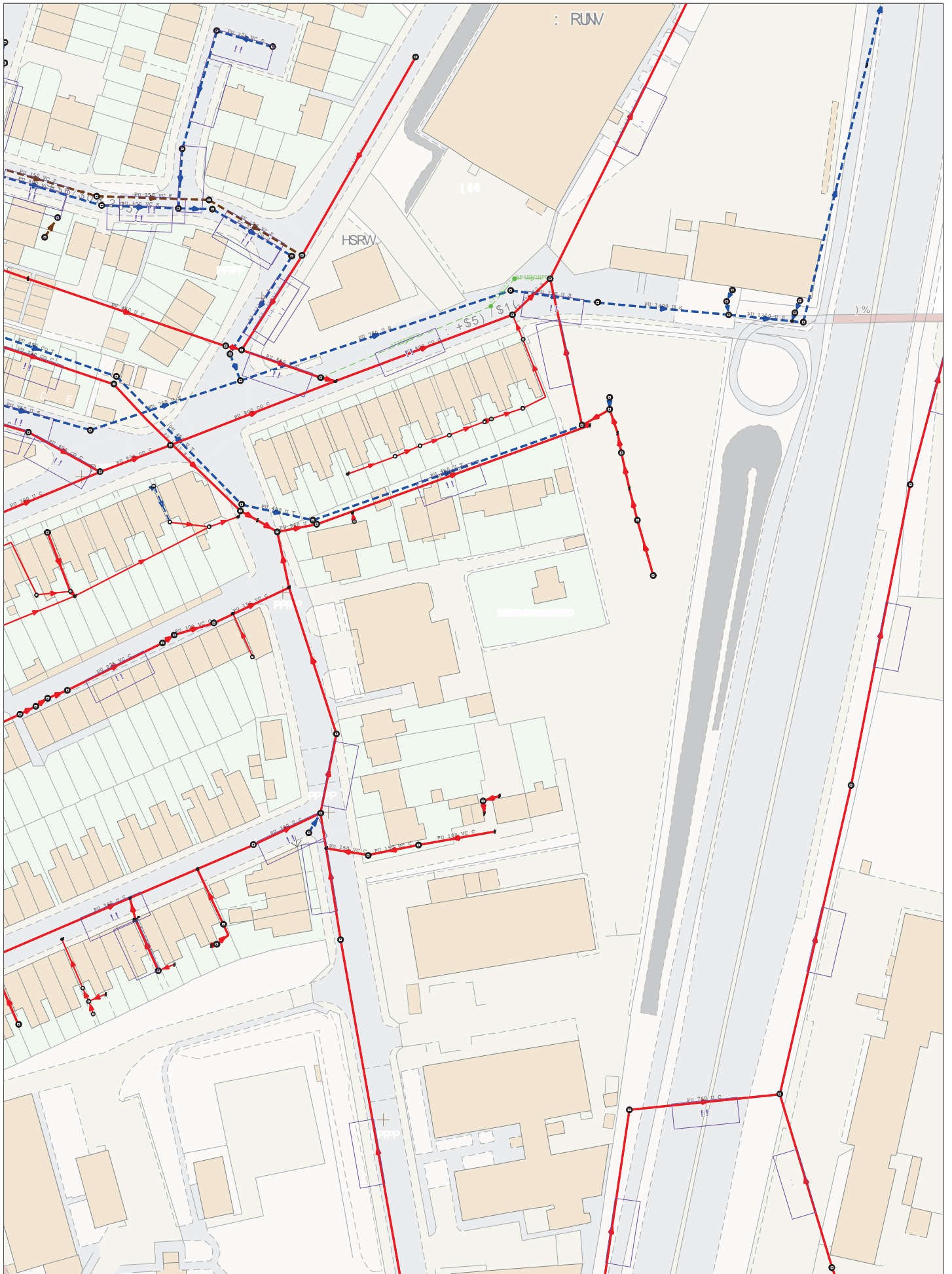


**Flood Map for Planning – Site located in Flood Zone 1**



**Surface Water Flood Risk Map – Low Risk Scenario (1 in 100 to 1 in 1000 Years- Equivalent to Flood Zone 2)**

**APPENDIX 2**  
**YORKSHIRE WATER SEWER RECORDS**

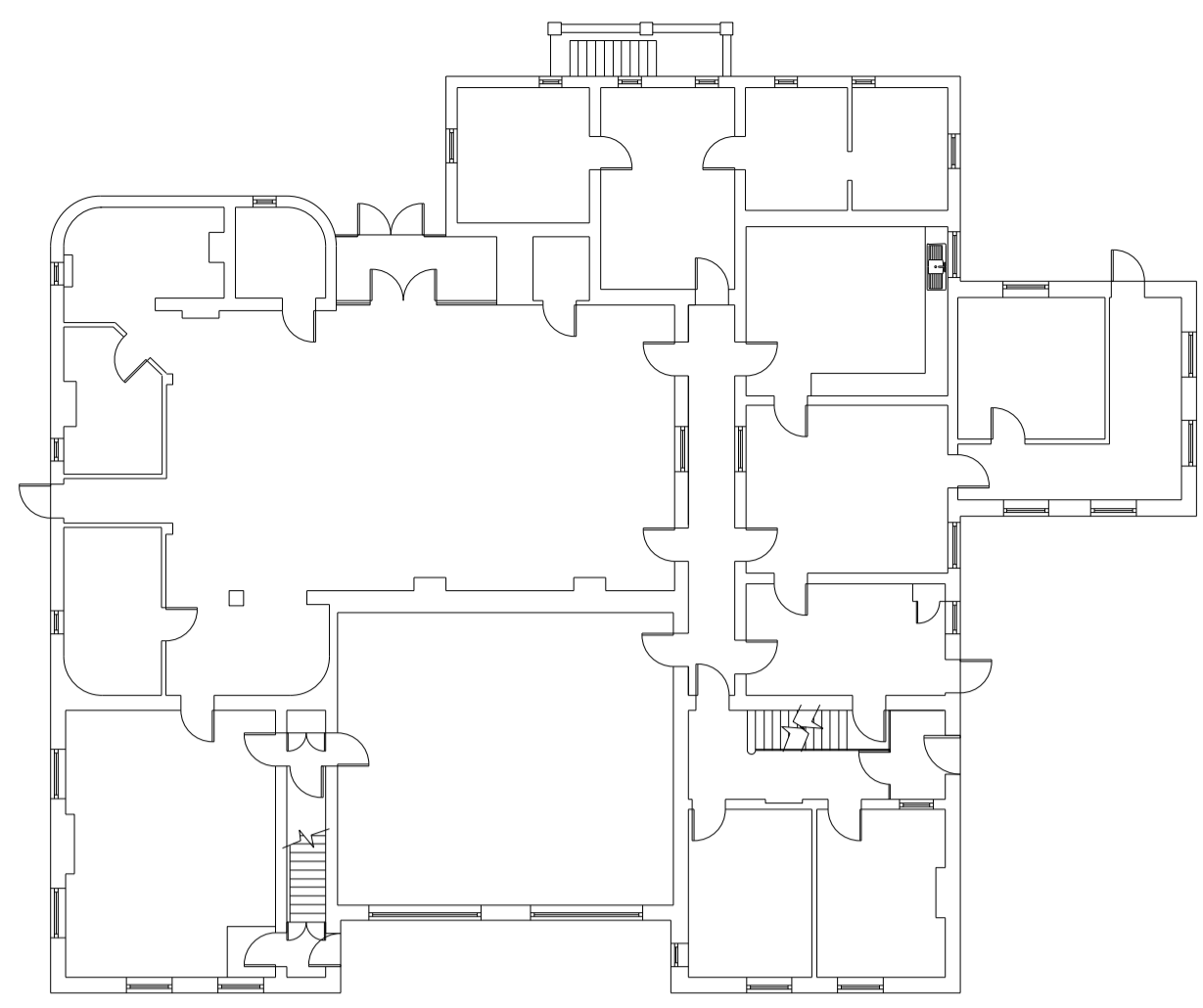


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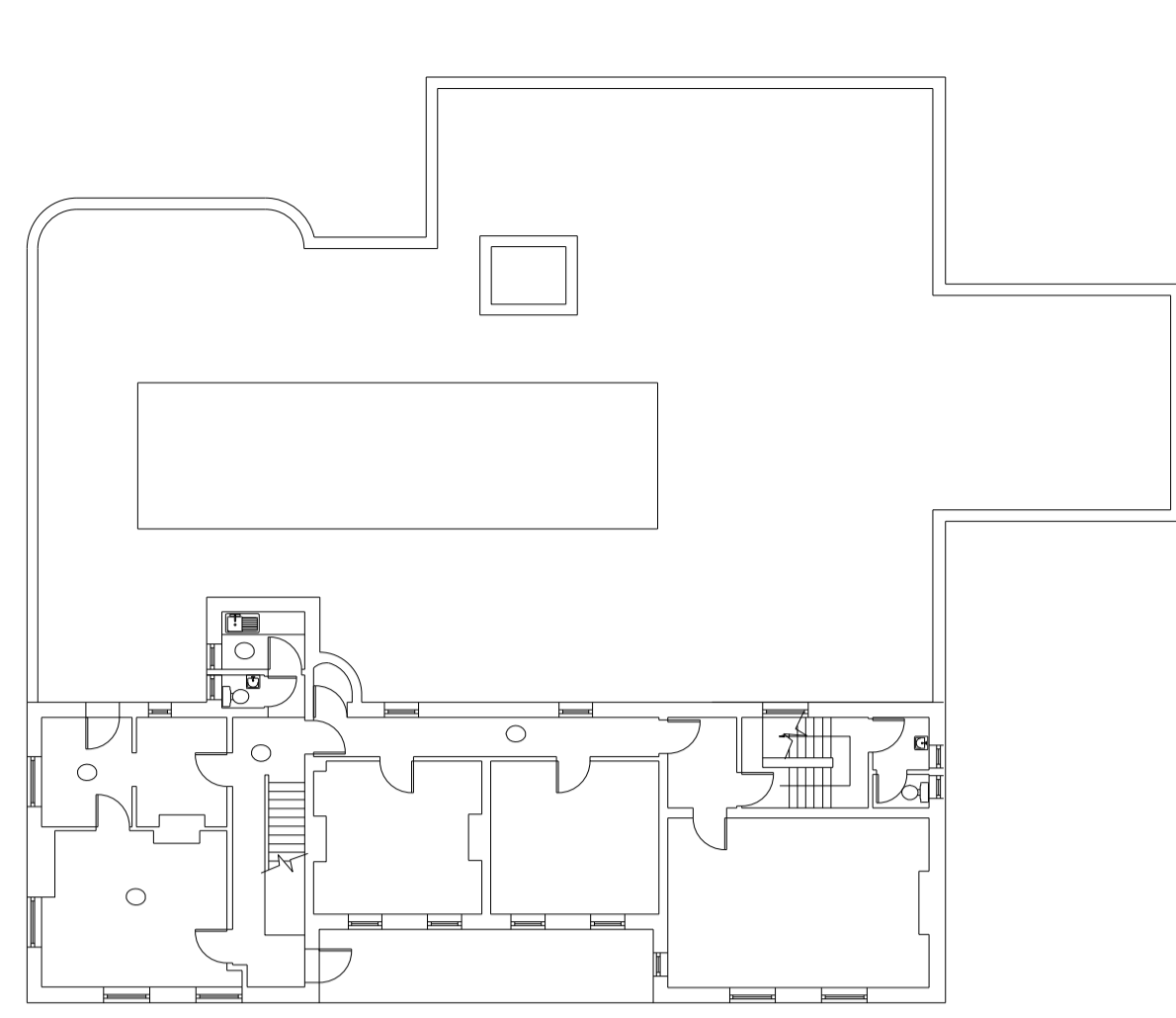
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## **DRAWINGS**



Existing Ground Floor Plan 1:200



Existing First Floor Plan 1:200



Existing West Elevation (Front) 1:200



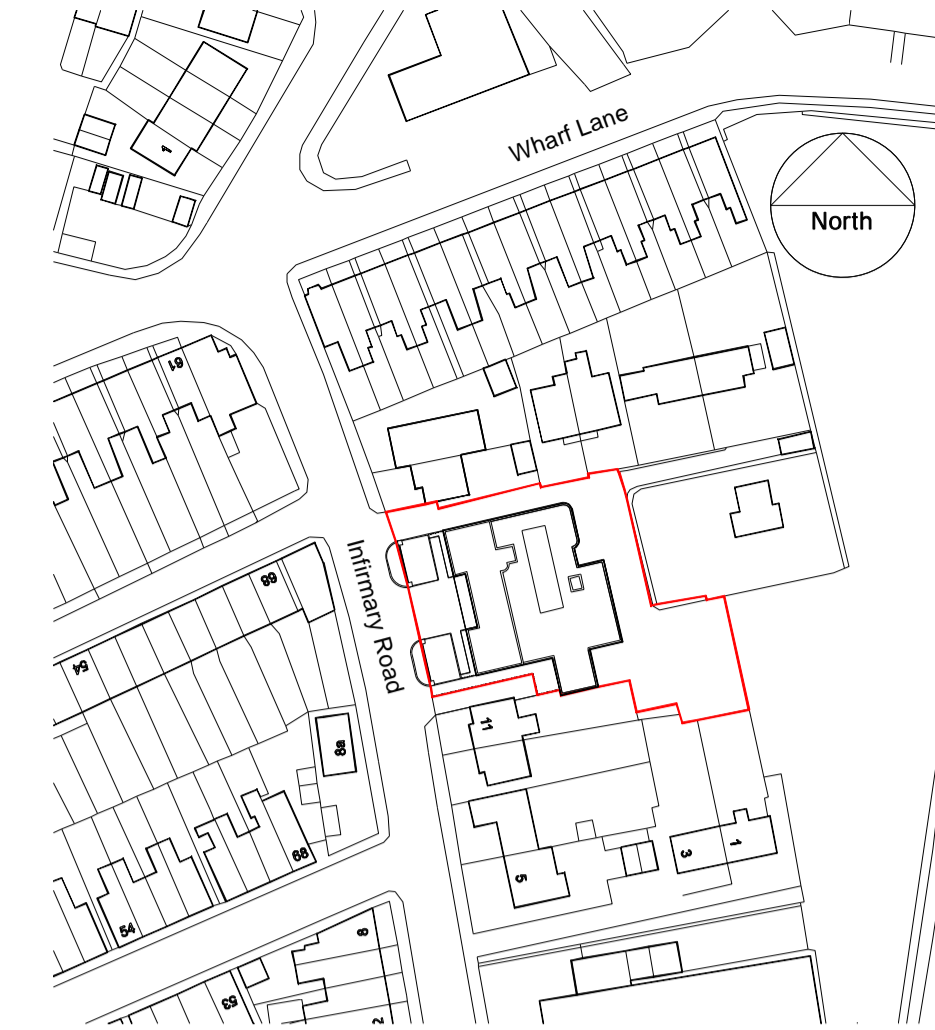
Existing South Elevation (Side) 1:200



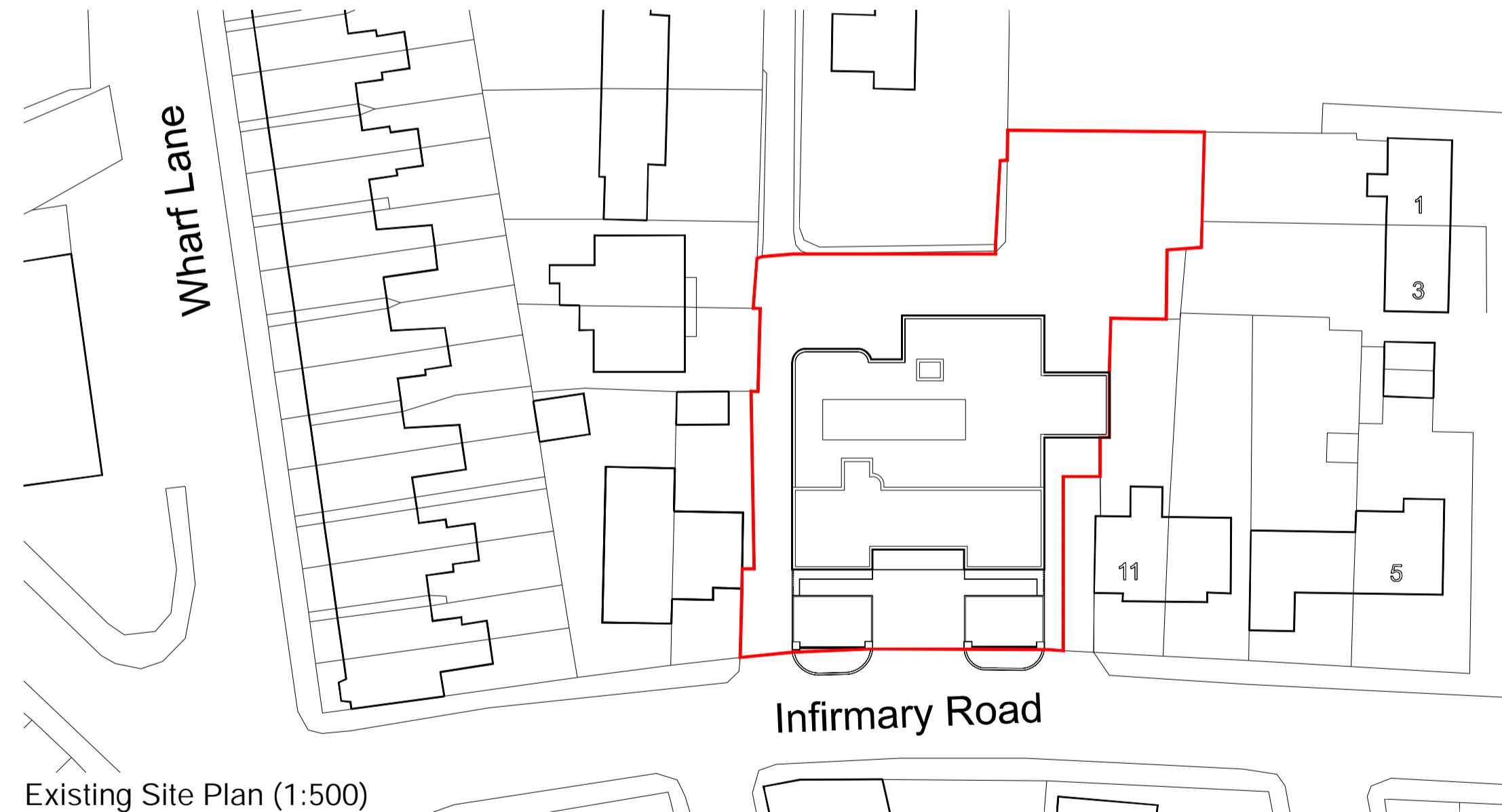
Existing East Elevation (Rear) 1:200



Existing North Elevation (Side) 1:200



Site Location Plan (1:1250)



Existing Site Plan (1:500)



Existing Site Visuals NTS

**NOTES**  
Do not scale from these drawings - If in doubt always ask first  
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Rev	Date	Comments
P2	09.05.23	Planning Issue
P1	28.04.23	Planning Issue

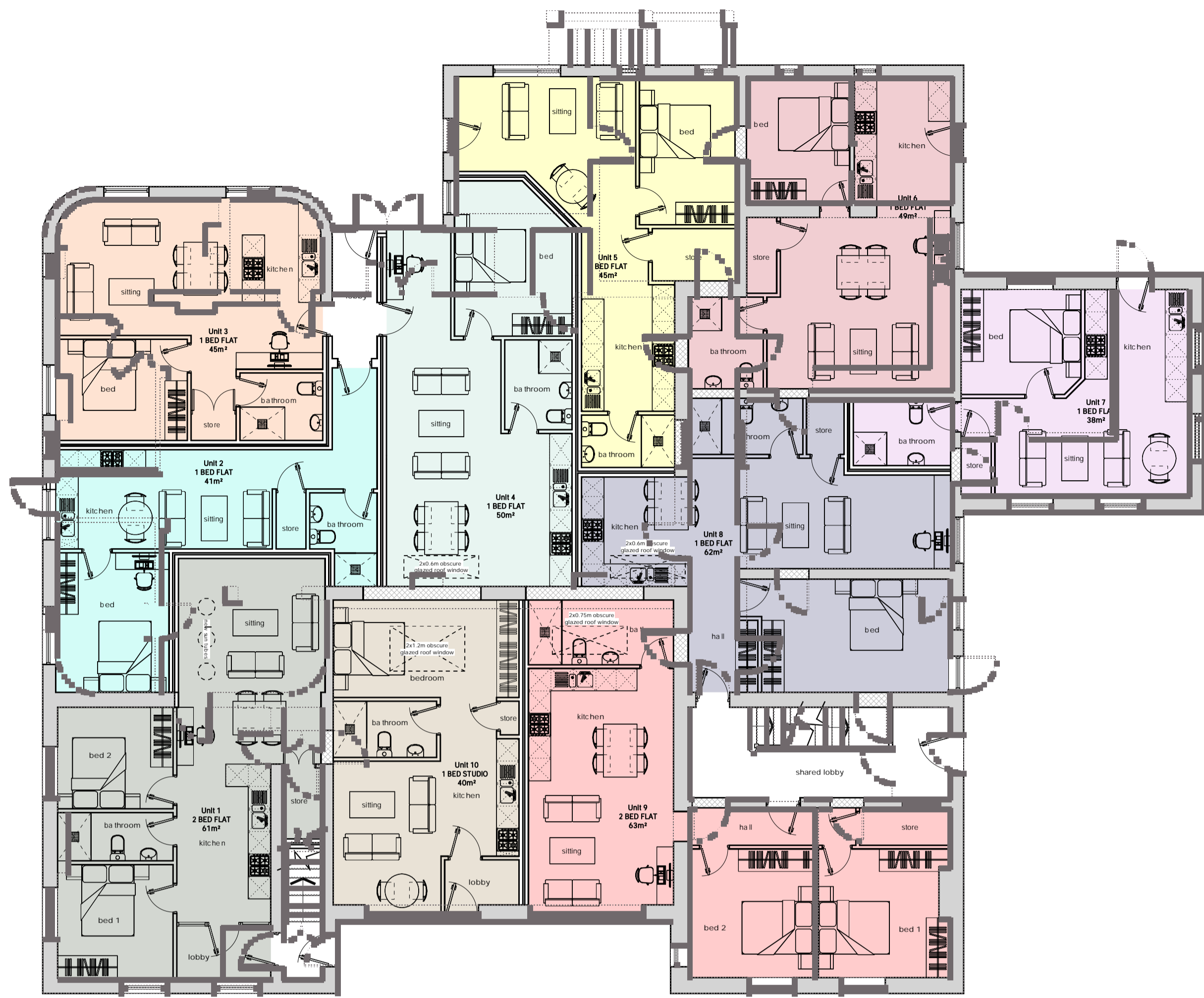
**Project**  
Residential Development -  
Change Of Use  
Mines Rescue Building,  
Infirmary Road,  
Chesterfield  
S41 7NF

**Client**  
 Dovedale Property

**Drawing title**  
Existing Plans, Elevations,  
Site Plan, Site Location Plan  
& Existing Visuals

Scale	Drawing No.	Revision
1:200/ 1:500 & 1:1250 @ A1	A21-01-01	P2
Date	24.05.22	
Drawn By	BJDL	

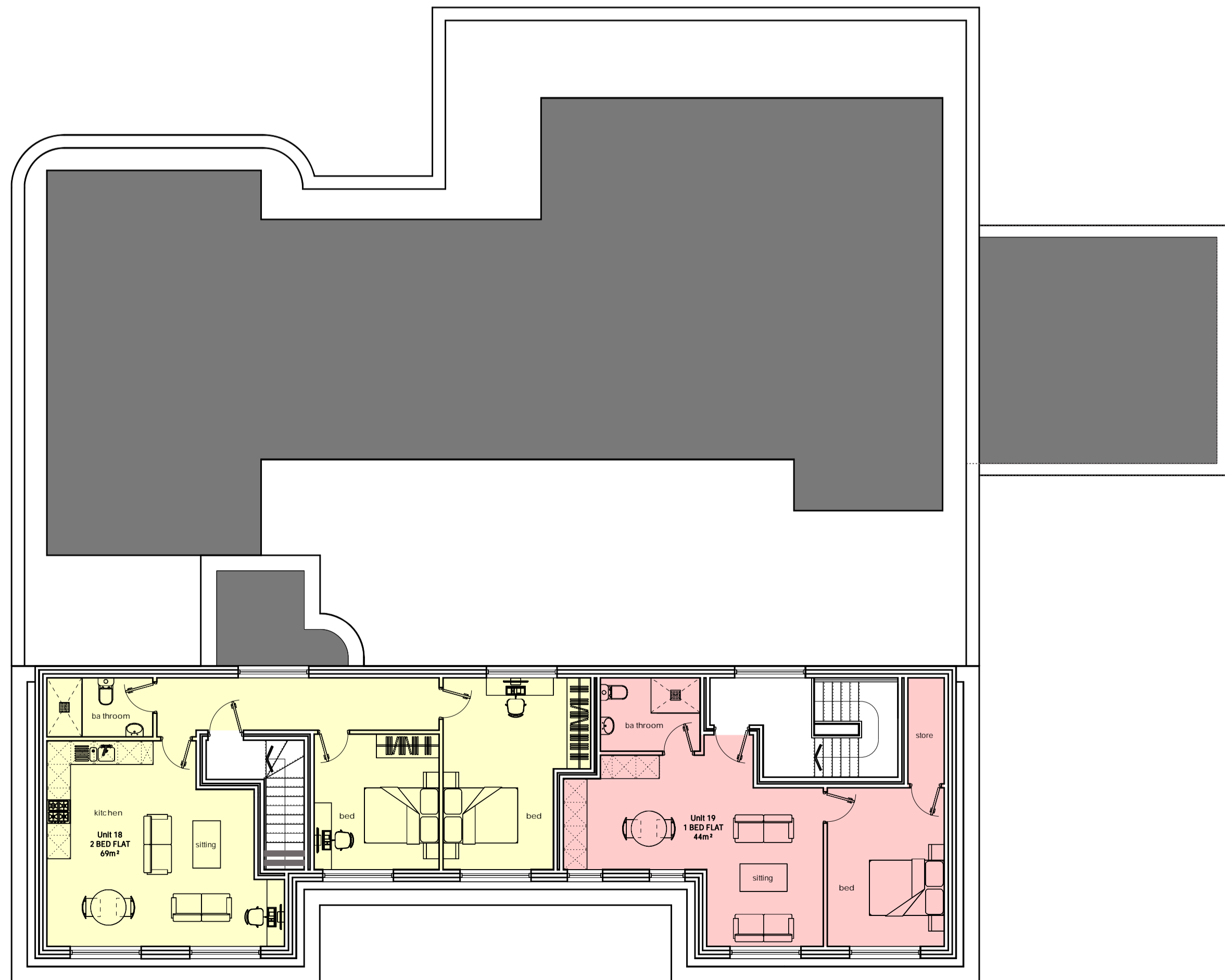




Proposed Ground Floor Plan 1:100



Proposed First Floor Plan 1:100



Proposed Second Floor Plan 1:100

NOTES  
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P2	09.05.23	Planning Issue
P1	28.04.23	Planning Issue
Rev	Date	Comments

Project  
Residential Development -  
Change Of Use  
Mines Rescue Building,  
Infirmary Road,  
Chesterfield  
S41 7NF

Client  
 Dovedale Property

Drawing title  
Proposed Floor Plans

Scale	1:100 @ A1	Drawing No.	A21-01-02	Revision	P2
Date	24.05.22				
Drawn By	BJDL				





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**EV**  
 Electric Vehicle Charging

P2	09.05.23	Planning Issue
P1	28.04.23	Planning Issue
Rev	Date	Comments

Project  
 Residential Development -  
 Change Of Use  
 Mines Rescue Building,  
 Infirmary Road,  
 Chesterfield  
 S41 7NF

Client  
 Dovedale Property

Drawing title  
 Proposed Site Plan

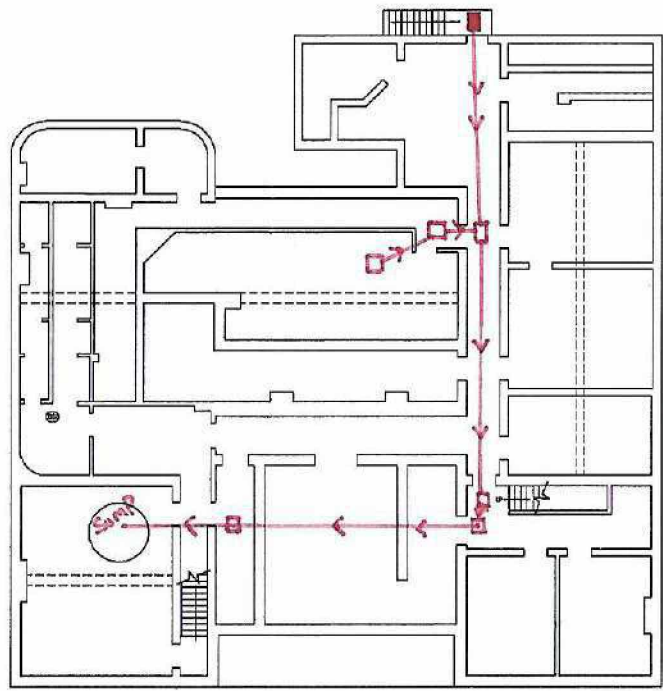
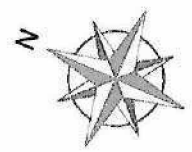
Scale	1:200 @ A1	Drawing No.	A21-01-04	Revision	P2
Date	24.05.22				
Drawn By	BJDL				



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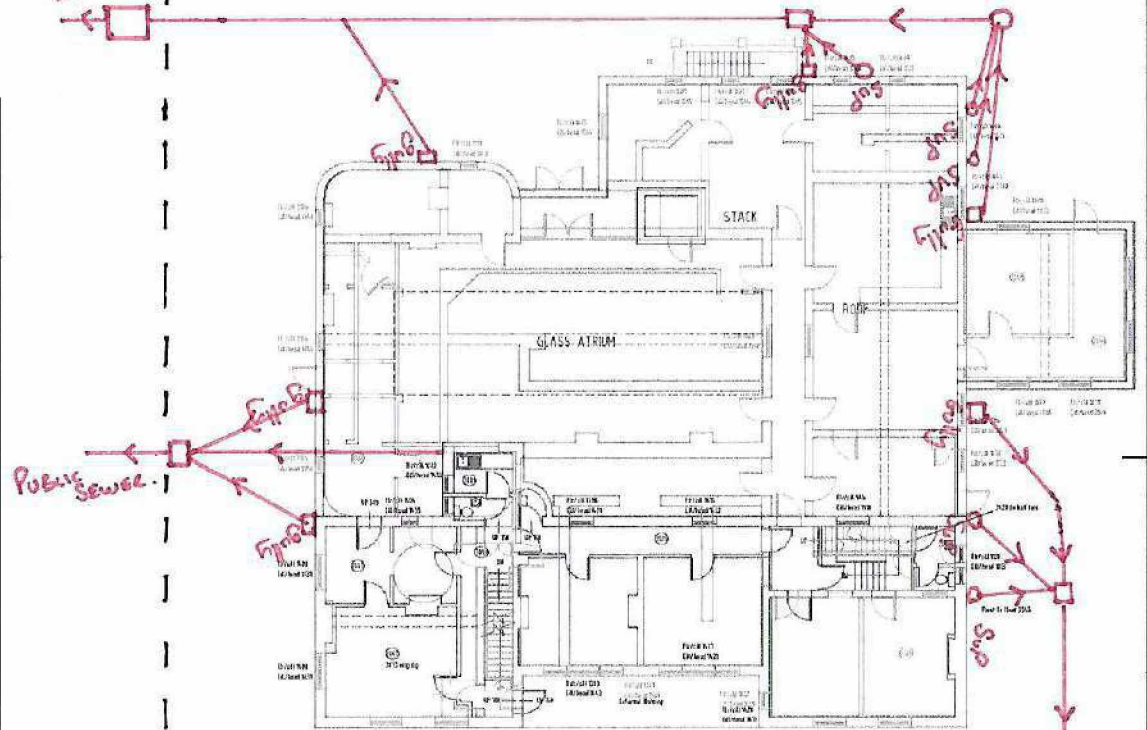
Proposed Site Layout Plan (1:200)

RevNo	Revision note	Date	Signature	Checked



**BASEMENT FLOOR PLAN 1:200**

*New Manhole cover installed*



**FULL MODEL FLOOR BY FLOOR 1:200**

Leica TCR705 / Leica Geo Office Tools	Example	
Point ID	Position or point measured	12
Coordinates	Values given to relate to the OS grid (if required)	98.458;116.415
Height	Value given above sea level (if required)	100.032
Stations	Specific control points within data capture	STN A
Code prop	Name specific to a point which is recognised when processing	BRICK W
The survey is carried out to an arbitrary grid and datum unless otherwise specified		



**TOPOGRAPHICAL SURVEYS & BUILDING MEASUREMENT**

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference		
Surveyed by TIM-ROWLEY	Checked by TIM-ROWLEY	Approved by - date TIM-ROWLEY	File name MINES	Date DECEMBER_2020	Scale 1:200
12 Forge Road Wales S76 5PB 07594 083398		Land Registry Plans Topographical Building Measurement SUAV Images PICO CAA Approved	THE_OLD_MINES_RESCUE_STATION CHESTERFIELD_DERBYSHIRE		
			A3-02	Edition 01	Sheet A3

