

Building Recording at the former Ice Works, 174, Bromyard Road, Worcester

Worcestershire Archaeology
for JJS Developments

July 2019



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THE FORMER ICE WORKS 174, BROMYARD ROAD, WORCESTER

Building Recording report



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SITE INFORMATION

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Building Recording at the former Ice Works, 174 Bromyard Road, Worcester

By Tim Cornah

Illustrations by Carolyn Hunt

Summary

Building recording undertaken at the former Ice Works, 174, Bromyard Road, Worcester (NGR SO 82895 54297). It was commissioned by JJS Developments, in advance of conversion of the main buildings into flats, the construction of new build flats and demolition of a number of the smaller ancillary 20th century buildings. Planning permission has been granted subject to a programme of archaeological works.

Despite the documentary evidence suggesting the presence of a mill on the site from 1086, the earliest extant building was a single brick structure likely to have been that mapped in 1729. The position of this brick structure confirmed the presence of the historic mill in the broad position of the current Ice Works structures.

The standing buildings were largely constructed during the site's use as a steam powered corn mill from around 1868 onwards. These included an engine room, six storey mill structure, a house, warehouse and a further outbuilding. The structures of these were largely unaltered, apart from an outbuilding which had been demolished. Very few of the internal features remained visible due to later coverings and insulation added after the buildings were converted to an ice works from 1898. Further buildings were added from this time, most notably a brick structure on the frontage in 1899 which truncated the earliest phase mill building. Further buildings were added at the rear of the property through the 20th century, partly over the former mill pond which was backfilled in the middle of the 20th century.

Report

1 Introduction

1.1 Background to the project

Building recoding was undertaken at the former Ice Works, 174, Bromyard Road, Worcester (NGR SO 82895 54297). The project was commissioned by JJS Developments, in advance of conversion of the main buildings into flats, the construction of new build flats and demolition of a number of the smaller ancillary 20th century buildings. Planning permission has been granted by Worcester City Council subject to a programme of archaeological works (planning reference P15C0371).

The archaeological advisor to the local planning authority considered that the proposed development had the potential to impact upon possible/specific heritage assets. A desk based assessment (Cornah 2015) highlighted the possibility for a mill to have existed on the site from 1086 onwards.

The project conforms to a brief prepared by Worcester City Council Development Management (Worcester City Council 2016a). A WSI was prepared by Worcestershire Archaeology (WA 2016) and approved by the Archaeological Officer, Worcester City Council (the Curator). The building recording also conformed to the industry guidelines and standards set out by the Standard and guidance for the archaeological investigation and recording of standing buildings or structures (ClfA 2014a) and the Guidelines for archaeological work in Worcester (Worcester City Council 2016b)

1.2 Site location, topography and geology

The western side of the City of Worcester is located above the River Severn to the east and the River Teme to the south. The site sits at the western boundary of the city, alongside the Laughern Brook which is itself a tributary of the Teme. The site is situated in a valley created by the Laughern Brook at a height of around 18m AOD.

The solid geology of the site is Sidmouth Mudstone Formation. The superficial deposits are likely to relate to the Laughern Brook and be comprised of clay, silt, sands and gravels. It is possible that some Holt Heath Sand and Gravel that is found in much of the western side of Worcester also extends into the bounds of the site (British Geological Survey 2018). An archaeological evaluation to the south of the site (WSM33363) recorded alluvial deposits within close proximity to Bromyard Road, these are likely to relate to Laughern Brook but the specific composition of any subsurface deposits on site is currently unrecorded.

2 Archaeological and historical background

2.1 Introduction

An archaeological desk-based assessment (DBA) of the site was previously undertaken (Cornah 2015), on behalf of JJS Developments. The findings presented in the DBA are summarised below.

The desk-based assessment highlighted the potential for archaeological features on the site from the Early Mesolithic period onwards. Archaeological remains within the area are limited from the prehistoric period into the Romano-British era, so would potentially be significant if they exist within the present site.

From the medieval period onwards, activity within the area is increasingly recognised. This is likely to have been due to the foundation of the Bromyard Road in the Anglo-Saxon era. Activity of this period has been seen from excavations to the north of the site where the settlement appears to have been agricultural in nature which expanded until the later medieval period.

A number of medieval mill sites have been suggested along the Laughern Brook. New Mill, founded in 1086, is thought to be within the development site. Mapping evidence shows that a mill stood on the site in 1729 which was called both Mudwall Mill and St Johns Mill in the 19th century. It is possible that medieval and post-medieval phases of this mill survive below the present buildings. These, along

with archaeological remains of all periods, are considered likely to be well-preserved in subsurface alluvial deposits relating to the Laughern Brook.

The site was taken over between 1868 and 1873 for use as a corn mill, and this date represents the earliest phase of the standing buildings. These buildings were developed and changed further from around 1900 when the Worcester and Midland Ice Co Ltd took over the site. The extensive cladding put up for conversion of the buildings for cold storage presently obscures almost all potential internal evidence for the earlier use of the buildings.

3 Project aims

The purpose of archaeological building investigation and recording, as defined by the Chartered Institute for Archaeologists, is 'to examine a specified building, structure or complex, and its setting, in order to inform:

- the formulation of a strategy for the conservation, alteration, demolition, repair or management of a building, or structure, or complex and its setting
- to seek a better understanding, compile a lasting record, analyse the findings/record, and then disseminate the results.'

In particular the project will have the following aims, as identified in *An archaeological resource assessment and research framework for the city of Worcester* (version 2.51, dated September 2007):

- Food and drink industries – trading, storage and processing (RP6.12) Identification and investigation of sites associated with the food and drink industries, in particular vinegar and sauce manufacture, and hop trading, storage and processing.

4 Project methodology

A Written Scheme of Investigation (WSI) was prepared by Worcestershire Archaeology (WA 2017). Fieldwork was undertaken between 4 December 2017 and 14 December 2018.

Building recording consisted of a photographic survey of the interior and exterior of the buildings, analysis of their development, annotation of existing survey drawings and measured survey. All photographs were taken with photographic scales visible in each shot where possible. The photographic survey was carried out with a Canon digital SLR camera. All photographs were recorded on a pro-forma Photographic Record Sheet. Annotation of existing ground plans and elevations, and completion of pro-forma Building Record, complemented the photographic record.

The project conformed to the specification for a level 3 survey as defined in the Historic England document *Understanding historic buildings: a guide to good recording practice* (HE 2016). This level of survey is described as 'an analytical record' comprising of 'an introductory description followed by a systematic account of the buildings origins, development and use' (ibid.). This required the following elements of survey.

Survey and drawings

- Plans of all main floors and elevations as existing (provided by client).
- Measured drawings showing the form of any architectural or functional detail not more readily captured by photography.

Photography

- Overall appearance of rooms and circulation areas.
- Detailed coverage of the building's external appearance.

Any detail, structural or decorative, relevant to the building's design, development and use, which does not show on general photographs.

Analysis of the building was based on the study of the photographic record, building recording forms, annotated drawings and measured drawings. It was also informed by the documentary sources listed above. This allowed plans to be drawn up showing the structural development of the building.

The project archive is currently held at the offices of Worcestershire Archaeology. Subject to the agreement of the landowner it is anticipated that it will be deposited with Museums Worcestershire.

5 Results

5.1 Building description

The buildings comprised eleven structures, with the earliest being brick built and dominating the road frontage. This is particularly true of the five storey mill structure which is flanked by ancillary structures such as the house and warehouse. To the rear of these are some later brick structures as well as clad steel framed structures added throughout the 20th century. At the time of this recording, some of the ancillary 20th century structures had already been demolished. The buildings can be seen broadly on (Figs 4-17) and (Plate 1 and Plate 2).

5.2 Historical information

A number of medieval mill sites have been suggested along the Laughern Brook. New Mill, founded in 1086, is thought to be within the site. Mapping evidence shows that a mill stood on the site in 1729 and was called both Mudwall Mill and St Johns Mill in the 19th century. It is possible that medieval and post-medieval phases of this mill survive below the present buildings.

The first detailed mapping of the site was from the tithe map of 1841. The buildings shown bear little relation to the standing structures, apart from the northern end of building C which aligned closely. A phase predating 1841 was therefore possible.

W Hadley was listed as being miller at Lower Wick in 1868 (Kellys Directory), then William Hadley and Son was listed as a steam miller at St Johns Mill in 1873 (Littleburys Directory) so it is considered likely that the current building was started between these dates. This was confirmed by the mapping evidence as the buildings shown on the 1885 Ordnance Survey do not correspond closely with those shown on the 1853 map. The 1885 map also labels the site as St John's Mill (Corn). William Hadley is listed as miller at the site again in 1896 (Kellys Directory) and one John Hardber being journeyman miller at the site in 1897 (Littleburys Directory).

The history of expansion at the site between 1868 and 1873 fits in closely with the general background to milling at this time. William Hadley was listed as a steam miller in 1873. Though the use of steam power was widespread though the 19th century, cereal milling was slow to adapt to the change from traditional water or wind power. Steam milling had been tested in the later 18th century but was not widely adopted until the latter half of the 19th century (Wenham 1989). Even in the later 19th century, there were many mills operating with both water and steam power, as was the case at Droitwich mill (Jones 2012) and it is entirely possible that this was the case here given the continued presence of a mill race. A further development in the latter half of the 19th century was the introduction of roller milling. As with steam power, this method was also first used in the 1790s at the Albion mill in London. The wider take up of this technology was again slow, with the first mill using the rolling method only being constructed in 1870 (Wenham 1989).

The buildings visible on the 1st edition Ordnance Survey map of 1885 are A, B, D, E and building I(2).

The site was taken over by the Worcester and Midland Ice Co Ltd in 1898 who quickly began to adapt the site for their own needs with a building application for building C submitted in 1899. Further planning permission for building I(2) was submitted in 1934 for the creation of an ice cream department with a further for a (no longer extant) shed in 1935. An ex-military Nissen hut, building K, was constructed after a building application of 1942 for the use of Lilly of the Valley Creamery Ices. Building F was also built between the maps of 1905 and 1928 with the small office building H between the mapping of 1934 and 1942. Buildings G and L post-date the 1950 Ordnance Survey map.

5.3 Building development

Six phases were identified during the investigation of the building which was described as follows:

- Phase 1: 18th century to 1841
- Phase 2: 1841 to c 1885
- Phase 3: 1899
- Phase 4: 1905 to 1928
- Phase 5: 1934 to 1942
- Phase 6: post-1950

5.4 Phase 1: 18th century to 1841

The earliest extant structure was a section of wall on the north east side of **building C** (Plate 3) (Figs 3 to 5). This was aligned north to south, turning a corner to run east to west. The Phase 2 mill was built onto this structure with a straight joint (Plate 4), at which point the structure again turned a corner to form a square or rectangular plan. A rectangular plan is likely as drawings for a proposed structure in 1899, to create what is now building C, shows a rectangular building aligned east to west (Plate 5), presumably with its gables at the east and west ends. These gables have at some point prior to 1899 been partially taken down and a gable erected on its northern end. Its southern wall was demolished at first floor level in 1899, with the rest removed to ground level at a later date. Little can also be said of its character at ground floor level on its northern side due to later alterations (Plate 6) although two blocked segmental arch headed windows are present within this elevation, with a further on its eastern elevation. These can be seen on a pre-1934 photograph of the site (Plate 7). Similarly, little can be said of the structure internally due to coverage by later cladding.

The exposed brickwork of this phase is of English garden wall bond. The bricks are thinner gauge than on any other structure on site, being two and a half inches in width. Whilst not conclusive, this may be indicative of a date earlier than the brick tax of 1784 after which bricks were more typically wider gauge. The building aligns closely with one shown on the tithe map of 1841, so clearly predates this. The east to west alignment of this structure is the same as that sketched on the Doharty map of 1729, though the accuracy of the sketch is questionable.

5.5 Phase 2: 1841 to c 1885

The map evidence suggests that all of the buildings within this phase were constructed between 1841 and 1885. An 1853 plan (BA2652) shows the buildings broadly although with a lack of detail so they are difficult to compare closely to the standing structures.

Building D (Fig 12)

Building D was brick built with a low pitch slate roof with its frontage facing the street with sash windows flanking a central door, with three further sashes above (Plate 8 and Plate 9). It was split up internally into two rooms on each floor which are separated by a passage that contained the staircase (Plate 10 to Plate 12). The front of the house was accessed from an off centre doorway, later blocked, which led into the western ground floor room. Secondary doors to access the western and eastern rooms led off the central passage. The western room on the ground floor was heated by a fireplace, for which a chimney can be seen above the western gable. The first floor rooms continued broadly the same layout (Plate 13 and Plate 14). The overall layout is suggestive of domestic space, an interpretation supported by the front windows being lit by sash windows. A further blocked window position was partially visible its eastern ground floor gable, implying that this house predated building E to its east. The softwood roof structure (Plate 15) confirms the original two room layout of each floor with the original back external wall on the north side of the central staircase.

Before the 1885 mapping, the house was extended to the north. This was a ground floor extension only with the first floor added in Phase 4 (Plate 16). It consisted of two rooms, one accessed from the

central passage of the house as well as from the rear, as well a further from the eastern room of the house (Plate 17). These rooms were divided up further in the 20th century.

Building B (Figs 7 to 11)

The single largest addition of this phase was the mill building itself (Plate 18 and Plate 19). Documentary evidence suggests that this was built between 1868 and 1873 by William Hadley as previously outlined (Cornah 2015) and first seen in a photograph of the site in the 1880s (Plate 20). This building had six storeys, each of which, apart from the sixth floor, was lit by five windows at the front, south facing elevation. An off-centre door on each floor gave access out to the street for loading and offloading directly from each floor. The fifth and sixth floor doors were covered by a clad, projecting timber structure known as a Lucam. The overall layout of the windows and doors of the front elevation is regular, a pattern which is repeated on the rear, north facing elevation. The west facing elevation has two windows on the third, fourth and fifth floors, along with a single round window toward the apex of the gable end on the sixth floor. The east facing elevation has two windows on the fifth floor, along with a round window toward the apex of the gable end on the sixth floor. Other windows at lower levels may have existed but are likely to have been blocked at a later date.

The tile roof of the mill was supported by four softwood king post trusses (Plate 21), the tie beam of which was truncated in order to create space on the sixth floor. These trusses were constructed using iron fixings at all of the appropriate joints, many of which were marked with numbers similar to carpenters marks that correspond to those on the timbers adjacent (Plate 22). On a number of principle timbers such as floor joists, further marks were visible of a type that are considered to have been marks placed on softwood at their port of origin, typically the Baltic (Plate 23). These were most often visible on sides of timber that had been hand converted, the remaining sides converted by circular saw.

An internal brick wall ran the entire height of the building, creating two rooms on each floor. The larger of these rooms on the second to fifth floors were further divided for use as cold storage during Phase 4 (Plate 24 to Plate 27). Each floor within this space was supported by four central steel columns, bracketed onto the floor joists above. The exception to this was on the ground floor where four further wooden posts were present beyond the shortened floor joists which did not reach the northern wall and were supported by a cross beam (Plate 28). All of the floors were accessed by a staircase in the south-west corner of the larger room (Plate 29), which was then moved to the smaller room between the ground and first floors (Plate 30). The floor joists have been cut on the second to fourth floors to accommodate the stairs, potentially suggesting it was a later addition despite no other former stair position being evident. It is likely that the stairs were a secondary addition to the original design.

Some idea of the workings of the structure could be suggested from a number of original features. Within the roof space on the fifth floor, a partial mechanism of a winch or pulley system was present that would have lifted materials to all of the floors through door facing onto the frontage (Plate 31). The Lucam created trap door floors on the fourth and fifth floors (Plate 32). A further smaller winch system appears to have been present on the fifth floor to the north of the stairs, as was evident from a blocked attachment to the wall or drive shaft position at this point (Plate 33) along with the same feature and a pattern of ware directly below this on the third floor (Plate 34). Though the evidence was not entirely consistent due to later coverings and modifications, there were two sets of hatches to the east of the internal winch, extending down from the fifth to the first floors (Plate 35). Some ware from the repeated passage of ropes could be seen on the base of these hatches as well as on the banisters of the staircase (Plate 36), strongly suggesting the staircase to have been an original feature. Further wooden hooks were also occasionally present in the vicinity of the staircase (Plate 37).

It is not clear if there was any means of internally dropping materials such as sacks of grain from the first to ground floors. It is possible that the timber posts supporting the northern section of the ground floor (Plate 28) were later insertions and that this section of floor was originally open. Within this possible later insertion were two former timber column heads with heavy bolting attached (Plate 38),

implying the former presence of machinery at these points. It is therefore likely that the milling took place on the ground floor.

A small blocked vertical slot visible on the exterior elevation suggests the probability of drive mechanisms powered from the mill race within the ground floor western room (Plate 39 and Plate 40). The roof in this room was replaced in the 20th century along with elements of the floors above, leaving no evidence of features such as drive shaft or other machinery passing through or within the rooms above (Plate 41 and Plate 42).

A single piece of machinery remained that is likely to relate to this phase (Plate 43) though is clearly not in its original position. This is a piece of belt driven roller milling machinery.

Building A (Fig 6)

The function of this structure and the western smaller rooms of building B are likely to have been closely linked as well as contemporary. A late 19th century photograph of the brick building (Plate 20) shows a substantial brick chimney on its north-west corner, suggesting the presence within the building of a steam engine which powered the machinery within building B. Evidence for the former chimney remained on the exterior of the building (Plate 39). The front gable of the structure also originally contained two tall, wide arch entrances, as would have been required for the ingress of coal loads to power a steam engine (Plate 44).

The structure consisted of a single rectangular ground floor room covered by a low pitch slate roof supported by four softwood king post trusses. An external door was present on the western side, with a further leading into building B to the east as well as two segmental arch headed windows on the northern elevation. A circular grill window was present in the street front gable. As with many other elements of these buildings, later cladding covers much of the structure internally obscuring original details (Plate 45).

Building E (Fig 13)

Building E abutted eastern end of the house, building D, so was therefore later within the phase. The was a brick structure with a low pitch slate roof aligned parallel to the street with the window pattern suggesting two internal storeys, though doors immediately below the apex suggest a further floor within the roof space (Plate 46 and Plate 47). Five segmental arched headed windows faced the elevation onto the street on each floor, a pattern mirrored at its rear though with a pedestrian door replacing one of these on the ground floor. A single window and a door are visible on its western gable and its eastern gable also had two windows on each floor as well as central doorways for the loading of carts. Ventilation can be seen above the apex of the gables at both ends, suggesting a storage space is likely.

Little can be said of the building internally as the floors were removed at a later date and the structure clad with insulation (Plate 48).

Building I(1) (Fig 16)

This brick structure aligned north-east to south-west probably consisted of a single storey only, though a window and ventilation in the north-east gable may suggest a floor within the roof space (Plate 49 and Plate 50). Three segmental arch headed windows faced onto the former mill pond (Plate 7) with a further door on its north-eastern gable. The original configuration of the south-eastern elevation is unknown as there are two extended lintels visible, with blockings of probable 20th century date. The roof was also of 20th century date. This building was not accessed internally.

5.6 Phase 3 1899

Building C (Fig 3)

This structure was the first known addition to the buildings after the Worcester and Midland Ice Co Ltd took over the site in 1898. It can be closely dated due to existing plans dated 1899 (Plate 5) as well as

a date stone below its gable apex (Plate 51). This incorporated and built over the Phase 1 structure as well as being built over and around buildings B and C.

This brick building's gable faced the street and was complete with two segmental arch headed windows with moulded brick hoods. Either side of the gable, brick pilasters extended to wall plate level with a dentilled pediment above. An indented section in the centre of the gable would have held the company name, with a further ware pattern suggesting further signage above at some point. Above this was the date stone.

Ground floor doors to the street frontage existed with further window above, though these had been subject to later changes. An internal door into building B was blocked, though a further added. The plans show that the building was spilt into two rooms on the ground floor with a single room open to the roof on the first floor. All the internal divisions were removed at a later date along with the first floor being replaced. Cladding added to the walls obscured the fabric of this and earlier phases internally (Plate 53 and Plate 54).

5.7 Phase 4 1899-1928

Building F (Fig 14)

The 1928 map shows this building having been built over the mill race which itself was diverted from the course shown on earlier maps.

This phase comprises one building that was added onto the northern side of the Phase 1 element of building C (Plate 55). This is a single storey brick building with a hipped roof which has been replaced in the late 20th century. It has a door and a window facing west and two further windows facing north. The mill race is partly visible underneath this building and it is likely that the heat exchange bars visible to its west to the rear of the mill building (Plate 56), relate to this phase. A number of machine settings were visible within this building (Plate 57).

It is likely that many of the internal changes seen through the earlier mill buildings relate to this time when it was converted for use as cold storage and ice works (Plate 25, Plate 26, Plate 41, Plate 42). This is particularly true of most of the floors of **building B** which had its windows bricked up and cladding inserted. The cladding largely took the form of tongue and groove boarding at a distance of approximately ??? from the exterior walls, and the gap filled fibrous material. This was true of all the rooms except the ground and first floor stair well and the smaller ground floor room. On the first to fifth floors, the larger rooms had their south western corners reduced by the addition of insulated walls and similarly insulated doors (Plate 58). Elongated holes cut into the wooden floors demonstrate that chilled air movement was required vertical through the structure. This is shown from a thermometer within building B (Plate 60) with the red lines show a normal range of between 28° to 33° Fahrenheit (-2.2° to 0.5° Celsius). This thermometer is of very close similarity to those shown in a sales catalogue in 1923 (Ultimheat 2018). An earlier 20th century photo shows ice storage within one these buildings (Plate 59).

The ground and first floor rooms of building B contained entrances without door into **building C**, which also its windows bricked. This indicates the same function for this building though the original cladding was later replaced by rolls of glass fibre and battens (Plate 53 and Plate 54). It is likely that the internal divisions and first floor visible on the building original application (Plate 5) were removed at the time of the glass fibre insulation being inserted, as the floor is of a later 20th century character. This again had holes within it to allow air flow between the ground and first floors.

Building E at some point which is not clear had it internal flooring and possible internal divides removed to create one large room. The cladding which remained within this building was covered by aluminium sheeting on the walls and foam boarding on the ceiling of types indicating a later 20th century date. These coverings entirely obscured the earlier elements internally (Plate 48) though the brick used to block the windows were not indicative of a later 20th century date, suggesting that the internal changes took place before the remaining cladding was installed.

It is probable that the first floor added onto the rear of **building D** was of this date (Plate 16). It was accessed by concrete steps and split into two rooms (Plate 61 and Plate 62). The roof was also altered, removing the earlier **building D** roof.

5.8 Phase 5 1934-1942

Building I(2) (Fig 16)

A two storey building was added onto the south-western end of building I(1) (Plate 63 and Plate 64). A 1934 planning application exists for this (Plate 65), and describes it as an extension to the ice cream department, for which building I(1) had been converted by this date.

It was a further brick building on the same alignment as building I(2) with two rooms on the ground floor and a single room on the first floor, though these could not be accessed. It had wide rectangular window on the first floor north-western, south-western and south-eastern elevations with those on the south-eastern elevation split by a door accessed from an external stair case.

The ground floor was accessed from a door on at the southern corner, with further rectangular window on the south-western and north-western elevations.

Building H (Fig 15)

This building was not illustrated on the plan of the site in the drawings for building I(2), neither is it on the 1938 OS map. It is first shown on plans for building K in 1942 (see below). It consisted of a brick structure of three rooms with a flat concrete and felt roof above (Plate 66). The central room was the yard managers office, with the northern room likely to have been an office also. The southern room was a plant room (Plate 68).

Building K (Fig 15)

The plans for this structure were submitted in 1942 (Plate 69), and it consisted of an ex-military Nissen hut with a rounded corrugated metal roof on a low brick plinth wall (Plate 70). This building was not accessed internally.

5.9 Phase 6 Post 1950

Buildings G, J and L post-date the 1950 OS map and are recorded in photographic form only on (Plate 71 to Plate 74), though could not all be accessed internally.

Throughout the latter half of the 20th century and into the start of the 21st, the Ice Works buildings were increasingly used for cold storage, most notably hops (Plate 75).

6 Discussion

The earliest phase of the standing buildings are likely to relate to the mill building illustrated on the Doharty map of 1729. This remained in the form of a rectangular brick structure, although its original form could not be clearly determined due to later heavy alteration. This was Mudwall Mill as it was named in 1853. It was named as St Johns Mill in 1884.

The buildings took on much of their extant form in around 1868 when W Hadley, formerly the miller at Lower Wick, took over the site. It is certainly the case that buildings A, B, D, E and I(1) were constructed between this date and the time of the 1st edition Ordnance Survey map of 1885. Together these formed a house, mill building, engine room, warehouse and an outbuilding.

William Hadley and Son were listed as steam miller in 1873 and it clear that the buildings A and B were designed together as a steam powered mill, though potentially retaining the ability to harness the power of the adjacent mill race within the new structures. It is possible that these buildings operated in tandem with the earlier mill structure, which appears to have remained intact up until 1899. The buildings of this phase remained largely intact structurally, but many of their internal features had been either removed, or were covered by later insulation. Despite this, evidence for

internal and external hoisting remained, along with potential machine setting positions on the ground floor.

The site was taken over by the Worcester and Midland Ice Co Ltd in 1898 who quickly began to adapt the site for their own needs, with a planning application for building C submitted in 1899. All subsequent buildings on the site were related to either ice and ice cream production or cold storage. This phase dominated the internal character of many of the structures as a large amount of internal insulation was added and many of the former mills windows blocked up. A number of original features of this period remained, most notably the large internal insulation doors, a thermometer of probable 1920s date and evidence of later hop cold storage.

7 Conclusions

Despite the documentary evidence suggesting the presence of a mill on the site from 1086, only a single brick structure likely to have been that mapped in 1729 was identified during the building recording. The position of this brick structure went a long way to confirm the presence of the historic mill in broad position of the later Ice Works structures.

The buildings were largely constructed during the site's use as a steam powered corn mill from around 1868 onwards. These included an engine room, six storey mill structure, a house, warehouse and a further outbuilding. The structures of these were largely unaltered, apart from the outbuilding which had been demolished. Very few of the internal features remained visible due to later coverings and insulation added after the buildings were converted to an ice works from 1898. Further buildings were added from this time, most notably a brick structure on the frontage in 1899 which truncated the earliest phase mill building. Various further buildings were added at the rear of the property through the 20th century, partly over the former mill pond which was backfilled in the middle of the 20th century.

The methods adopted allow a moderately high degree of confidence that the aims of the project have been achieved. Many of original features of the 18th and 19th century mills were truncated or covered by its conversion to an ice production and cold storage facility.

8 Project personnel

The project was led by Tim Cornah, ACIfA, and managed by Tom Vaughan, MCIfA. Illustrations were prepared by Carolyn Hunt, MCIfA.

9 Acknowledgements

Worcestershire Archaeology would like to thank the following: Paul Farley and Kelvin Sparrey (JJS Developments) and James Dinn (Archaeological officer, Worcester City Council).

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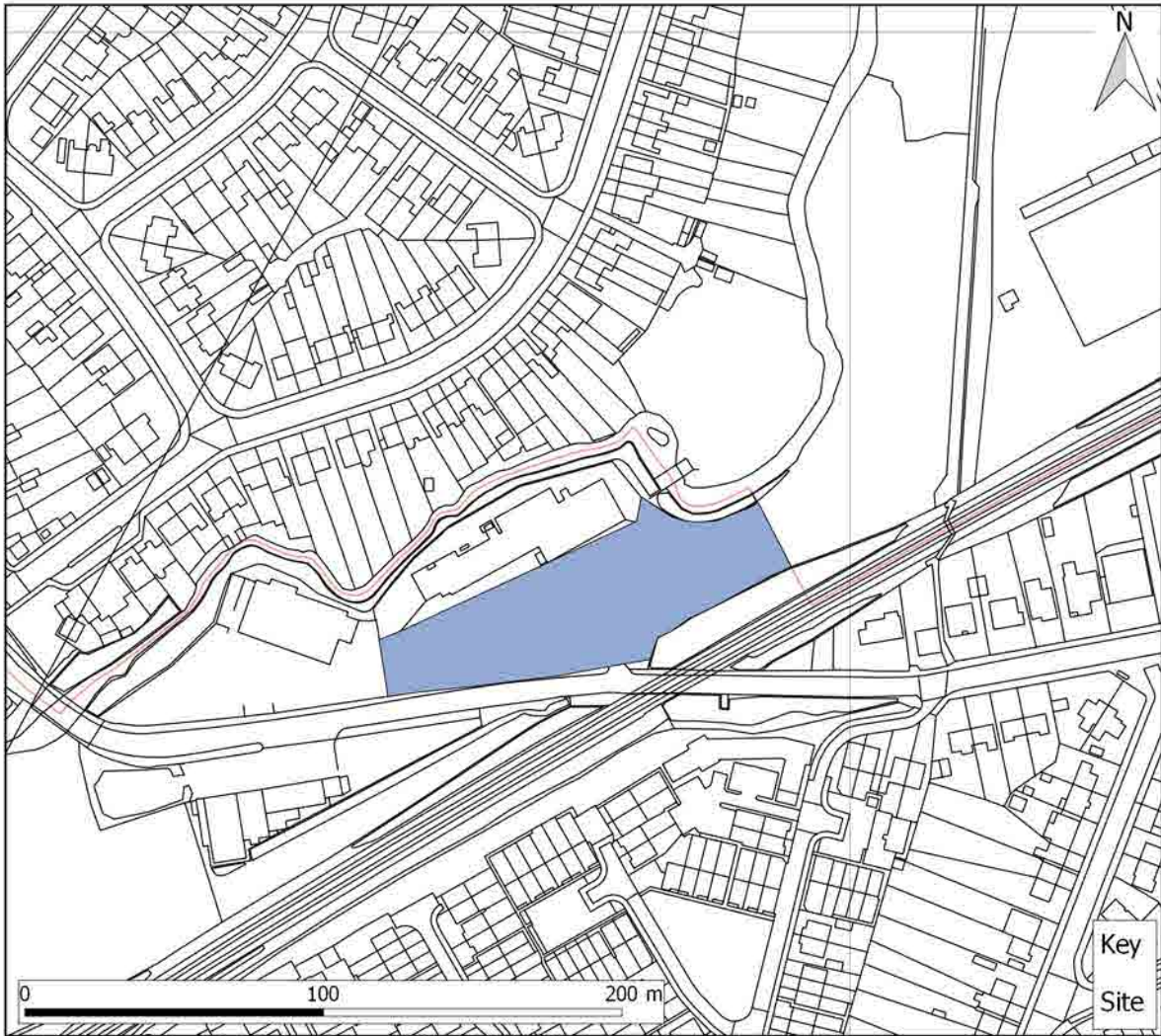
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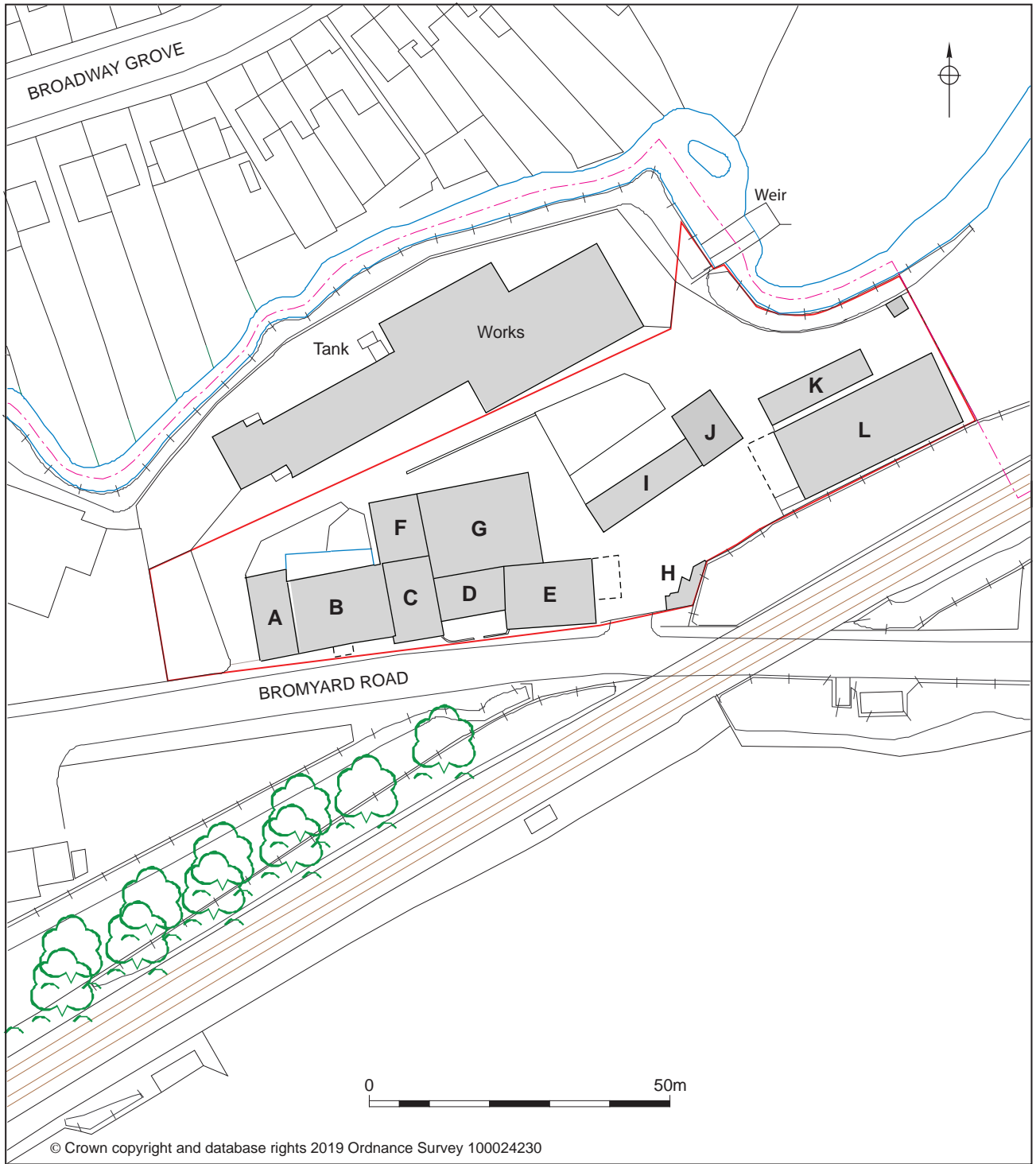
Figures



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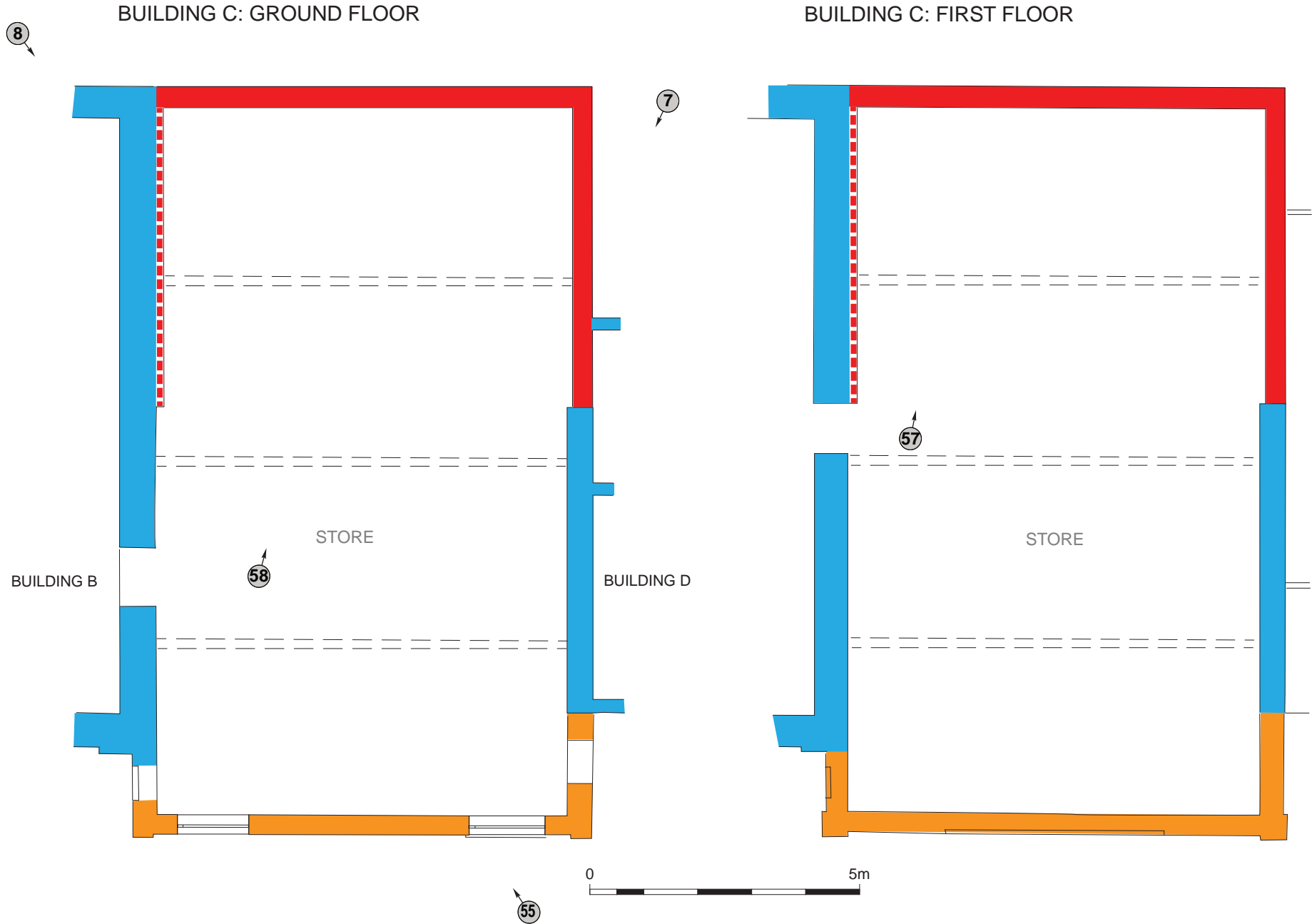
Location of the site

Figure 1



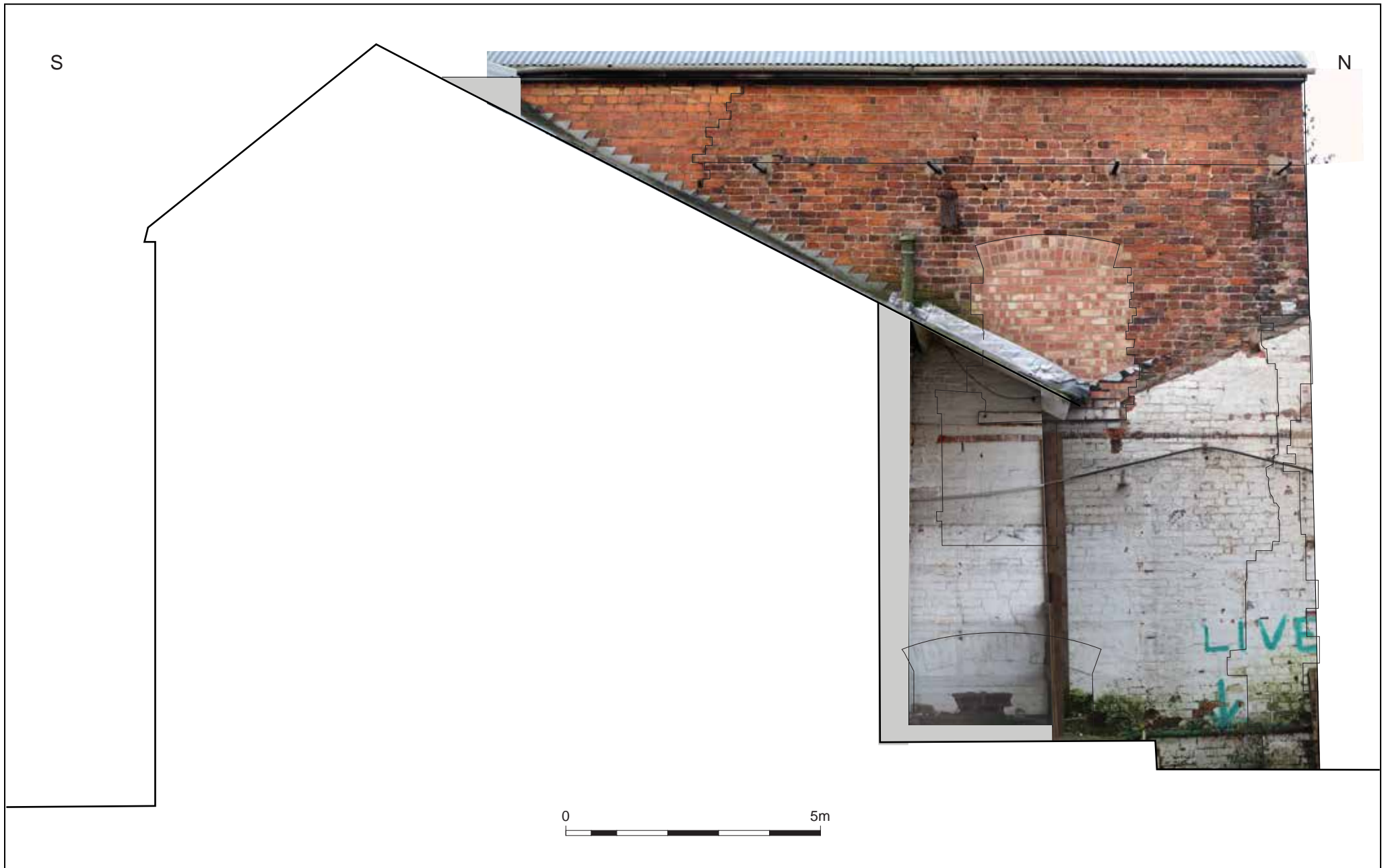
Plan of buildings

Figure 2



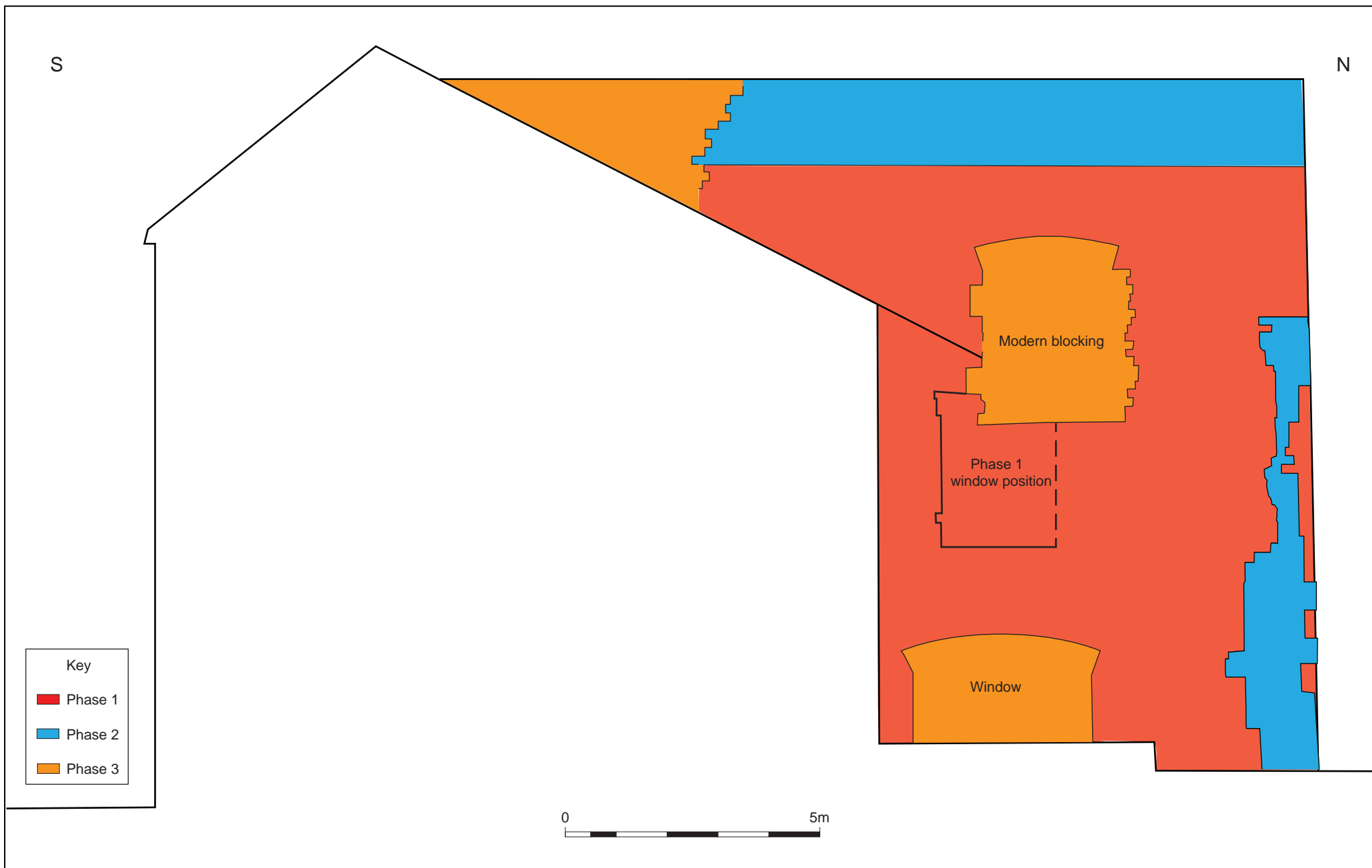
Building C: Ground Floor and First Floor phased plans

Figure 3



Phase 1 photo elevation

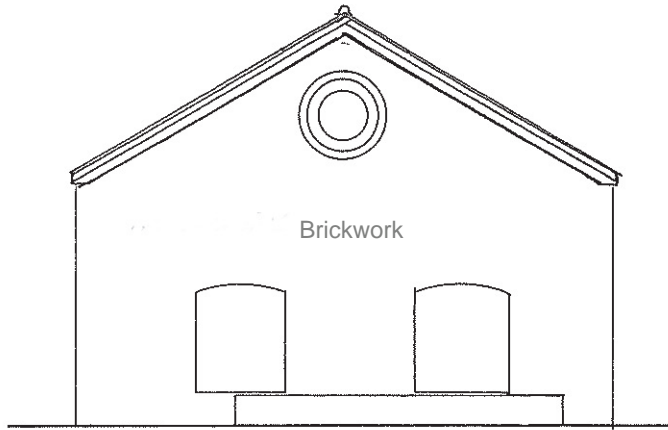
Figure 4



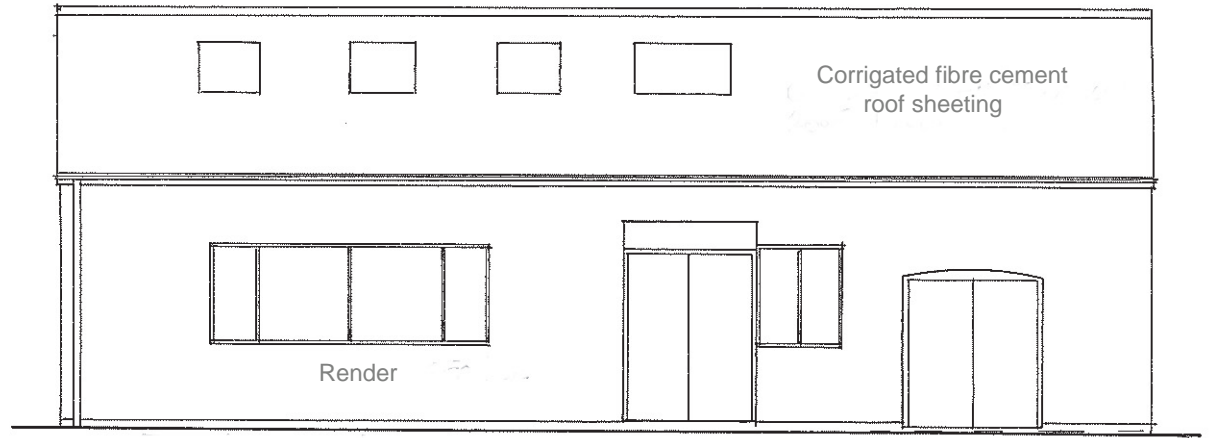
Phase 1: interpretation of elevation (see Fig 6)

Figure 5

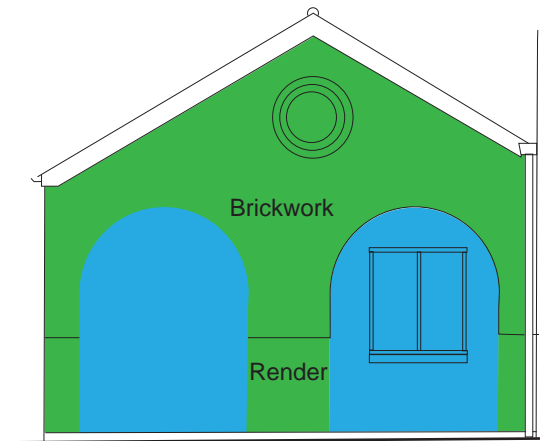
BUILDING A: NORTH ELEVATION



BUILDING A: WEST ELEVATION



BUILDING A: SOUTH ELEVATION

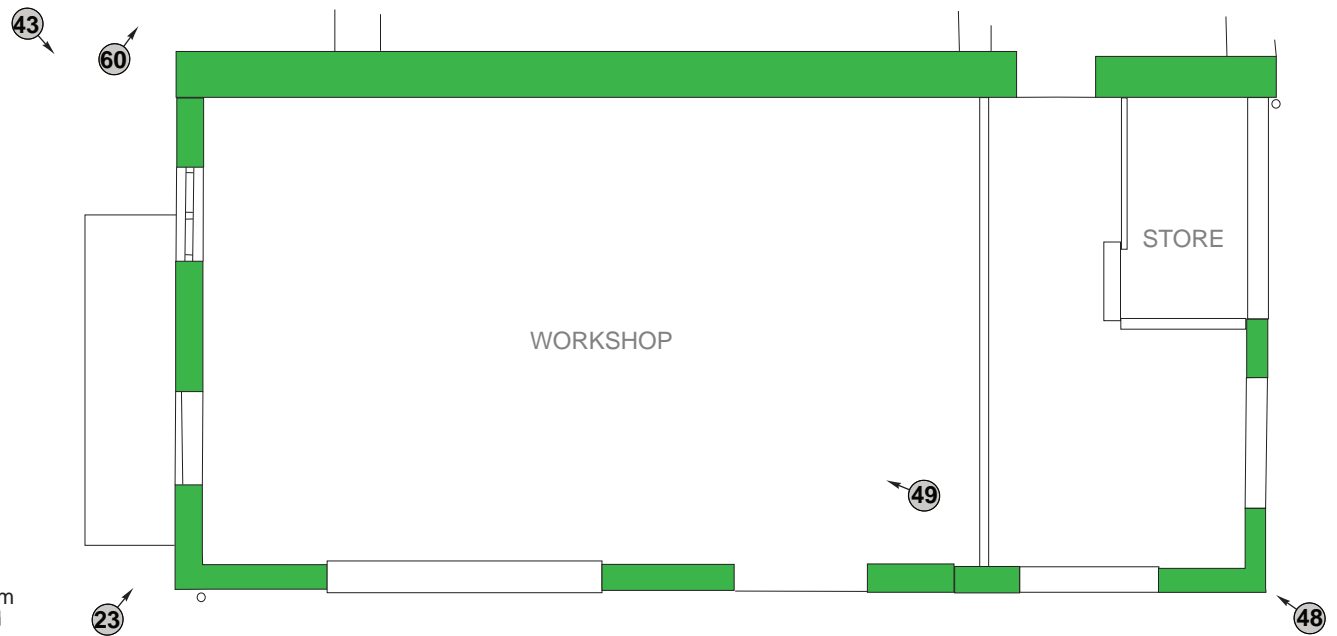


Key

- Phase 2
- Phase 4

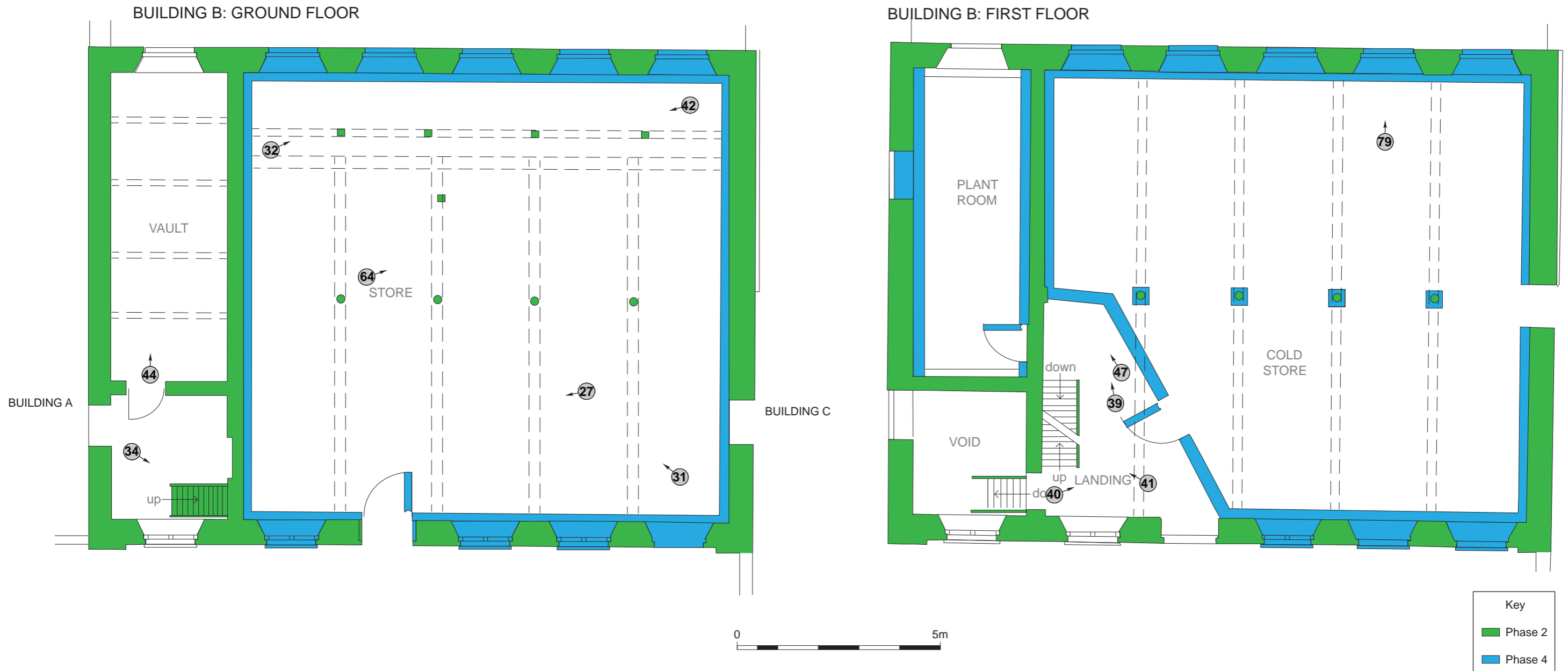


BUILDING A: GROUND FLOOR PLAN



Building A: Plan and elevations

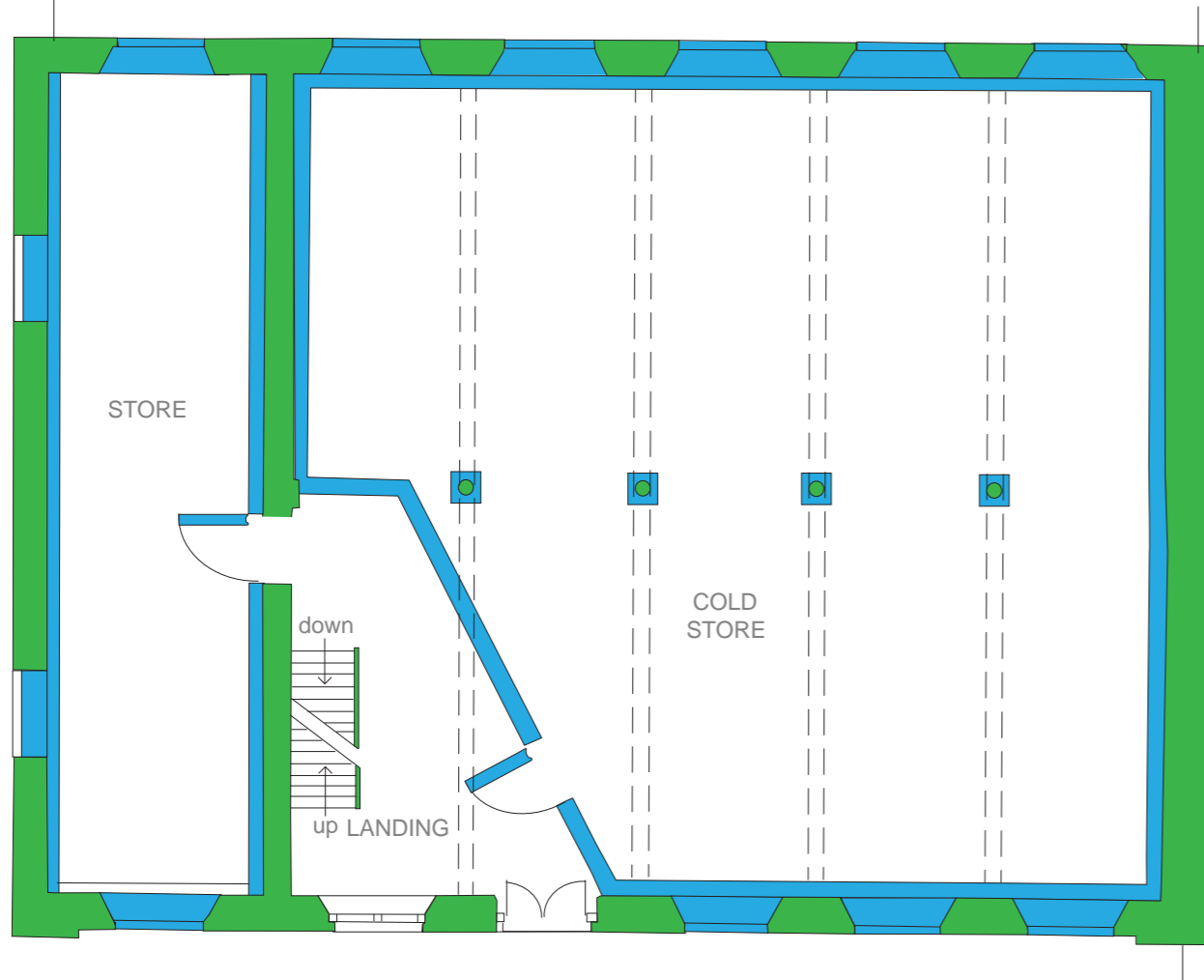
Figure 6



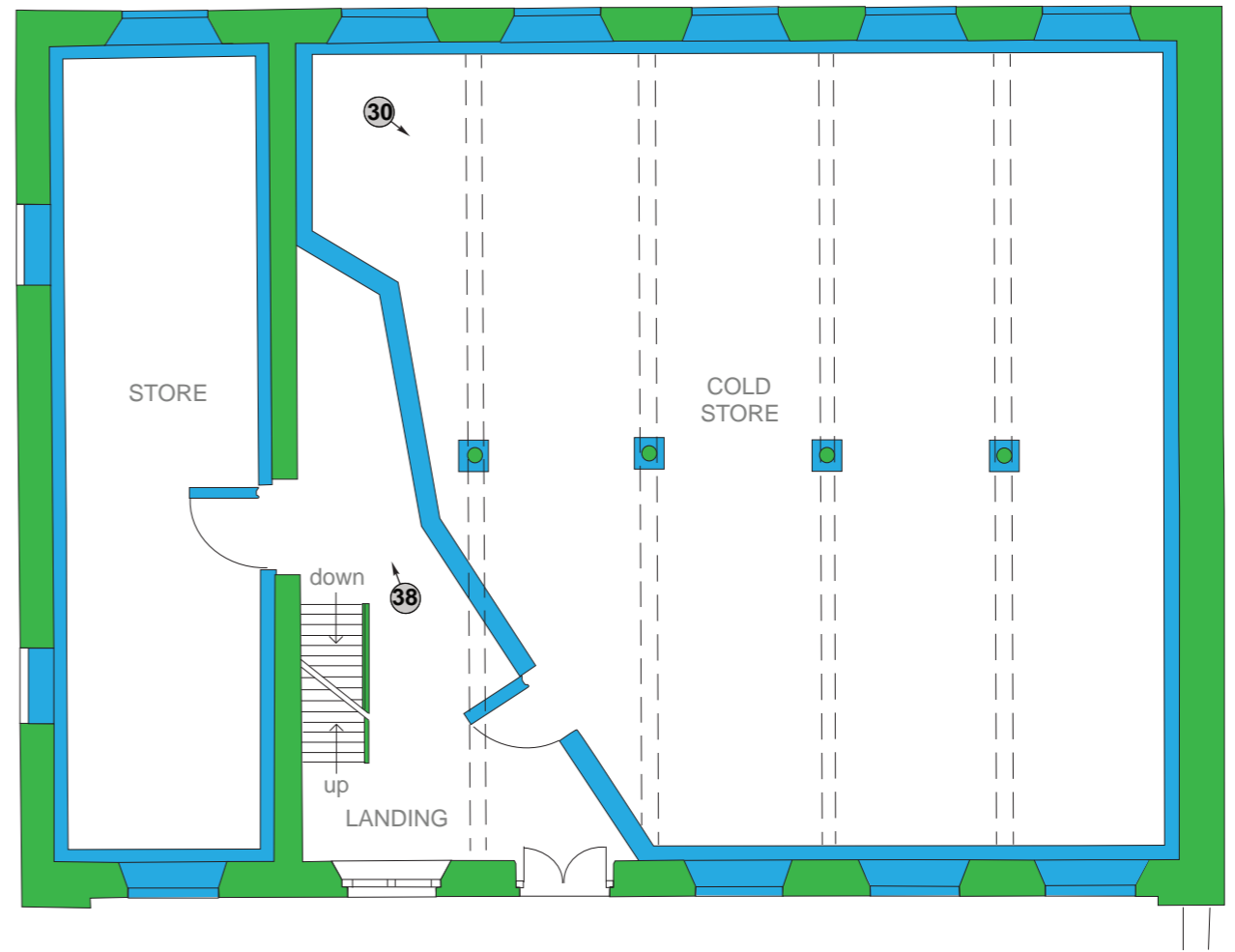
Building B: Ground Floor and First Floor phased plans

Figure 7

BUILDING B: SECOND FLOOR



BUILDING B: THIRD FLOOR

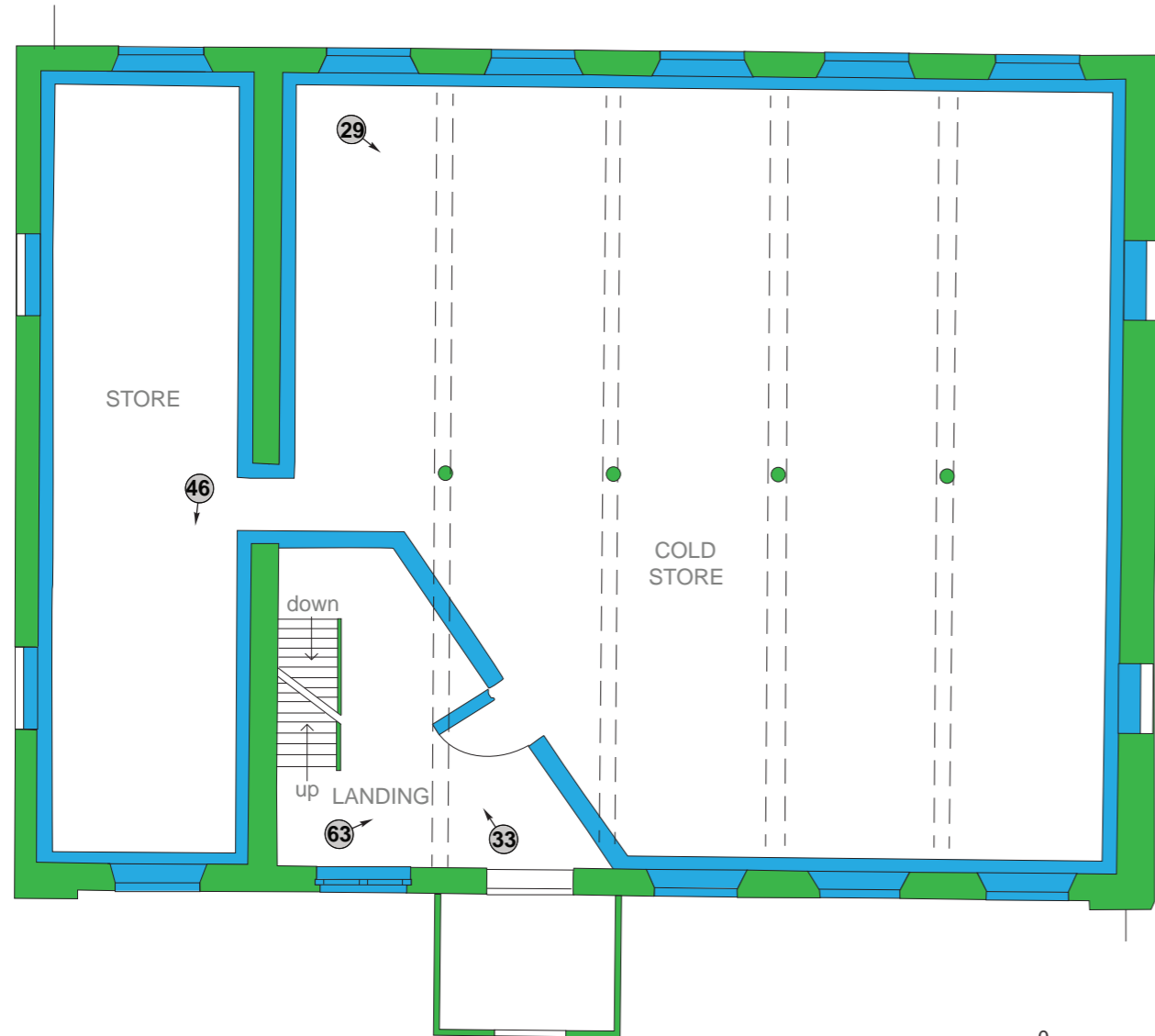


Key	
■	Phase 2
■	Phase 4

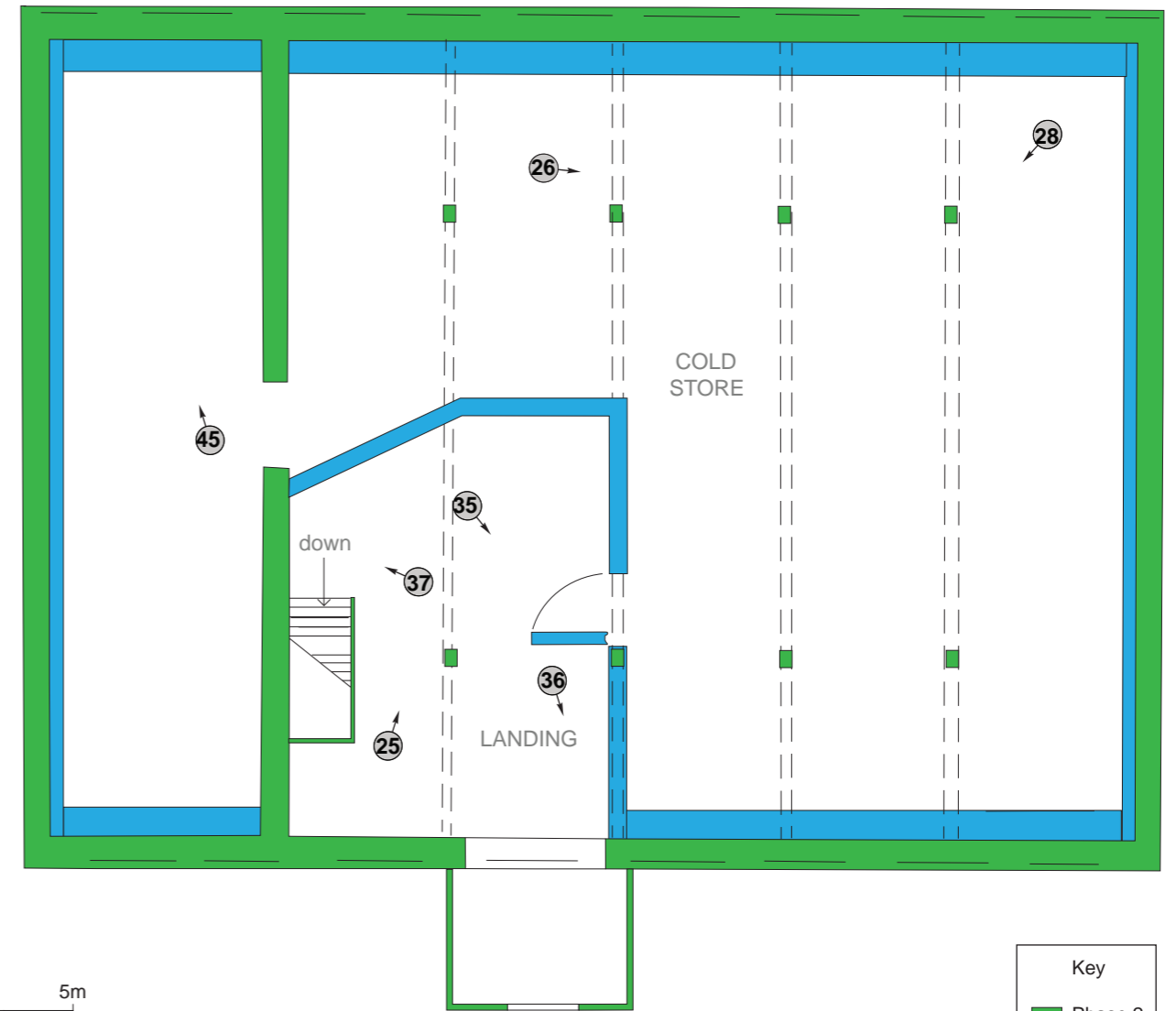
Building B: Second Floor and Third Floor phased plans

Figure 8

BUILDING B: FOURTH FLOOR



BUILDING B: FIFTH FLOOR



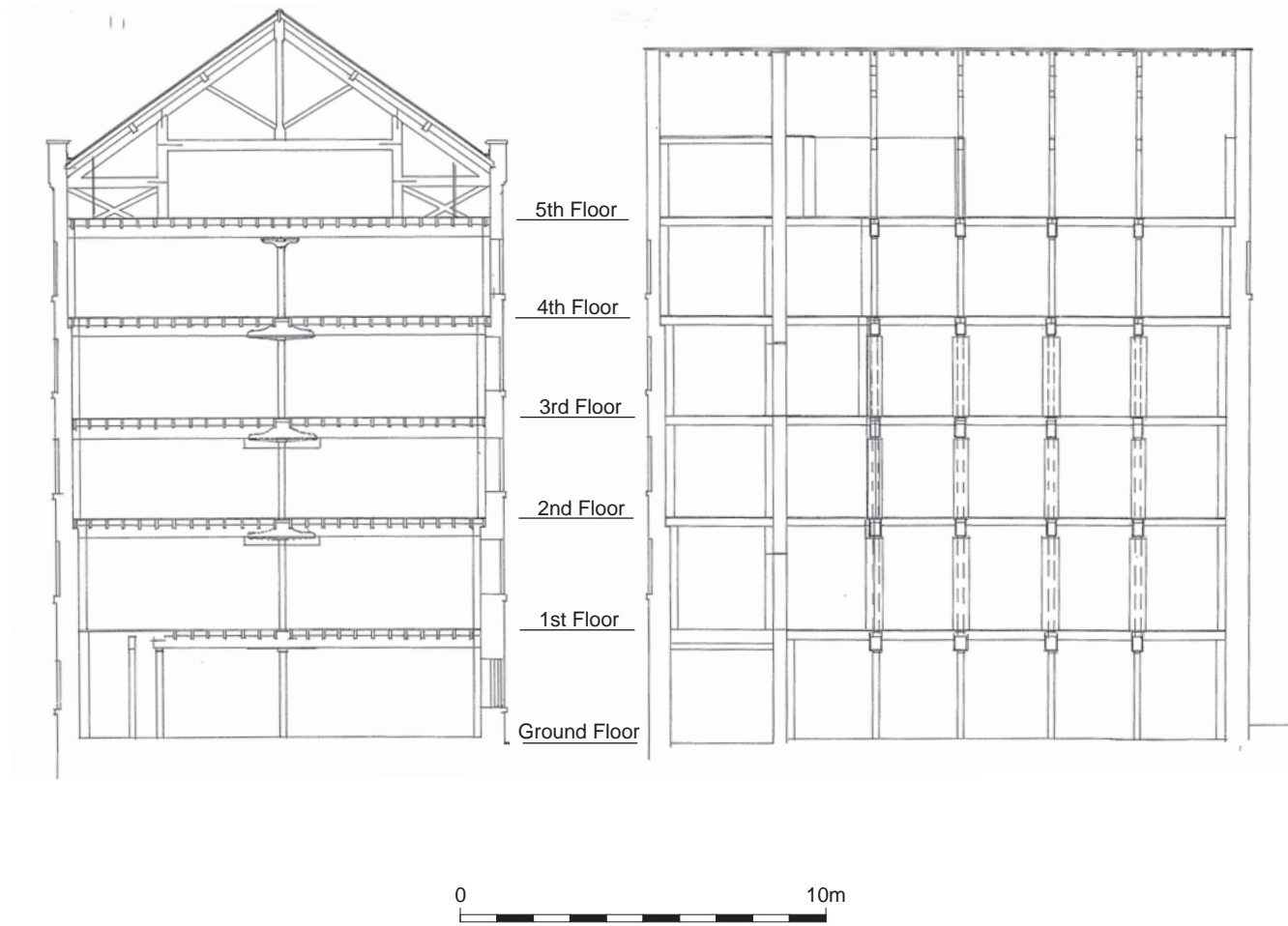
0 5m

Key	
■	Phase 2
■	Phase 4

Building B: Fourth Floor and Fifth Floor phased plans

Figure 9

BUILDING B: SECTIONS



Building B: Sections

Figure 10

BUILDING B: ELEVATIONS

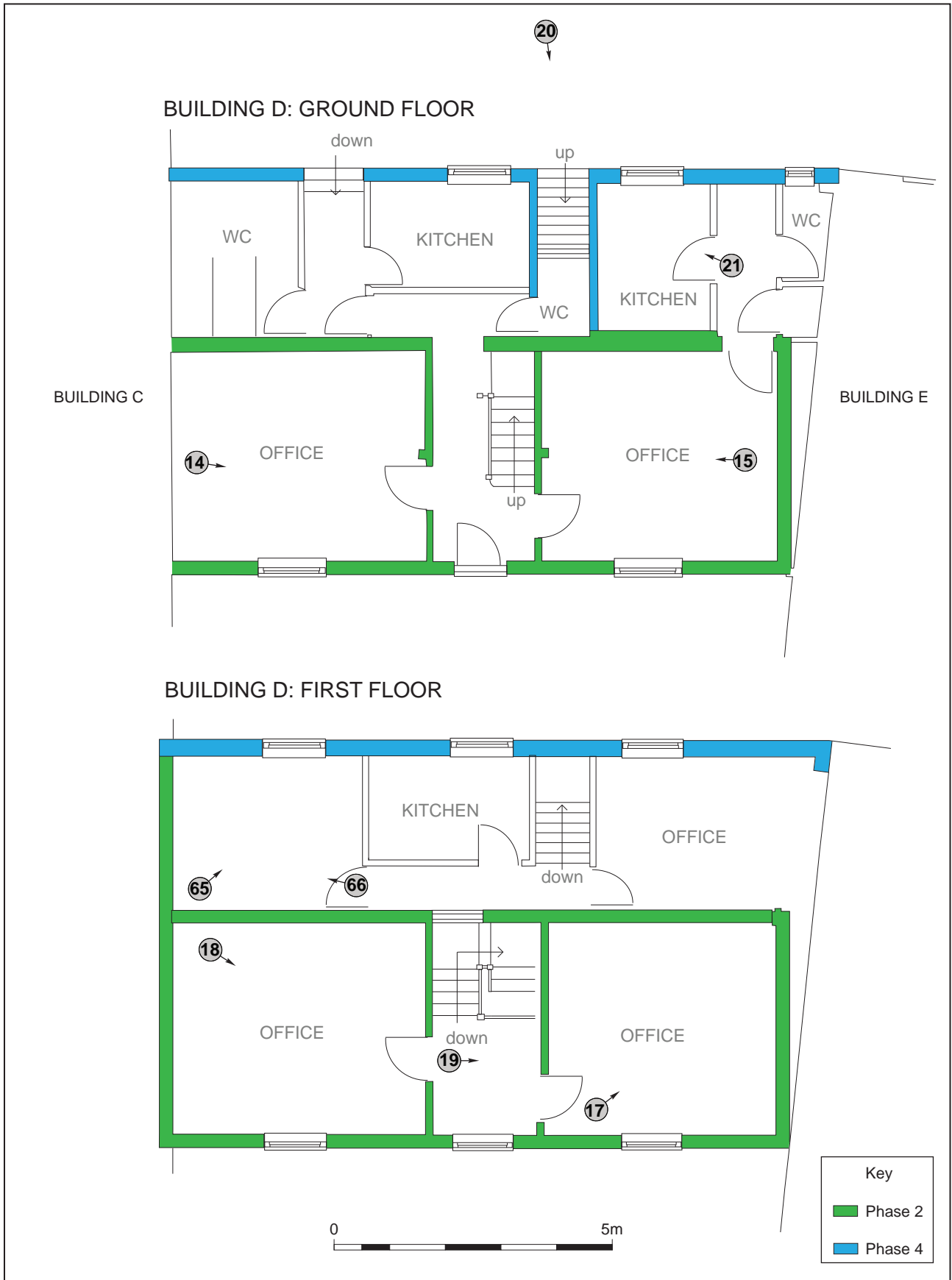
Front - south

Back - north



Building B: South and North elevations

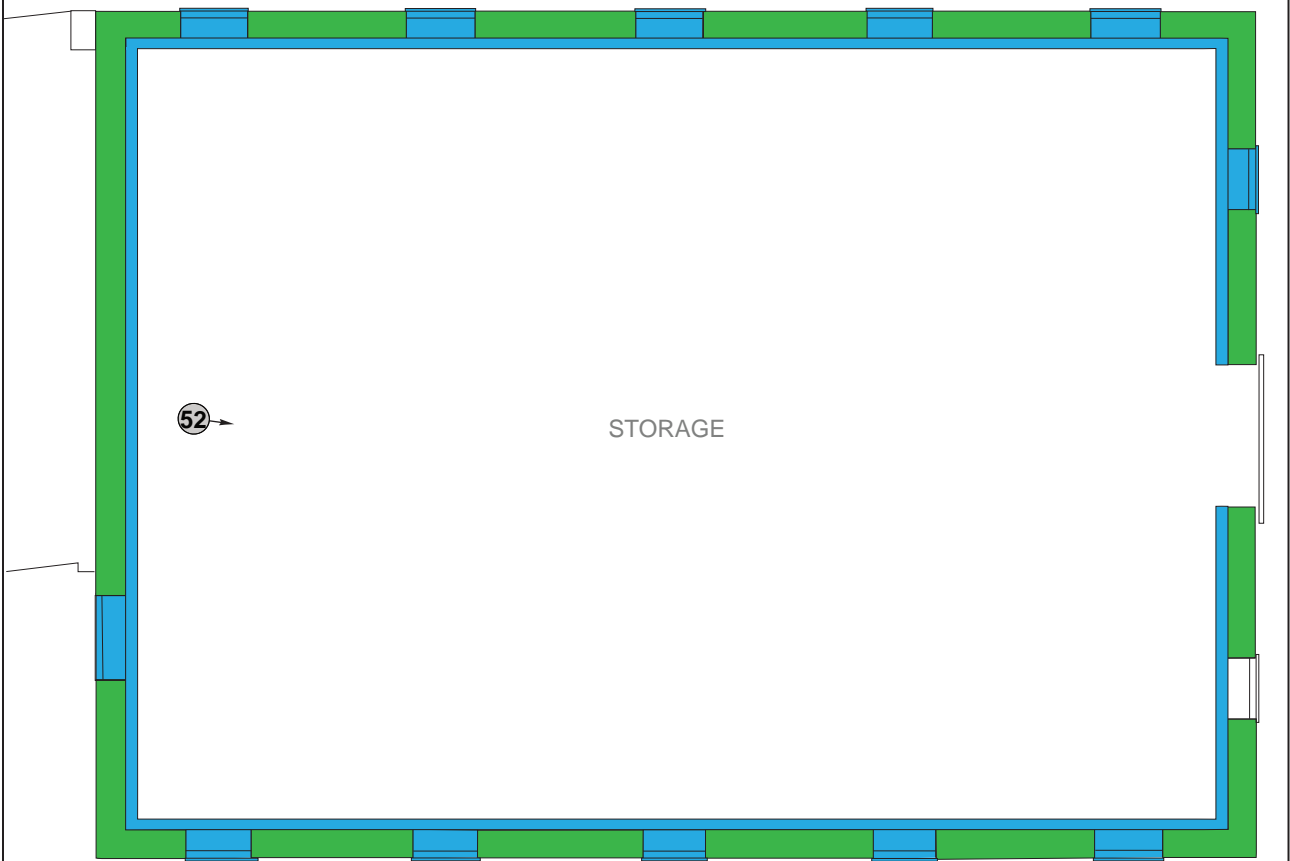
Figure 11



Building D: Ground Floor and First Floor phased plans

Figure 12

BUILDING E: GROUND FLOOR



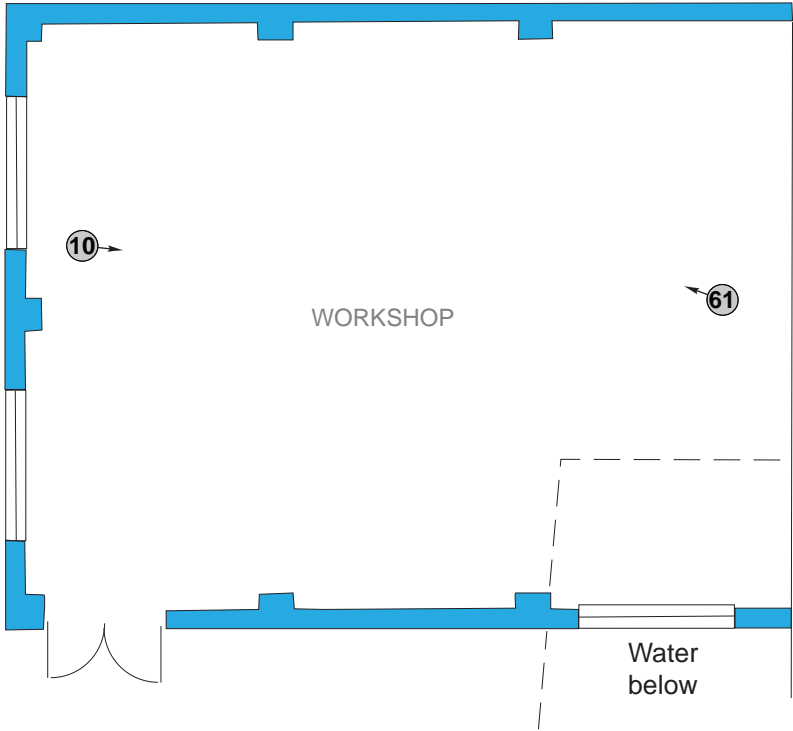
0 5m

Key	
■	Phase 2
■	Phase 4

Building E: Ground Floor phased plan

Figure 13

BUILDING F: GROUND FLOOR



59

10

61

WORKSHOP

Water below

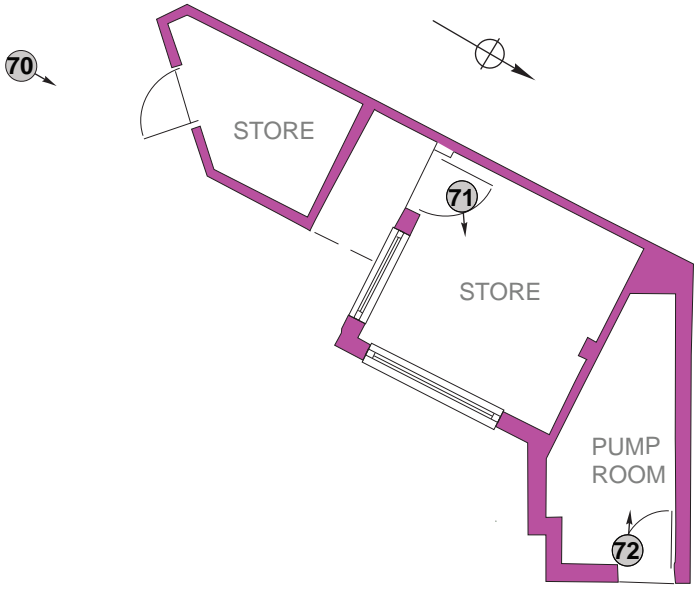


Key
Phase 4

Building F: Ground Floor phased plan

Figure 14

BUILDING H: GROUND FLOOR PLAN



BUILDING K: GROUND FLOOR PLAN



Key
Phase 5



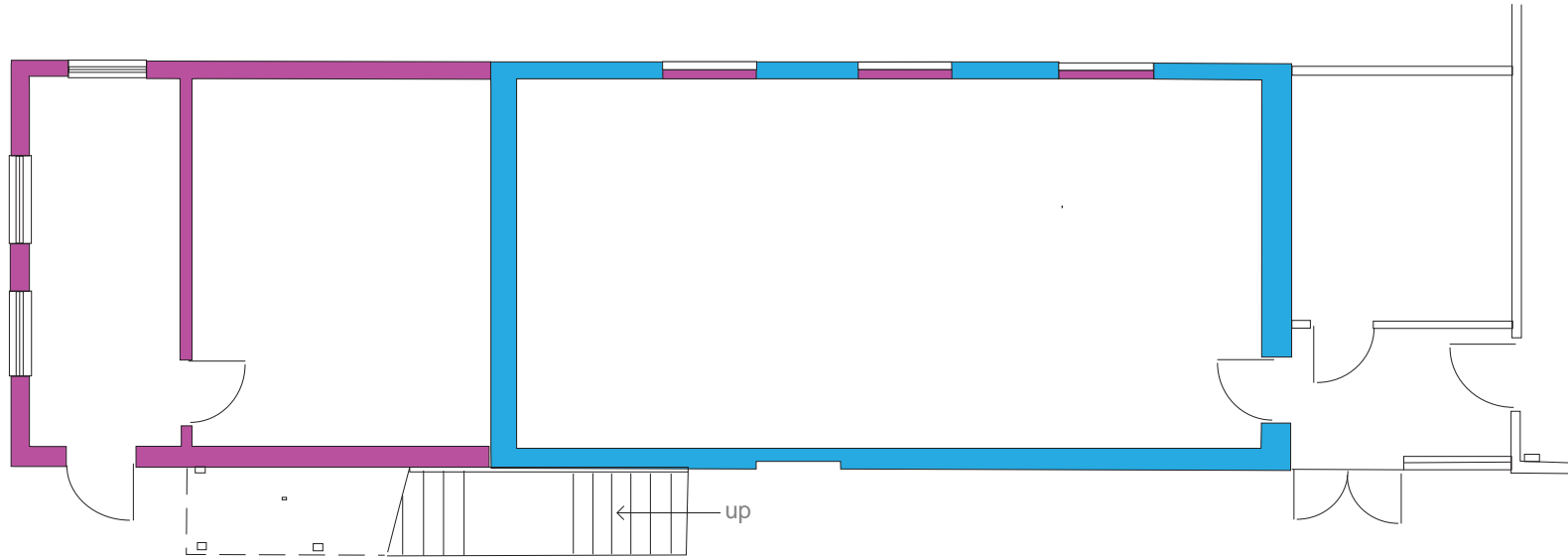
74

Buildings H and K: Plan

Figure 15

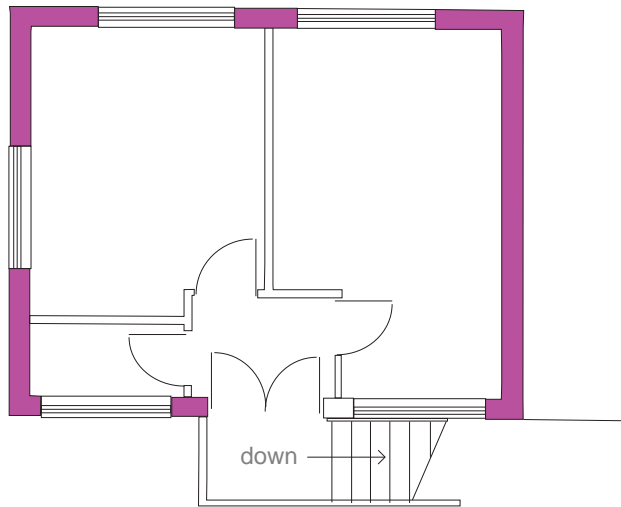
68

BUILDING I: GROUND FLOOR

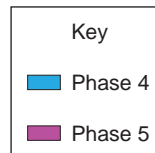


67

BUILDING I: FIRST FLOOR



53



Building I: Ground Floor and First Floor phased plans

Figure 16

Plates



Plate 1 The former Ice Works buildings, looking north-east



Plate 2 The former Ice Works buildings, looking north-east



Plate 3 Phase 1 structure, looking south-west



Plate 4 Phase 1 structure, looking south-east

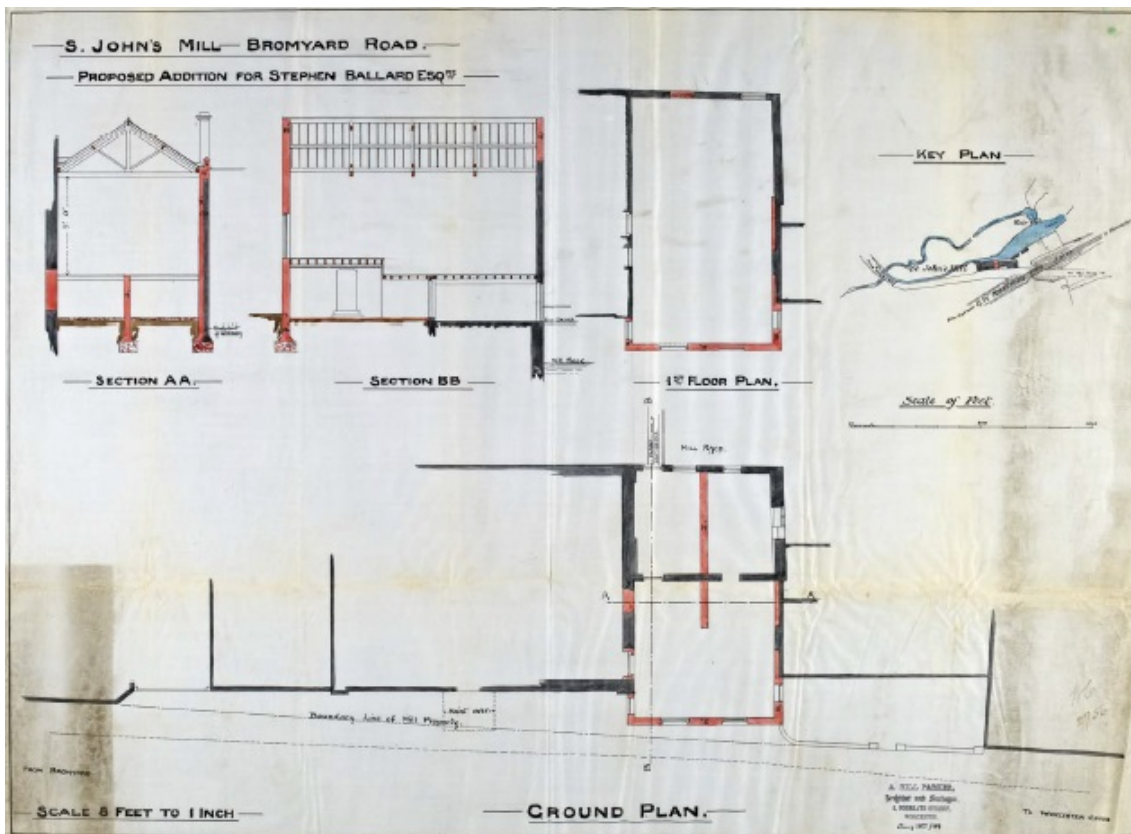


Plate 5 Building C original plans, St Johns Mill- Bromyard Road-Proposed addition, (Building application number 2756)



Plate 6 Phase 1 structure from within building F, looking south



Plate 7 Early 20th century a view across the former mill pond, looking south-west (reproduced courtesy of Worcester and Midland Coldstores Ltd)



Plate 8 Building D c 1890-1910, looking north-east (reproduced courtesy of Worcester and Midland Coldstores Ltd)



Plate 9 Building D, looking north



Plate 10 Building D ground floor, looking east



Plate 11 Building D ground floor, looking west



Plate 12 Building D first floor, looking south



Plate 13 Building D first floor, looking east



Plate 14 Building D first floor, looking south-east



Plate 15 Building D roof space, looking east



Plate 16 Building D rear extension, looking south



Plate 17 Building D rear extension ground floor, looking west



Plate 18 Building B, looking north-east



Plate 19 Building B, looking south-east



Plate 20 Buildings A, B, D and E in the early 1880s, looking north-east. Note the sack in the process of being lifted below the lucam (reproduced courtesy of Worcester and Midland Coldstores Ltd)



Plate 21 Building B fifth floor roof trusses, looking north



Plate 22 Building B fifth floor roof truss fastening and marks, looking east



Plate 23 Building B ground floor ceiling joists Baltic timber marks, looking east



Plate 24 Building B fifth floor, looking south



Plate 25 Building B fourth floor, looking south-east



Plate 26 Building B third floor, looking east



Plate 27 Building B ground floor, looking north-west



Plate 28 Building B ground floor, looking north-east



Plate 29 Building B fourth floor, looking north-west



Plate 30 Building B ground floor, looking south-east



Plate 31 Building B fifth floor hoist machinery, looking south-east



Plate 32 Building B fifth floor lucam interior, looking south



Plate 33 Building B fifth floor possible drive shaft hole, looking west



Plate 34 Building B third floor possible drive shaft hole, looking west



Plate 35 Building B first floor hatch, looking north



Plate 36 Building B first floor ware on stairs hand rail, looking east



Plate 37 Building B first floor wooden hook, looking north-west



Plate 38 Building B ground floor possible machine positions, looking east



Plate 39 Buildings A and B, looking south- west



Plate 40 Building B ground floor, looking north



Plate 41 Building B fifth floor, looking north



Plate 42 Building B fourth floor, looking south



Plate 43 Building B first floor, rolling mill machinery



Plate 44 Building A, looking north-east



Plate 45 Building A interior, looking north



Plate 46 Building E, looking north-east



Plate 47 Building E, looking west



Plate 48 Building E interior, looking east



Plate 49 Building I, looking north-west



Plate 50 Building I, looking south



Plate 51 Building C, looking north-west



Plate 52 Buildings A, B, C and E in the early 20th century, looking north-east (reproduced courtesy of Worcester and Midland Coldstores Ltd)



Plate 53 Building C first floor, looking north



Plate 54 Building C ground floor, looking north



Plate 55 Building F, looking south-east



Plate 56 Coolant bars to the west of building F within the former mill race, looking south-east



Plate 57 Building F interior machine bases, looking north-east



Plate 58 Building B fourth floor. looking north-east



St. John's Works—Ice Warehouse (500 tons reserve kept in this building).

Plate 59 Early 20th century photograph of ice storage within the buildings (reproduced courtesy of Worcester and Midland Coldstores Ltd)

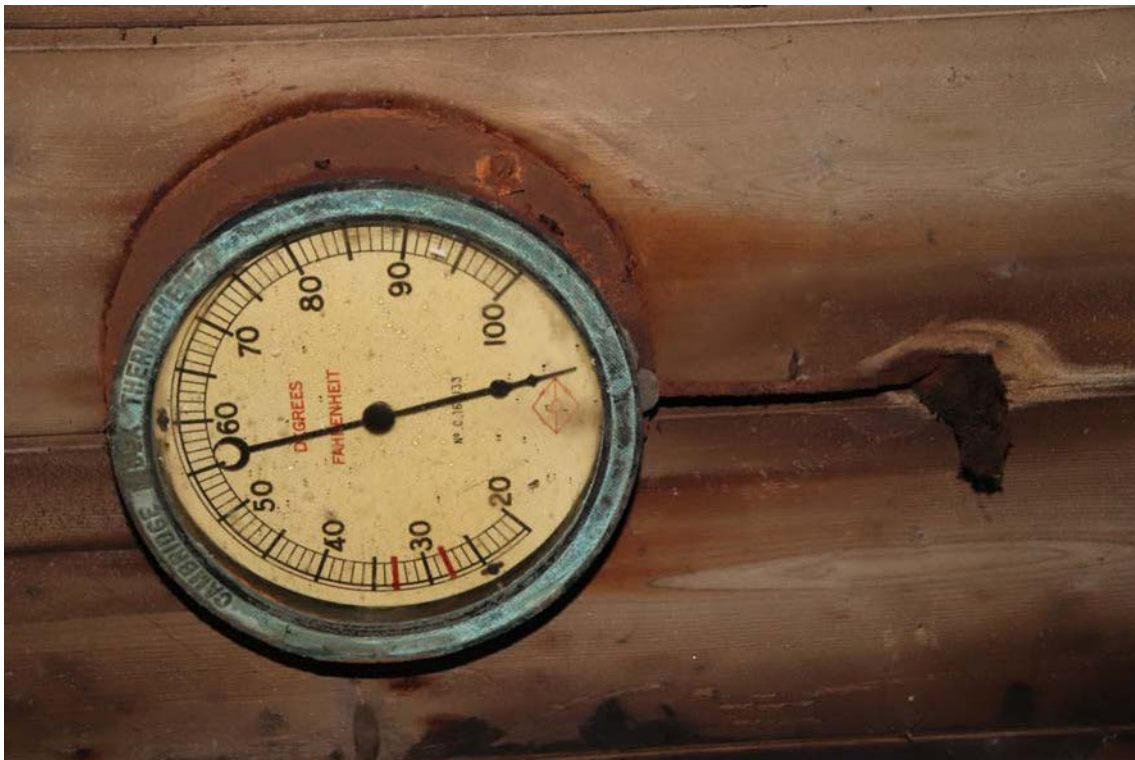


Plate 60 Building B ground floor 1920s thermometer



Plate 61 Building D first floor extension, looking north-east



Plate 62 Building D first floor extension, looking west



Plate 63 Building I, looking north



Plate 64 Building I, looking south-west

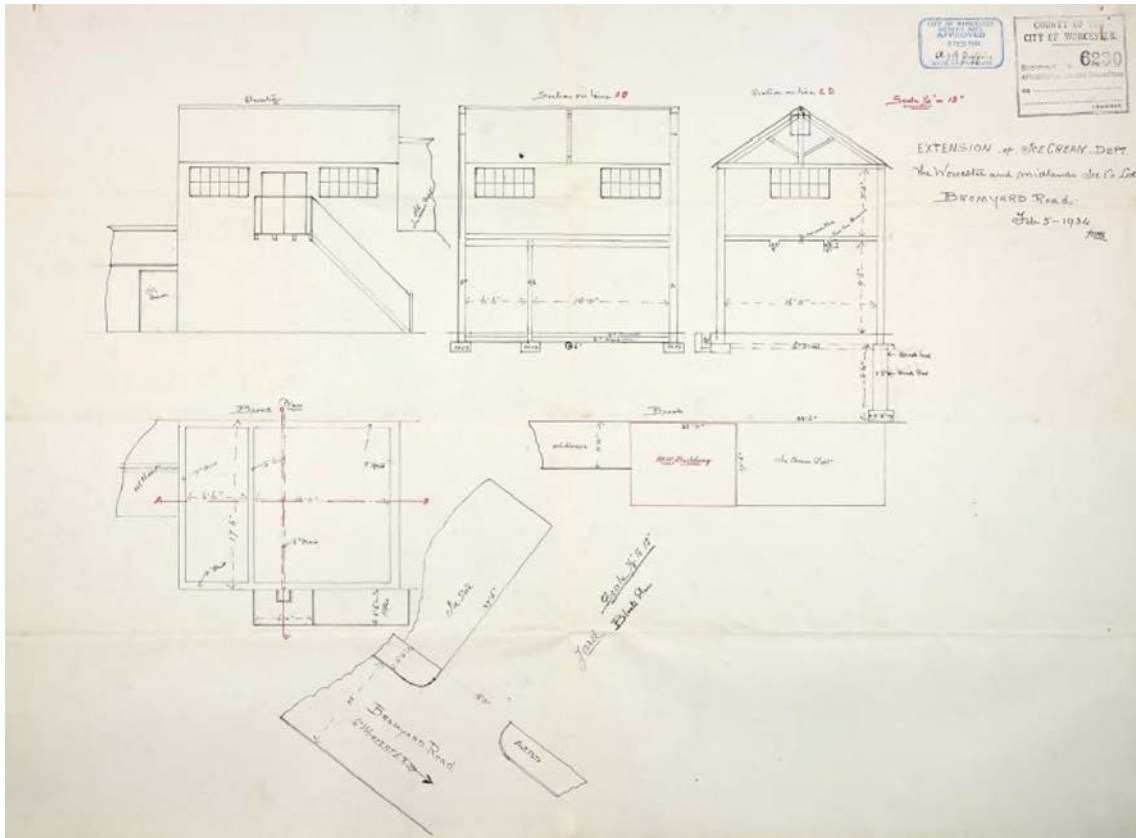


Plate 65 Building I 1934 planning application drawing (Building application number 6230)



Plate 66 Building H, looking south



Plate 67 Building H, looking south-west



Plate 68 Building H, looking east

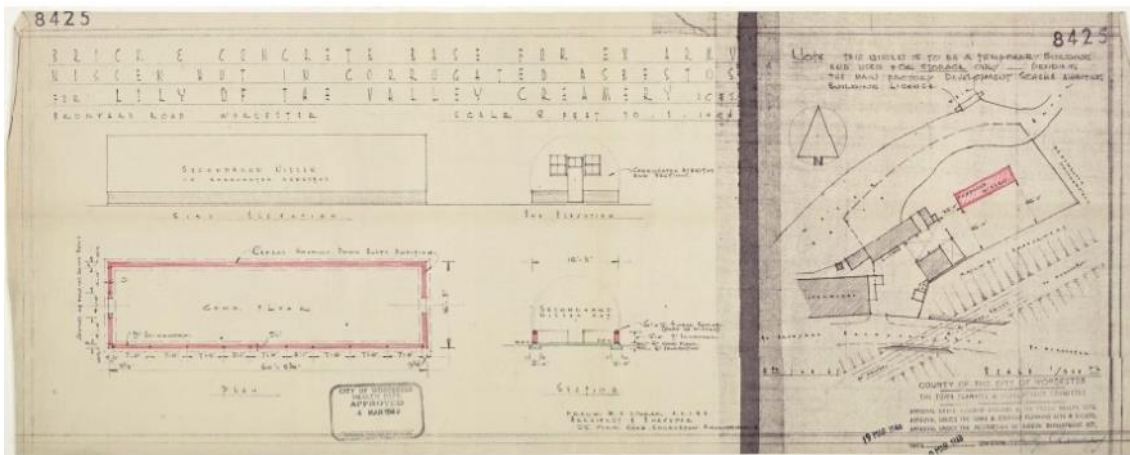


Plate 69 Building K 1942 planning application drawing (Building application number 8425)



Plate 70 Building K, looking east



Plate 71 Building J, looking south



Plate 72 Building L, looking east



Plate 73 Building G, looking north-west



Plate 74 Building G, looking east

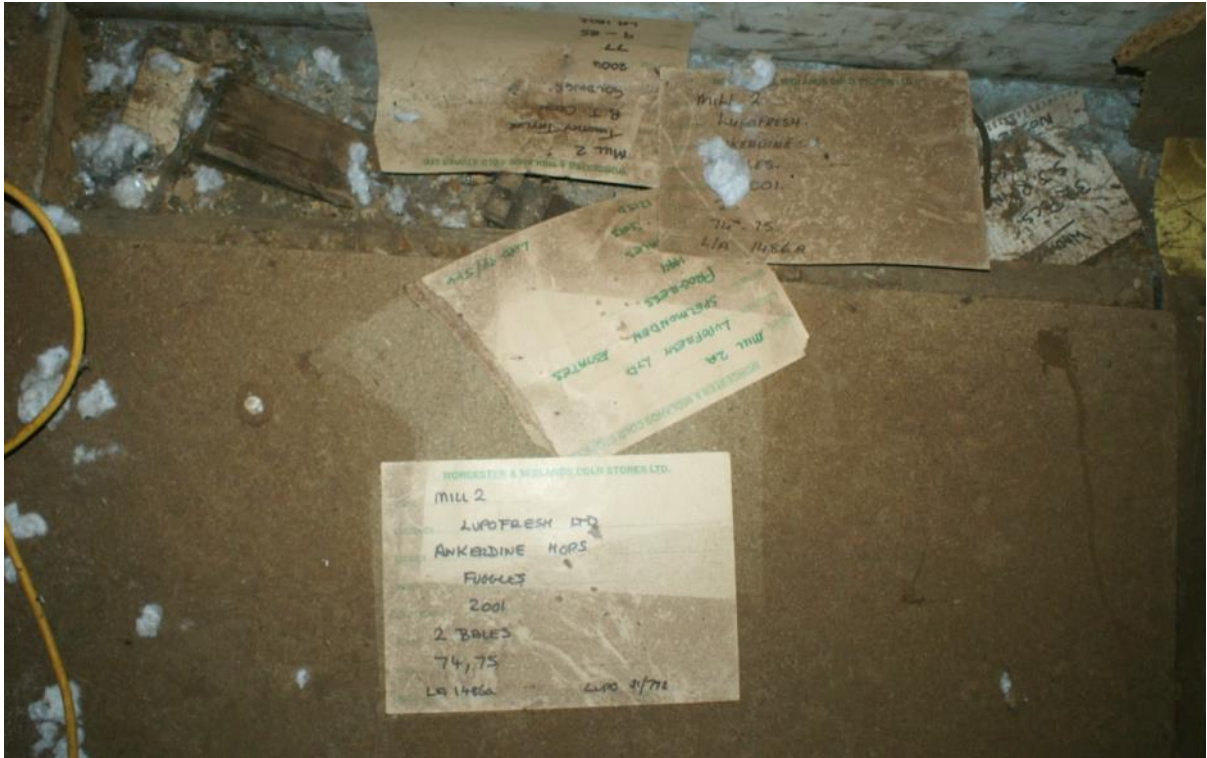


Plate 75 Evidence for cold storage of hops within Building B

Appendix 1: Summary of project archive (WCM102356)

TYPE	DETAILS*
Artefacts and Environmental	n/a
Paper	"Contextsheet", "Diary", "Drawing", "Photograph", "Plan", "Report", "Section", "Survey", "Unpublished Text"
Digital	"GIS", "Images raster / digital photography", "Text"

*OASIS terminology