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Report on the Survey of the Wagon Shed at Fort Cumberland

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Summary

Fort Cumberland is an 18th century fort built on the shingle spit of Eastney Point on the south eastern corner of Portsea Island. It is a Scheduled Ancient Monument (Hampshire monument no. 277) and is the home of English Heritage's Centre for Archaeology. It is described in the English Heritage's Visitors' Handbook as 'perhaps the most impressive piece of 18th century defensive architecture in England'.

The Wagon Shed, dating from the 19th century, is a six-bay timber-framed structure that incorporated an earlier brick wall into its build. As part of the refurbishment works at Fort Cumberland, the Wagon Shed was to be conserved and repaired for re-use. The following is the report on the survey of the structure and the interpretation of its development and use through time.

Keywords

Excavation
Survey
Standing Building
Post-Medieval

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Summary

The Wagon Shed is a six-bay timber-framed structure of late 19th-century date situated to the north of the Guardhouse at Fort Cumberland, Hampshire. The building was in a very poor state of repair, and a request was made by the Inspector of Ancient Monuments (IAM) of Historic Properties South East (HPSE – now South East Region) to the Centre for Archaeology (CfA) to record the building prior to a decision being made over its future treatment. A project design was agreed, and work was undertaken in June 1999.

The aim of the survey was to create a full record of the building as existing and to interpret its development and use through time, and to that aim an independent timber specialist was employed to record the timber elements of the structure. The record created was to be used to inform the design process for the planned conservation project on the building.

The results of the survey showed the timber-framed element of the building to be generally of a single phase of construction, with relatively few subsequent minor repairs. The date suggested for the construction of the building by the elements of the timber framing was of the late 19th century, and the historic plan evidence showing the building existing by 1886 but not in 1861 corroborated this.

The southern elevation of the Wagon Shed consisted of a brick wall that pre-dated the construction of the current building. The wall had been built in several phases, with different bricks and mortars used, and the survey revealed much about the changing use and plan of the area between the wall and the Guardhouse to the south.

A series of seven construction phases were identified in the build of the wall, although these included minor modifications. There are two principal sections of brickwork that make up the main body of the wall, with the older section to the east. This length of wall may date from the re-organisation of the Fort in the early 19th century, and the surviving corner at its western end shows there to have originally been a wall running north-south through the position of the centre of the current Wagon Shed structure.

The later section of brickwork to the west contained within its build a small gabled structure that extended to the south, and dated from the mid to late 19th century. This related to a major re-organisation of the area to the north of the Guardhouse, resulting in the creation of an enclosed walled yard containing the above-mentioned gabled structure and further small buildings to the east.

The timber framing of the Wagon Shed was placed on the top of the wall following a slight heightening and levelling in the late 19th century. The latest major construction phase took place in the early to mid 20th century when the ground level was raised between the buildings and the structures within the yard were demolished, with a new toilet block constructed to the west. This has subsequently been demolished.

1 Introduction

1.1 The Project

1.1.1 The following is a report on the recording and analysis of the fabric of the Wagon Shed, a late 19th-century building within Fort Cumberland, Portsmouth (located on **figure 1**). The building was to be conserved by HPSE during 1999, and the main aim of the project was to provide a record of the fabric as it survived before conservation, and to provide information on the nature and sequence of construction of the building to inform the design process for the conservation project.

1.1.2 The survey and recording project was undertaken in two phases. The first phase took place during June and July 1999 and involved the completion of the survey and the recording of the surviving timber framing and the southern brick wall of the building. The second phase took place in January and February 2000 and included the recording of the concrete floor (postponed from the first phase of works as the Wagon Shed had become unsafe) and the monitoring and recording of the restoration of the building (which included small-scale excavations necessary for the timber post foundations and for services).

1.1.3 The timberwork was recorded by an independent timber consultant, John R Pidgeon, to the specifications set by the HPSE, and the results have been incorporated into this report. It was intended to combine the records from both elements of the survey along with those from the measured survey contractor in digital format to aid the interpretation and understanding of the structure as a whole. The analysis of the building was also to be related to the completed analysis of the Guardhouse so that the relationships between the two buildings could be determined where possible.

1.1.4 This report is to be read in conjunction with the Fort Cumberland draft Conservation Plan, prepared by Judith Roebuck in 1998, which provides background information on the monument and the buildings within it.

1.2 The Wagon Shed

1.2.1 The Wagon Shed (Fort Cumberland building no. 85) is a six-bay structure orientated east-west. It opens to the north, the entrance to each bay formerly having sets of double doors (now restored). The structure is largely of timber, with the exception of the southern wall that is constructed of brick. This dates from more than one phase of construction, and pre-dates the construction of the shed. There was a breeze-block internal partition wall dividing the interior in two. The remains of the close-boarded roof were covered in bitumen roofing felt.

1.2.2 The building was in very poor condition, described in the Conservation Plan as dangerous, and had been temporarily propped for some years. All of the principal timbers remained, but most were badly decayed, and there were considerable gaps in the roof covering. A graphic demonstration of how dangerous the structure had become was seen during the survey when one of the truss tie beams failed and part of the roof collapsed, leading to the suspension of works to the building.

1.2.3 The Wagon Shed appears to date from between 1861 and 1886, when it first appears on plan. The rear (southern) wall contains earlier fabric, and appears to contain the remains of the yard enclosure wall attached to the Guardhouse, shown in the plan of 1861. This rear

wall is of more than one phase, and some of the alterations pre-date the construction of the timber Wagon Shed structure.

1.2.4 The Wagon Shed is part of the Fort Cumberland Scheduled Ancient Monument (Hampshire SAM Number 277).

1.3 Previous work

The building is depicted on the overall plan of Fort Cumberland carried out by On Centre Surveys Ltd in 1995, incorporating the earlier survey by Plowman Craven Associates undertaken in 1987. This survey is held digitally by HPSE and (temporarily) by the CfA. In addition there is a series of 1:50 survey drawings produced by Broadway Malyan Architects in December 1993. These include a plan, the north (front) elevation, the internal east and west elevations, and a section.

2 Aims and Objectives

The following are the aims and objectives set out in the project design for the recording of the Wagon Shed.

2.1 Aims

2.1.1 The creation of an analytical record of the building 'as found', prior to the conservation and refurbishment that will permanently alter the fabric. This analysis will be based upon information gained from the fabric of the building, from historic plans and photographs, and from other available documentary evidence. (Served by objectives 2.2.1-2.2.5)

2.1.2 To provide information necessary to highlight potential opportunities and constraints at the design stage, allowing the IAM to safeguard the survival of the historic fabric without loss of significant information. (Served by objectives 2.2.1-2.2.4)

2.1.3 The creation of a detailed and accurate survey of the building that will serve the needs of the architects, engineers, contractors and others engaged in the conservation and refurbishment of the building. (Served by objectives 2.2.5- 2.2.7)

2.2 Objectives

The recording project has a number of specific objectives. They arise from an initial appraisal of the building in light of the stated aims of the project and from the gathering by HPSE of documentary and pictorial evidence. These are: -

2.2.1 The compilation of a complete record of the surviving fabric of the Wagon Shed (Aim 2.1.1) (Methods 3.1, 3.2)

2.2.2 The analysis and phasing of the fabric of the building (Aim 2.1.2) (Methods 3.1, 3.2)

2.2.3 The reconstruction of each phase of the building from surviving physical and documentary evidence, providing dating evidence where possible (Aim 2.1.2) (Methods 3.1, 3.2)

2.2.4 The understanding of the southern elevation of the Wagon Shed (Aim 2.1.2) (Method 3.1, 3.2)

2.2.5 The creation of an archive of primary recording data (Aim 2.1.1) (Method 3.1)

2.2.6 The production of the fabric record showing historic elements and more recent additions (Aim 2.1.3)

2.2.7 The production of drawings detailing the roof timbers and ironwork (Aim 2.1.3)

3 Methodology

3.1 General Methodology

The primary measured survey is based largely on rectified photography, as this was the most cost-effective method for recording the flat brickwork. This survey was carried out to the specifications provided by Paul Roberts, then Assistant Inspector of Ancient Monuments for HPSE. Survey control targets were left in place by the survey contractors and these allowed the accurate positioning of the surveyed structure within the three-dimensional survey grid which is in turn tied to the OS grid (Aim 2.1, Objectives 2.2.1-6). The process of enhancement employed was as follows: -

3.1.1 The photographs were used with the survey control data to compile 1:20 elevations of the building on sheets of permatrace. In the areas not covered by the rectified photographs, the detail was hand drawn.

3.1.2 The site drawings were digitised to create the basic digital record. Features such as openings and apparent building breaks were added, and all architectural features, such as the detail of the buttresses, were depicted brick-by-brick. This is compatible with the general specifications set by the Metric Survey Team for the recording of brickwork. All masonry elements were also digitised (see **figure 2**).

3.1.3 The timber elements of the building were recorded by J R Pidgeon to the specifications set by HPSE, and the drawings were based on the Broadway Malyan survey drawings.

3.1.4 A reflected plan of the roof structure and drawings of sample trusses and other constructional details were also produced by J R Pidgeon.

3.1.5 It was not proposed that a full context record be compiled; however, walls and features were numbered, and field notes of additional information not recorded on the drawings - pointing, mortar details etc. - were compiled in this textual record. The records

that were made are presented in Table 1, and the locations of the contexts described are shown on **figure 3**.

3.1.6 Record or 'narrative' photography of details not shown on the rectified photographs was undertaken by the CfA. The record was compiled using 35mm cameras with colour transparency and monochrome print film, with additional photographic coverage taken with a Kodak DC210 digital camera. The digital camera was used predominantly during the restoration phase of the project and was invaluable in providing instant photographic records that could be used by the architects, the IAM and the sub-contractors on site, as well as enhancing the archaeological record.

3.1.7 The plan of the floor was based on the On Centre Surveys Ltd digital site plan, with enhancements made on permatrace overlays at a scale of 1:50. These were subsequently added to the digital record.

3.2 The primary measured survey was enhanced digitally to create a full record of the fabric in AutoCAD v. 14. The standards and conventions used in the creation and numbering of the drawings was based on the specification provided by Paul Roberts of HPSE.

3.3 The recording was carried out according to the English Heritage Health and Safety Manual, and the CfA Health and Safety Procedures Manual, with due regard to the English Heritage Health and Safety Policy and to the Codes of Safe Working Practice.

3.4 On completion of recording, the site archive was produced in line with the specification provided by MAP2 appendix 3. A short interim report paper was produced before this stage for the benefit of the IAM and development project team. This summarised the findings of the fieldwork, and a copy has been included at the end of this report (Appendix 2).

3.5 It is not planned to take this project forward to MAP 2 assessment at this stage. An assessment may be carried out on completion of all recording associated with the Fort refurbishment works.

4 Results of the survey of the south wall of the Wagon Shed

The Wagon Shed is a fairly simple single storey timber-framed lean-to structure dating from between 1861 and 1886. The timber framing forms a six-bay structure, each bay opening to the north with a set of hinged double doors (now removed). The back wall of the building consists of an earlier brick wall that has evidence of two main construction phases, and the wall had been heightened slightly to take the timber wall plate.

The Wagon Shed is situated directly to the north and parallel to the Guardhouse building, the Guardhouse being one of the two surviving buildings from the first fort constructed in the mid 18th century (1747). The plan of the original fort shows the banked fortifications beginning a short distance to the north of the Guardhouse in the position now occupied by the Wagon Shed.

The fabric survey of the wall revealed a great deal regarding the sequence of development of this area within the Fort, with seven phases identified, and these are set out by phase below.

The phasing of the wall elevations can be seen on **figures 5 and 6**, with the phased development plans of the area between the Wagon Shed and the Guardhouse shown on **figure 4**.

4.1 Phase 1

The earliest identifiable section of the south wall of the Wagon Shed is the eastern half, constructed of red brick laid in single Flemish bond, which has English bonded brickwork on one side (the southern side) and Flemish bonded brickwork on the other (the northern side). The wall forms a corner at its western end and has been truncated to the east. It dates either from the fortifications of the original Fort (1747) or from the construction of a building of the second fort built between 1782 and 1812. The fortifications shown on the plan of 1747 begin with an earthen slope in this position, so unless there was a retaining brick wall not shown on the drawings it seems likely that the wall dates from the later re-organisation phase. The survival of the corner brickwork at its western end shows there was a wall running at right angles to the north of this wall, and this suggests there may have been a building in this position although as yet this has not been located on any of the historic plans. The top of the wall was picked out with a course of bull headers, and it is possible that these walls formed the boundary walls for a courtyard.

The bonding pattern used in this length of wall requires further comment. Single Flemish bond seems a peculiar bond to use to create a low wall (c.2.5m) such as this. The addition of the Flemish bond to the one face of the wall requires the wall to be three bricks thick as opposed to two for either a solely English or Flemish bonded wall. For this wall the Flemish bonded bricks were tied in to the main body of the wall (the English bonded section) by the headers on alternate courses (corresponding to the header courses on the English bonded side). Where the headers were not tied across, half bricks have been used. The reason for forming a three brick thick wall may have been to increase the stability of the wall and to counteract the (expected) subsidence caused by building onto the natural (unconsolidated) gravel. Further to the west, the narrower wall is buttressed suggesting that possible subsidence was a major consideration when constructing the walls in this part of the Fort.

Further investigation to the east of the Wagon Shed has revealed two surviving bricks surrounded by the later concrete additions. The alignment of the bricks is perpendicular to that of the Phase 1 brick wall, and these may represent the eastern return wall of the original structure. If this were the case, the building or yard formed would have been c.14m in length. It has not been possible to establish how far to the north the original walled area extended.

4.2 Phase 2

A lean-to structure was constructed in the south-western corner of the Phase 1 brick yard\structure (see **figures 2 and 4**). Surviving from this are at least two brick courses of the gable sitting on top of the course of bull headers of the Phase 1 wall top. The eastern side of the gable consists of two bricks cut at an angle showing the line of the roof pitch. The rest of

the gable has been dismantled, presumably when the timber framing of the Wagon Shed was constructed. The continuation of the trace of the roof pitch could be seen on the surface of the brick wall, and running down from the end of the pitch line was the line of the eastern wall of the lean-to. The removal of this wall had left traces of mortar and a stain showing its outline on the surface of the brickwork. At the junction of the roof scar and the vertical wall line was a brick-filled socket, originally housing the wall plate of the lean-to, and further to the west (0.4m) was another brick-filled socket related to this building. The lean-to would have been 1.05m wide and the roof pitch was just less than 40 degrees – the same as the gabled structure to the west.

4.3 Phase 3

The plan of 1861 shows the Phase 1 wall section to have been subsumed into a complex of buildings annexed to the northern side of the Guardhouse. The area was presumably a walled courtyard, although it had a central north-south dividing wall and a more elaborate arrangement of divisions to the east.

A section of wall was constructed continuing the alignment of the Phase 1 wall, although with a narrow gap separating the two. This length of wall was built with red bricks laid in Flemish bond, and on the northern face two buttresses were incorporated into the build.

A small gabled structure was built at this time at the eastern end of the newly constructed length of wall. This was roughly square in plan, 1.5m wide and approximately 1.5m long (shown on the plan of 1861). It had a pitched tile roof, part of which survives within the heightened wall top, and a possible use suggested for the structure is as a building housing a toilet.

To the east of the gabled structure, the wall running to the north from the western corner of the early brick wall was dismantled and the wall was rebuilt to create the eastern jamb of the opening.

The walled yard to the north of the Guardhouse was partitioned with a brick wall running south from the western corner of the Phase 1 brick wall. Two patches of keying-in damage can be seen on the wall face, although evidence for the corresponding keying-in to the north face of the Guardhouse has been removed by the insertion of a later window. At the foundation level there is a brick surviving on the line of the partition wall, stepping out from the wall footings.

4.4 Phase 4

The opening created between the two lengths of wall was an access route into the walled courtyard to the north of the Guardhouse, and this opening was later given a limestone threshold step. The insertion cut for the threshold was seen cutting into both the rebuilt brick eastern jamb of the opening and the back wall of the gabled structure to the west.

The opening was quite narrow (0.67m wide), and the height of the threshold was 0.45m above the ground level to the north. This would have required the use of a step or steps up to the threshold from the north, and these have subsequently been removed. The plan of 1861 shows a slight extension of the structure to the north at this point that may correspond to the step.

The insertion of the threshold at a higher level than the ground to the north may have been a result of an early change in the ground level between the Guardhouse and the Wagon Shed in an intermediate phase that has not yet been identified.

To the west of the step there is a piece of cast iron set into the wall at ground level. This has been broken off flush with the wall face and may be the remains of a boot scraper.

The southern (internal) face of the gabled structure retains patches of the plasterwork showing the inside to have been decorated.

On the northern face of the brick wall to the west of the door opening there is a line of evenly spaced iron nails\holdfasts hammered into the wall. Directly above the level of the nails and holdfasts are the remains of a narrow band of bitumen. Also seen at this end of the wall are 2 brick filled sockets. The height of the sockets corresponds to the height of the tops of the cut-down Phase 3 brick buttresses, and it seems likely that the sockets, the cuts to the top of the buttresses, the holdfasts and the bitumen are evidence of an earlier lean-to building against the southern brick wall.

Towards the eastern end of the wall at the same height as the lean-to sockets are 2 further brick filled sockets. No associated evidence for roof pitches was seen although it may be that a further lean-to existed at this end of the wall using the wall top as a wall plate.

4.5 Phase 5

The fifth phase identified is the construction of the timber-framed Wagon Shed building. From historic plan evidence, this appears to have happened at some time between 1861 and 1886. In order to level the wall top and create the height for the wall plate of the timber framing, an additional two to three courses of brickwork were added to the top of the wall. The newly added brickwork included a length of bull headers over stretchers at the eastern end of the wall, three courses of headers and stretchers towards the centre of the wall (with some narrow bricks used directly to the east of the gabled structure), and at the western end, a course of headers above a stretcher course. The wall plate was mortared to the top of the brickwork.

The survey of the timber elements of the Wagon Shed structure was undertaken by John Pidgeon, an independent timber specialist. John was able to ascertain that the construction of the timber framing of the Wagon Shed was generally of a single phase, with subsequent small-scale repairs. The following (sections 4.5.1 – 4.5.6) is taken from his report, with associated tables showing the dimensions and jointing techniques employed appended to the overall report (see Appendix 1). See **figures 7, 8 and 9** showing the timber survey drawings.

4.5.1 Introduction to timber survey

The purpose of this limited survey was to record enough of the standing structure of the Wagon Shed in order to create an as-built record. Although any repair or reconstruction of the original structure was considered unlikely due to the advanced decay of the timbers, leading to a potentially unsafe structure, the record would enable the Wagon Shed to be entirely built from new to the original specifications. The text therefore is an adjunct to the drawings and deals with the original structure with reference to the timber, jointing, dimensions, finishing, conversion, appearance and approximate dating. Most of this is expressed in tabular form, the dimensions being given in the original intended Imperial measurements.

4.5.2 The Timber

The original timber is entirely softwood pinus spp. on superficial examination probably ‘pinus sylvestris’ commercially known as 'Red Deal' or ‘Red Pine’ or commonly known as 'Scots Pine' in this country, but other species e.g. Douglas Fir, Corsican Pine are possible. Considering the proposed date, imported timber is more likely due to a lack of suitable building timber found in Britain.

4.5.3 Conversion

The North wall plate is boxed heart but since no other sections were observed we could surmise that the other members were slabbed and the boarding planked out; this is standard with this type of work and timber.

4.5.4 Finishing

Circular sawn and whitewashed/painted internally, painted externally.

4.5.5 Dating

The circular saw marks indicate a date of after 1830, approximately, and the general style of building and scantling sizes would lean towards a date in the latter part of the 19th century. The top two courses of the rear southern wall are co-eval with the Wagon Shed and may give a closer date. There is no evidence of phasing beyond a minor degree of repair within the building. The scarf joint is an interesting survival from a much earlier period and may indicate a reservoir of timberworking skill at Fort Cumberland that has not fully been appreciated before.

4.5.6 Conclusions

The Wagon Shed would have appeared as a fully hipped structure with six pairs of externally opening doors along the north front with a felted roof and a white painted interior. The rear southern wall was interrupted by a small gable approximately mid-way along the brickwork, and this was built into the Wagon Shed because the rafter trimming has been built in to allow the gable to occupy the normal wall plate position. A late 19th-century date may well be

accepted.

4.6 Phase 6

The following briefly describes the evidence seen on site for the sequence for the disuse and demolition of the gabled structure, the blocking of the entrance way, and the construction of the timber-framed Wagon Shed: -

i) The timber wall plate on top of the brick wall respects the gabled roof of the small structure to the south, with a bracing timber (the rafter tail trimmer) used to span the width of the structure on the inside of the Wagon Shed. This implies that the gabled structure was in place when the Wagon Shed was constructed.

ii) The timber wall plate of the Wagon Shed sits on the brickwork blocking the entrance alongside the gabled structure. On the internal wall face, there is a vertical joint between the blocking brickwork and that used to heighten the wall to the east.

iii) The brick blocking the entranceway is seen on the southern (external) face of the wall to extend beyond the position of the eastern wall of the gabled structure. This implies that the gabled structure had been dismantled prior to the entrance being blocked.

The above evidence leads to the conclusion that the opening was retained when the Wagon Shed was constructed, with the timber wall plate of the frame of the Wagon Shed initially spanning the gap. Prior to blocking the opening, the gabled structure would have been dismantled. The external face of the eastern gable wall was cut back prior to the opening being blocked, and no reason for this is readily apparent.

The demolition of the gabled structure and the blocking of the opening belong to this phase of works, post-dating the construction of the Wagon Shed. At this time the brick partition wall across the yard to the Guardhouse was demolished. The space between the Guardhouse and the Wagon Shed was re-ordered with the rendered repair of the removed yard wall being the same as that repairing the wall face following the removal of the western wall of the gabled structure.

4.7 Phase 7

The latest phase of use of the area of land between the Guardhouse and the Wagon Shed was the creation of a toilet block (now demolished) at the western end. The keying-in of the brick walls of this toilet block can be seen in the brick wall of the Wagon Shed. The wall lines, the floor and the foul drains from the toilets still remain and are visible on site.

The current ground level between the buildings was created during this phase (dating from earlier in the 20th century, probably in the 1940s). A concrete retaining wall was constructed c.0.40m to the south of the brick wall and the land was levelled between this and the Guardhouse. The gap was retained as the difference in levels would have lead to a problem with damp, and the base was concrete with a fall to the east for drainage. The eastern end of the drain has a metal grille in place.

4.8 The changing ground level

The alterations to the ground level in this part of the Fort are important to the understanding and interpretation of the land use. The current parade ground and general ground level date from the levelling of the ground surface in preparation for the construction of the new fort between 1782 and 1812. This lowered the ground around the existing Guardhouse and had the effect of leaving it on a slightly raised platform. Access up to the Guardhouse was provided by sets of steps, and these are shown on the plan of 1861 and on some of the photographs of the early 20th century.

The Phase 1 brick wall has its base at the lower ground level suggesting that it was built as part of (or following) the construction campaign of the second fort (1782-1812).

The second phase of works, the mid 19th-century construction of the yard between the Guardhouse and the Wagon Shed, created a doorway\access route through the yard wall. The ground level to the north was at the general level of the second fort (1782-1812), and presumably sloped up from this level to the current level at the Guardhouse. The insertion of a threshold step in the doorway implies the raising of the ground level directly to the south of the Wagon Shed\yard wall, although this is still some way below the current ground level.

The current level was formed by the infilling and levelling behind a concrete retaining wall constructed slightly to the south of the Wagon Shed\yard wall, and this dates from early in the 20th century. The external staircases accessing the first floor of the Guardhouse have their bases on this raised ground level, and the levelling of the land may be contemporary with the conversion of the upper floor of the Guardhouse into an entertainment complex in the mid 20th century.

5. The Relationship between the Guardhouse and the Wagon Shed

An explanatory note on the phasing:-
At the time this report was written independent phasing sequences had been compiled for the individual buildings surveyed during the conservation works. These will eventually be unified and related to the overall Fort phasing sequence identified in the Conservation Plan (Roebuck, 1998), and that is set out below in section 5.1.

5.1 Phasing of the Fort buildings as identified in the Conservation Plan for Fort Cumberland

1) *1747-8* The first fort
2) *1782-1812* Rebuilding
3) *late 1850s* Restructuring
4) *1880s* Further restructuring
5) *20th century* Developments
6) *The last 50 years*

5.2 Phasing of the Guardhouse

In the analysis of the construction of the Guardhouse, seven phases were identified.

1) *1747-8* Original guardhouse build. North wall had windows (9) at ground and first floor level
2) *Late 18th C* Repairs to chimney on west elevation (1774)
3) *1782-1812* Possible use as office space
4) *Mid 19th C* Re-ordering, post-1859. Three doors punched through the wall with increase in size of the ground floor windows
5) *Early 20th C* Ground floor windows and doors blocked. Internal floor had collapsed. Conversion of building to a rope store
6) *Pre-1940* Lean-to shed against the north wall.
7) *Post-1940* Entertainment complex on first floor (cinema, stage). Insertion of two first floor doors through north wall with associated external stairs. Insertion of three ground floor windows of two different styles.

5.3 Phasing of the Wagon Shed

Seven phases of build were identified in the analysis of the Wagon Shed, but the numbers of these phases **do not correspond** to those used for the Guardhouse, although they do in places overlap, e.g. Phase 4 of the Guardhouse is equivalent to Phase 4 of the Wagon Shed.

1) *Early 19th C* Corner of brick structure
2) *Early-Mid 19th C* Lean-to construction
3) *Mid 19th C* Yard construction to north of guardhouse
4) *Mid 19th C* Threshold step insertion
5) *Mid-Late 19th C* Construction of Wagon Shed (shown on 1886 plan)
6) *Early 20th C* Blocking of opening and removal of brick wall spanning yard. Also removal of gabled structure
7) *Mid-Late 20th C* Removal of rest of yard buildings. Construction and demolition of the toilet block at the western end of the former yard area.

5.4 Description

It is clear that the main redevelopment of the land to the north of the Guardhouse was undertaken in the mid to late 19th century, and this was most probably in response to the transfer of the Royal Marine Artillery Headquarters to Fort Cumberland in 1859.

The redevelopment at this time saw the creation of the yard and associated buildings to the north of the Guardhouse and the partitioning and reordering of space within the Guardhouse. The insertion of the three ground floor door entrances through the north wall of the Guardhouse corresponded not only to the internal building plan, but also to the external yard and yard partition walls. From the plan it can be seen how the access positions served the spaces created in the yard, as well as the rooms in the Guardhouse.

The windows may have been increased in size to compensate for the reduction in available light following the construction of the yard structures.

The retention of the opening through the north wall of the yard following the construction of the Wagon Shed structure enabled access to the yard from the north to be maintained.

In the early years of the 20th century the Guardhouse fell into disrepair. In the early 20th century the building was converted into a rope store, and this involved the removal of the internal floor structure, the blocking of the ground floor windows, and the replacement of the roof. The yard buildings and partitions were demolished, and the need for the opening through the south wall of the Wagon Shed was consequently removed and the opening blocked.

In the mid 20th century the first floor of the Guardhouse was reinstated and the upper half of the building was converted into an entertainment complex (cinema, stage). The land between the Guardhouse and the Wagon Shed was levelled and two first floor doorways were inserted with external stairs for access.

A toilet block constructed at the western end of the yard area, either during the mid 20th-century phase of works or following the removal of the yard structures earlier in the century, was demolished.

To the east of the Wagon Shed a concrete covered petrol tank and pump were constructed, the pump housed in a small rectangular brick building. The pump and housing brickwork still survive, and the structure was refurbished as part of the Wagon Shed restoration programme.

6. The Floor

The layout of the Wagon Shed floor reflects the six-bay pattern of the framing of the Wagon Shed. The floor is concrete, constructed of a hard grey cement matrix with frequent orange\brown gravel inclusions (of less than 0.01m in size). The divisions are created with raised strips of concrete flooring, the northern end of each (by the doors) finished off with a moulded Portland limestone slab (the slabs having had the exposed corners rounded off). The central section of each bay has a gradual slope from the south to the north. At the northern side of the Wagon Shed (the door side) the step to the raised bay divisions is up to 0.04m in height whereas along the southern side the bay divisions gradually become flush with the surrounding concrete surface.

To the south preserved within the concrete floor surface are the impressions of timbers (possibly sleepers) set across each bay. The timbers are no longer in place but the bolts that attached them remain, set into concrete filled cuts through the original flooring. The bolts used have 3.2cm (1¼") square heads and have a circular cross section and have 5.1cm (2") square, 2mm (1\8") thick washers. The timbers would have been 0.82m long and 0.12m wide, and are set within each bay along the south of the Wagon Shed, 0.06m from the face of the southern wall.

The edges of each of the dividing partitions have been repaired using grey concrete. This has also been used to form a skim over a large proportion of the original floor surface.
At the door entrances the concrete floor has suffered badly from wear and in several of the bays the concrete has been repaired with a similar though paler coloured aggregate-rich concrete.

During the restoration of the Wagon Shed, excavations were undertaken around the position of the door posts of the front of the building. As the posts had suffered badly in the past with damp from the ground, in some instances necessitating the complete or partial replacement of the post, it was decided to support the post bases above the ground on metal plates bolted onto concrete post pads. To insert the concrete for the pads the existing concrete pads were removed allowing limited archaeological investigation in the post positions. This was surprisingly revealing. The excavation generally showed the disturbed underlying beach gravel as expected, although some interesting archaeology was seen in two of the post holes (V and VII – for location, see **figure 8**). The post hole for post VII, to the front of the western elevation of the building, exposed the brick raft that had been used for footings to support the north-western corner of the Wagon Shed. The hole for post V revealed a brick drain running northeast-southwest beneath the Wagon Shed floor and out towards the Motor Transport shed. Only a short length of this was seen, less than 0.20m, but two courses were exposed and these were a course of stretchers forming the side of the drain capped with a course of headers, two of which had collapsed into the central void of the drain.

The concrete floor appears contemporary with the construction of the Wagon Shed in the latter part of the 19th century, and presumably (as the name suggests) the building was constructed to house carts or wagons. Wear and general decay has lead to some of the timbers being replaced, and also to some of the areas of floor being patched, especially along the edges of the raised strips of concrete forming the bases of the partitions and also near the door openings. The timbers bolted to the floor at the end of the bays along the south wall (no longer in situ) are secondary to the original construction and may date from the garaging of motor vehicles in the shed early in the 20th century (each bay has the name of the rank of the vehicle's driver to be parked in it painted on the southern brick wall e.g. SNCO)

7. Conclusions

The survey of the Wagon Shed has revealed a great deal about the complex development of this part of the Fort. The Wagon Shed was constructed in a single building campaign of the late 19th century, and has subsequently had few relatively minor repairs and alterations (up until the latest restoration work which has led to the replacement of many of the original timbers). The rear wall of the Wagon Shed pre-dates the construction of the timber-framed structure, and it is from the build of this wall that a great deal of information was retrieved regarding its historical development.

Much of this related to the development of the whole of the Guardhouse\Wagon Shed complex of structures, and of the yard and associated buildings and walls in the space

between. The plan showing the interpretation of the sequence of development (**figure 4**) illustrates its complex construction history.

Following restoration and refurbishment it is hoped that the Wagon Shed will once again be put to beneficial use. With the plans to utilise the Guardhouse as an Outreach Centre, and with the proximity of the Wagon Shed to the Guardhouse, it is possible that this re-use may be associated with the Outreach Centre.

TABLE 1 The Context Record

The following table shows the details recorded for the main structural elements identified during the survey of the Wagon Shed. The location of the numbering of the contexts can be seen on **figure 3**.

Number	Feature	Description

Number	Feature	Description
Phase 1	**c.1812**	
1	Wall	Brick wall forming the eastern half of the south wall of the Wagon Shed. Wall is 0.35m wide, and is 2.45m and 31 courses high. The bricks are laid in single Flemish bond (Flemish on the north face, English on the south). The bricks used in its construction are hand-made red bricks with a folded clay texture and a sanded surface, and measure 0.23 x 0.11 x 0.065m in size (9 x 43 x 22 inches). The bricks are bonded with a grey lime mortar. The western end of this wall originally formed a corner with a north-south aligned wall, the length of which is not known. It was removed in the Phase 2 building works. The base of the wall has an offset brick footing, 0.05m from the wall face, of which only the upper course is visible. The top of the wall is finished with a course of bull headers. On the south face of the wall there are a series of vertical wear marks in the brickwork. These are up to three courses high, 0.01m deep, and have a rounded profile. What these are a result of is not known, although they may be from racking or shelving knocking against the wall.
Phase 2	**early-mid 19th century**	
2	lean-to	Bricks cut at an angle to form the pitch of a roof of a lean-to structure against the Phase 1 brick walls. Two courses of the gable also survive. The wall line of the lean-to can be seen on the surface of the Phase 1 brickwork, the bonding mortar having stained the earlier brickwork. The lean to would have been 1.05m wide, length unknown. This context also includes two sockets (now brick filled), one at the junction of the roof scar and wall (for the wall plate), the other at the same height 0.4m to the west.
Phase 3	**pre 1861**	
3	Wall	Flemish bonded brick wall, constructed of red bricks bonded with a grey\brown lime mortar. Bricks are 0.23 x 0.11 x 0.068m in size (9 x 43 x 2: inches). The wall has two brick buttresses on the north face.
4	Gable Structure	Brick built gabled back wall of structure with pitched roof extending to the south of the south wall of the Wagon Shed. Bricks are the same as those used for the wall to the west (context 3). These bricks generally appear less weathered than those at either side. The lower part of the south face of this wall retains the remains of render on the surface, possibly the vestiges of the internal decoration. The western wall has been cut back flush with the face of the wall (Phase 5), and the eastern wall has been removed and its position infilled with later brick blocking, context 11 below (Phase 6).
5	Access	The gap between the east wall of the gabled structure and the

Number	Feature	Description
	Opening	western end of the Phase 1 brick wall (context 1) formed an access opening from the north into the courtyard to the north of the Guardhouse. The eastern jamb of the opening was rebuilt or repaired at this time.
6	Wall	Brick wall that formed the dividing wall of the yard. Wall spanned from the corner of the Phase 1 brick wall (context 1) across to the north wall of the Guardhouse.
Phase 4 pre1861		
7	Access threshold	The opening between the east wall of the gable and the western end of the brick wall (context 1) was given a limestone threshold. The walling below the threshold is brickwork laid in Flemish bond. The threshold stone has c.0.03m of wear on it and so must have been in use for a fairly long period of time, unless it had been repositioned here from elsewhere. The step protruded to the south of the wall face where it was hacked back roughly flush with the wall during the Phase 6 works.
8	Lean-to roof	Along the length of the north face of the wall to the west of the opening (context 3) and above the height of the buttresses is evidence for a simple lean-to roof. At intervals, nails and iron holdfasts have been hammered between the brick courses, probably to attach a timber beam, and above this, there are the remains of thickly applied black paint or heavily decayed bitumen, possibly relating to weatherproofing the roof.
9	Sockets	There are 2 sockets cut into the north face of the wall (context 3), now blocked with brickwork. The sockets are 2-3 brick courses high, and are up to a stretcher long. They are at the same height within the wall, and relate to the lean-to structure against the northern face of the wall.
10	Sockets	2 sockets towards the eastern end of the southern brick wall (context 1). May relate to a lean-to although there is no further visible evidence to support this.
Phase 5 1861-1886		
11	Wall top	The height of the wall top was increased to take the timber wall plate of the framing of the Wagon Shed. The heightening used two to three courses of bricks bonded with a soft, pale brown, lime mortar that contained a large proportion of fine rounded gravel inclusions. To level the wall top, the brick coursing altered from east to west. At the eastern end, a course of bull headers was set on a course of stretchers, with a thick mortar bed between. Towards the centre of the wall, the bull headers were replaced by a course of headers and a course of stretchers with thin mortar beds, and thinner bricks were used to the west. To the west of the gable wall, there were two courses of brick. This suggests that the wall top

Number	Feature	Description
		sloped down to the east prior to the construction of the Wagon Shed. On the southern wall face, the top of the Phase 1 brick wall to the east of the access opening was given a rendered coping. This was necessary as the wall alignment stepped out along this section, and so the coping joined the original external wall top with the timber wall plate. The coping was built up using bull nosed bricks, crudely shaped to form the slope, with render over the surface.
Phase 6 early 20th century		
12	Brick blocking	The opening forming the entrance way to the east of the gable structure was blocked with weathered red bricks laid in running bond. The bricks were slightly smaller than those used in the rest of the wall measuring 0.225 x 0.11 x 0.065m (8: x 43 x 22 inches) and were bonded with a pale grey\brown lime mortar. This blocking extended through to the position of the removed eastern wall of the gable structure, and the blocking presumably post-dated the removal of this building. Thus the truncation of the brickwork of the western wall of the gable structure belongs to this phase.
Phase 7 mid 20th century		
13	Retaining wall	The concrete retaining wall for the infill and raising of the ground level between the Guardhouse and the Wagon Shed was constructed 0.4m to the south of the wall face, leaving a gap as the ground level on the north side of the wall remained lower. The raised level accommodated the steps accessing the upper floor of the Guardhouse.
14	Toilet block	The toilet block was constructed at the western end of the land between the Guardhouse and the Wagon Shed. The partition walls (now removed) can be seen to have been keyed into the south face of the Wagon Shed wall. Also evident are the remains of the limewash and grey paint inside the toilet block.

Bibliography

CfA 1998 *Centre for Archaeology recording manual (*draft), English Heritage

Magrath P.A. 1992 *Fort Cumberland 1747-1850 Key to an Island's Defence*, Portsmouth Paper Number 60

Roebuck J. 1998 *Fort Cumberland Conservation Plan for Parade Ground Buildings* (draft), English Heritage

Acknowledgements

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APPENDIX 1

The following are the tables compiled by John Pidgeon to illustrate the jointing methods and dimensions of timbers used in the construction of the Wagon Shed. They should be read in conjunction with the drawings included in the report (see **figures 7, 8 and 9**), along with the descriptive text contained in the main body of the report (see section 4.5.1-4.5.6).

JOINTING

MEMBER	to MEMBER	TYPE OF JOINT
Wall plate (N)	Wall posts III & V.	Mortise & tenon, post tenon as tongue in plate
Wall plate (N)	Wall posts I,II,IV,VI,VII	Mortise & tenon (2 pegs)
Wall plate (N)	Wall plate (N)	Edge-halved scarf. See timber drawings 05 and 06
Tie beam	Wall plate	Lapped, beam notched, nailed
Tie Beam/Collar Beam	Rafter	Lapped & nailed
Rafter (S)	Wall plate (S)	Notched & nailed.
Rafter (N)	Wall plate (N)	Nailed
Trimmed Rafter	Tail trimmer	Mortise & tenon
Tail Trimmer	Trimming Rafter	Mortise & through tenon
All Rafters	Ridge Board	Skew nailed
Common/Jack Rafters	Hip Rafters	Skew nailed
Angle Tie	Wall plates	Half lapped & nailed

DIMENSIONS.

ROOF (Pitch 32% degrees, all timbers on edge unless stated)

Wall plate (N)	9” x 9"	Wall plate (S)	4" x 3" (laid flat)
Tie Beam	7" x 2½”	Principal Rafters	4" x 2"
Common Rafters	4” x 2½”	Hip Rafters	4" x 4"
Jack Rafters	4" x 2"	Ridge Board	6" x 1"
Roof Boards	7" x 1"	Tail Trimmer	5" x 3"
Angle Tie	6" x 3"	(Rafters 3’ centres)	

EAST WALL

Cill Plate	4" x 3"	Corner Posts	4" x 3½"?
Studs	4" x 2"	Top Rail	4" x 3”
Cladding	7" x 1" (1½" lap)		

WEST WALL

Centre Post	7" x 6" (CUT DOWN?)	Studs/Braces	4" x 4”
Cladding	7" x 1" (1½" lap)	Fe. Brackets	2½" x ½

APPENDIX 2

CfA Project 651 The Wagon Shed
Interim Statement - Friday 9th July 1999

This statement has been produced to detail the current position of the survey of the Wagon

Shed and to highlight the major findings from the survey so far.

Following the recent collapse of several members of the timber framing, and after consultation with Fred Powell (Facilities Surveyor, HPSE), work on the internal elevations and floor has been suspended until the building is made safe. This occurred during the surveys of the internal southern elevation and floor of the building, which are consequently unfinished, although fortunately the site work for the timber survey by John Pidgeon had just been completed.

The survey of the timber framing showed the roofing to be generally of a single phase of build with a series of minor repairs. A construction date of the late 19th century was suggested.

The fabric survey of the southern brick elevation of the building revealed a complex historical sequence. Six phases have been identified within its length relating to the varied use of the land and buildings directly to the north of the Guardhouse.

The eastern half of the extant brickwork is the earliest, thought to date from early in the 19th century. This is the surviving brickwork from the earliest brick building or structure in this position, and the position of the corner of this wall and a now-removed north-south aligned wall can be seen at the western end of the brickwork.

The western end of the southern wall of the Wagon Shed belongs to the second building phase. This brickwork dates from pre-1861 and relates to the enclosure of the area to the north of the Guardhouse creating a walled yard, and with the construction of roofed structures and partition walls within it.

This wall included within its build a small simple gable roofed structure, and adjacent to this was a narrow opening. The opening was situated between the corner of the early brick wall and the gabled structure.

The third phase of work was the insertion of the limestone threshold stone in the opening. This was positioned at a higher level than the ground level to the north and may have resulted from a rise in ground level in the walled yard to the north of the Guardhouse.

The fourth phase of work, from between 1861 and 1886, was the construction of the timber-framed structure of the Wagon Shed. This required the wall tops to be heightened slightly, and the design of the roof included trimmed rafters to accommodate the existing gabled structure.
The opening adjacent to the gabled structure was retained for a time following the construction of the Wagon Shed. The fifth phase of works identified removed the gabled structure and at least one of the yard partition walls and blocked the opening.

The final phase of works included the raising of the ground level, the construction of the toilet block at the western end of the yard, and the removal of a series of structures to the east (shown on photographs dating from the early years of the 20th century).

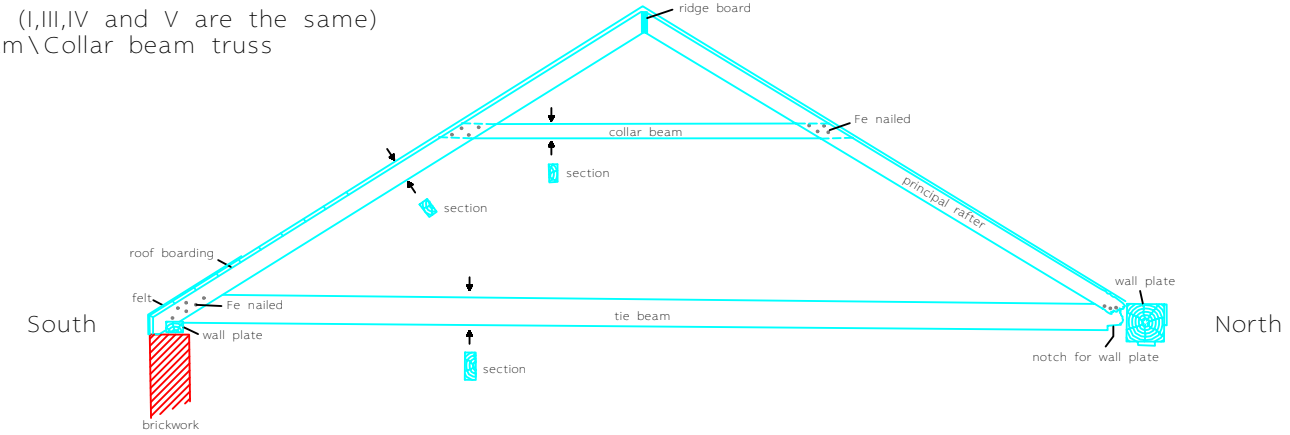
The records compiled consist of permatrace overlays to the rectified photographs, and these have been digitised. The site report is in preparation, and appended to this will be the report on the timber framing.

Copies of the annotated site drawings or of the digitised versions are available when required.

David Fellows
CfA

Figure 9 Roof Truss Elevations of the Wagon Shed (from the east)

Truss II (I,III,IV and V are the same)
Tie beam\Collar beam truss



Common Collared Rafter Truss
(all except trusses I to V incl)

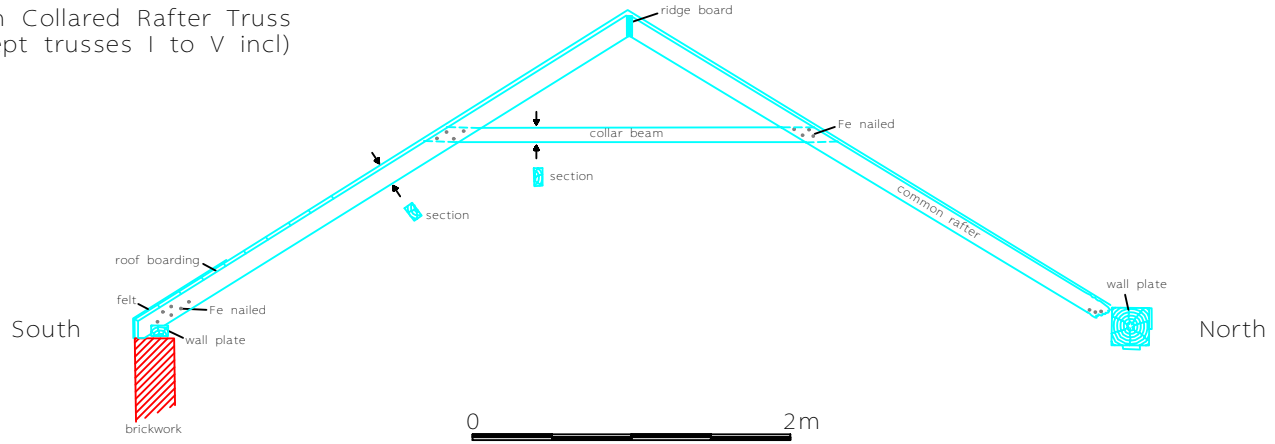


Figure 8 Roof Plan of The Wagon Shed (from above)

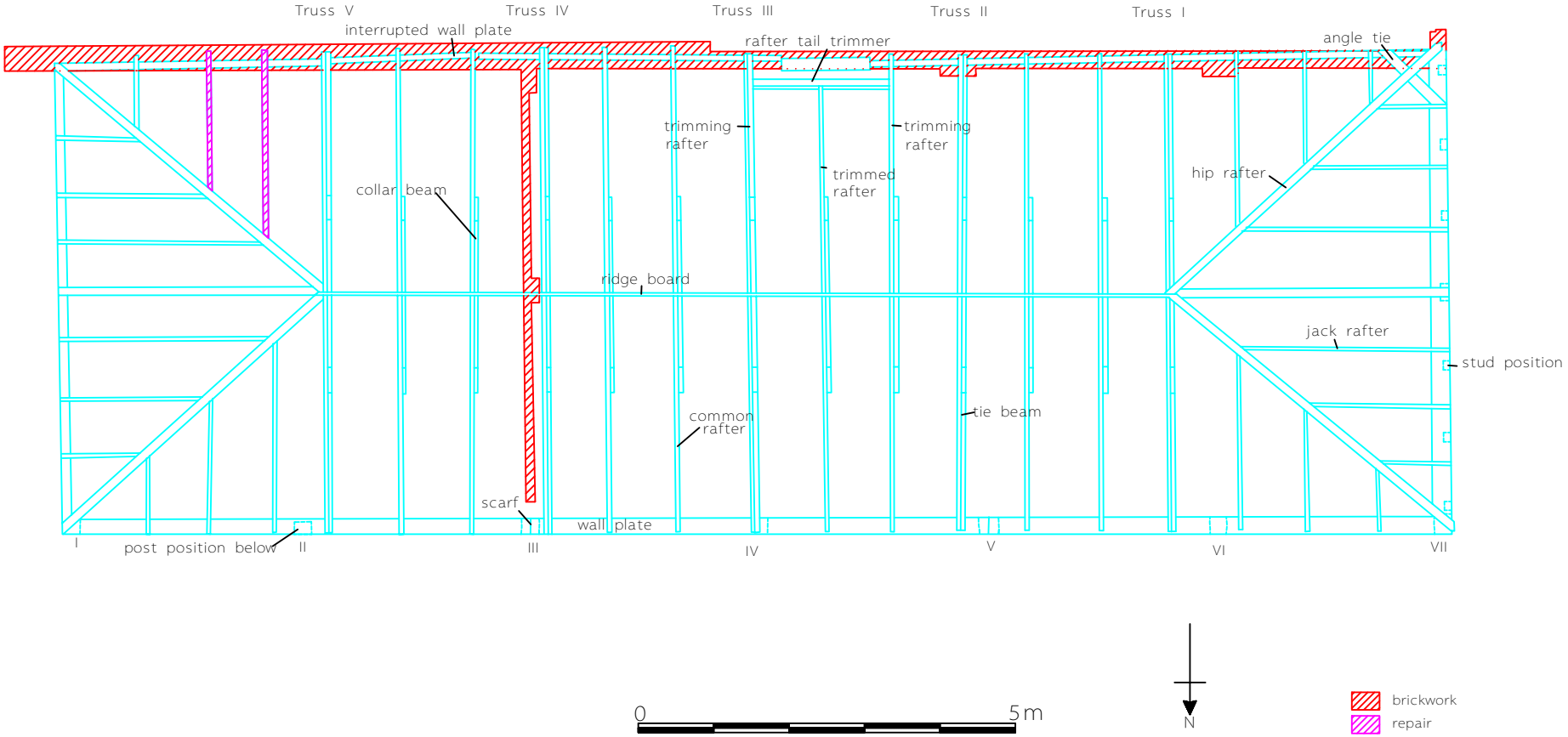


Figure 7 North Facing (Front) Elevation of the Wagon Shed

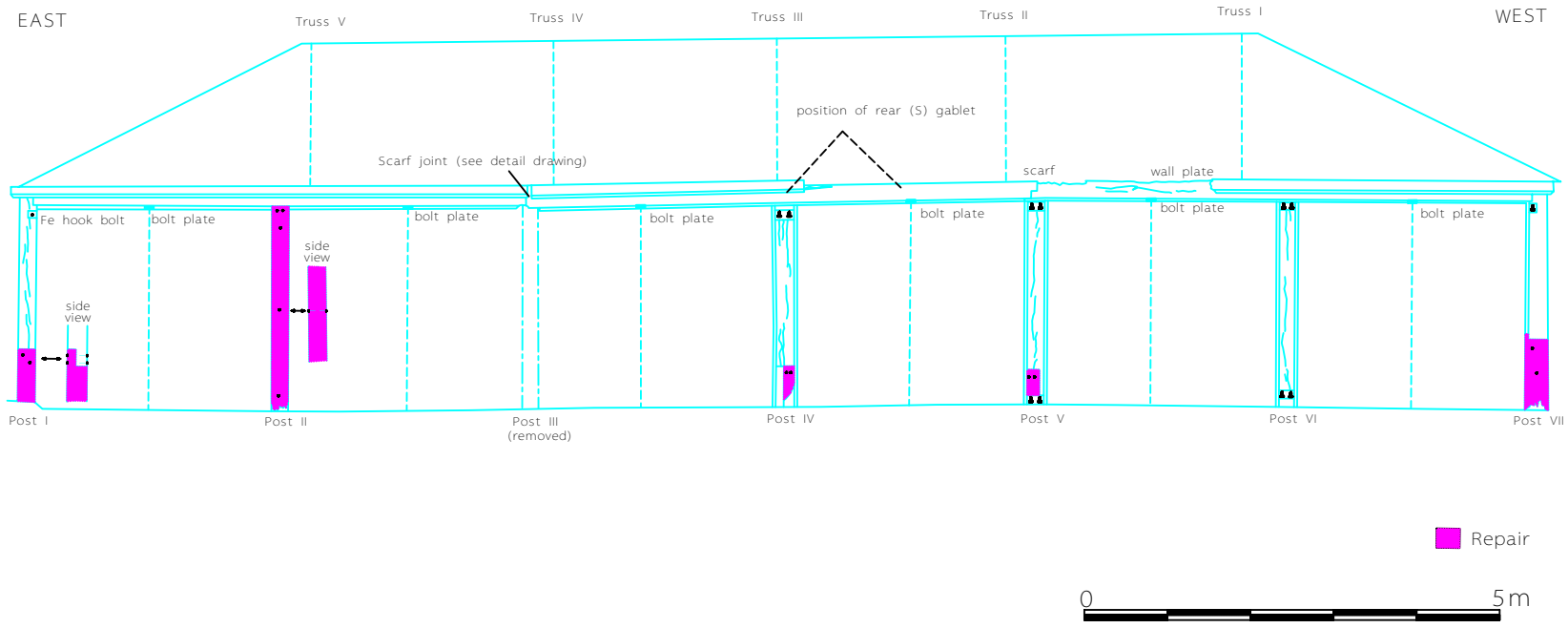


Figure 6 Phased South Face of the South Elevation of the Wagon Shed

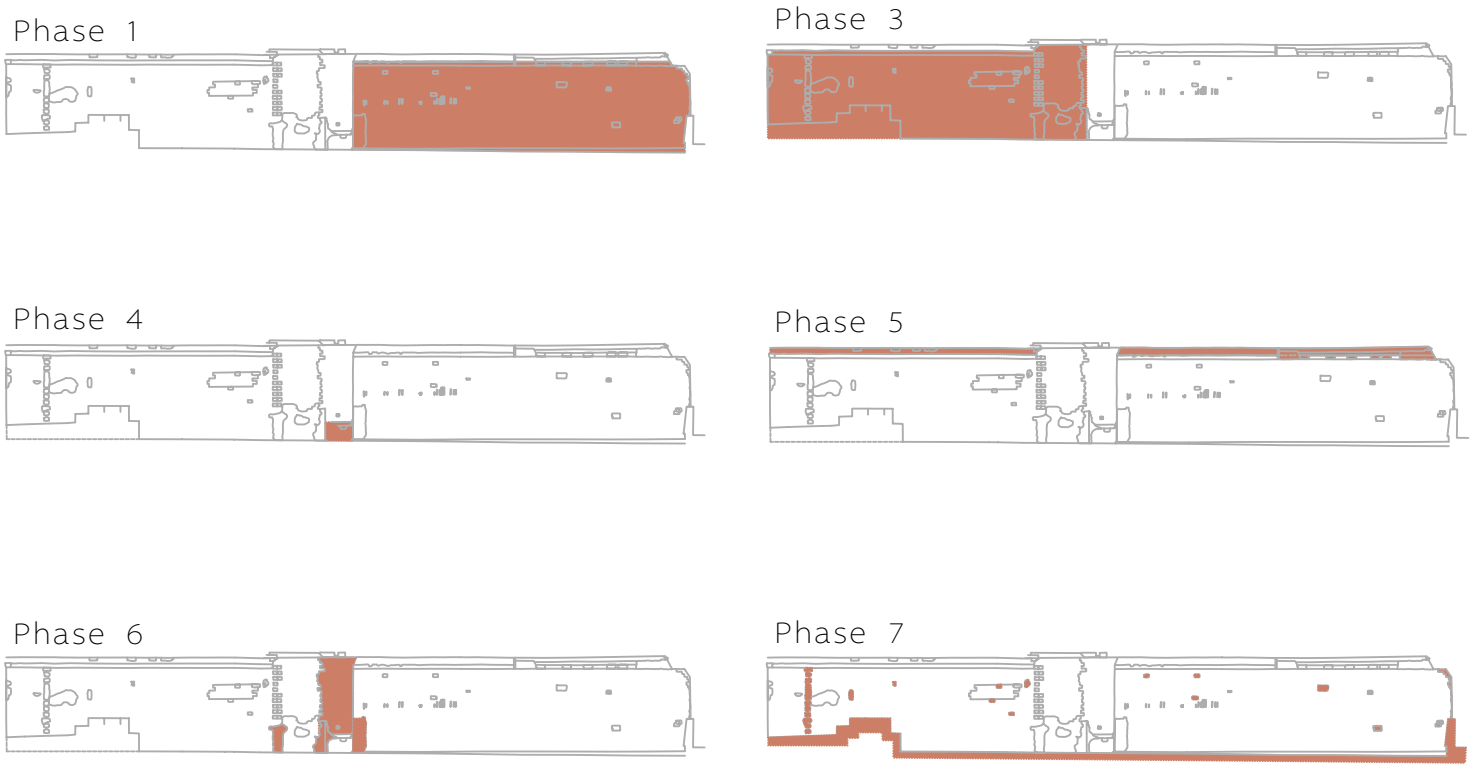
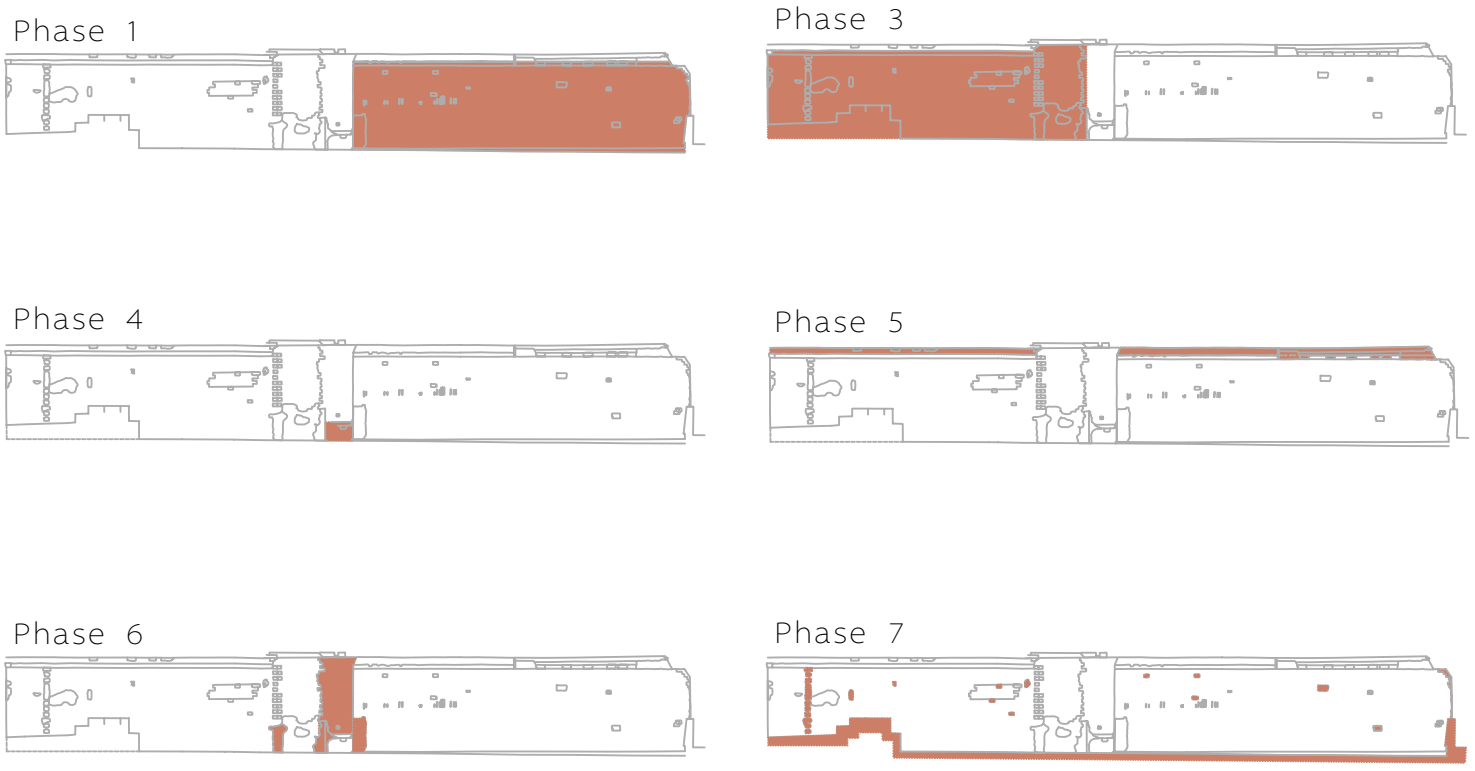
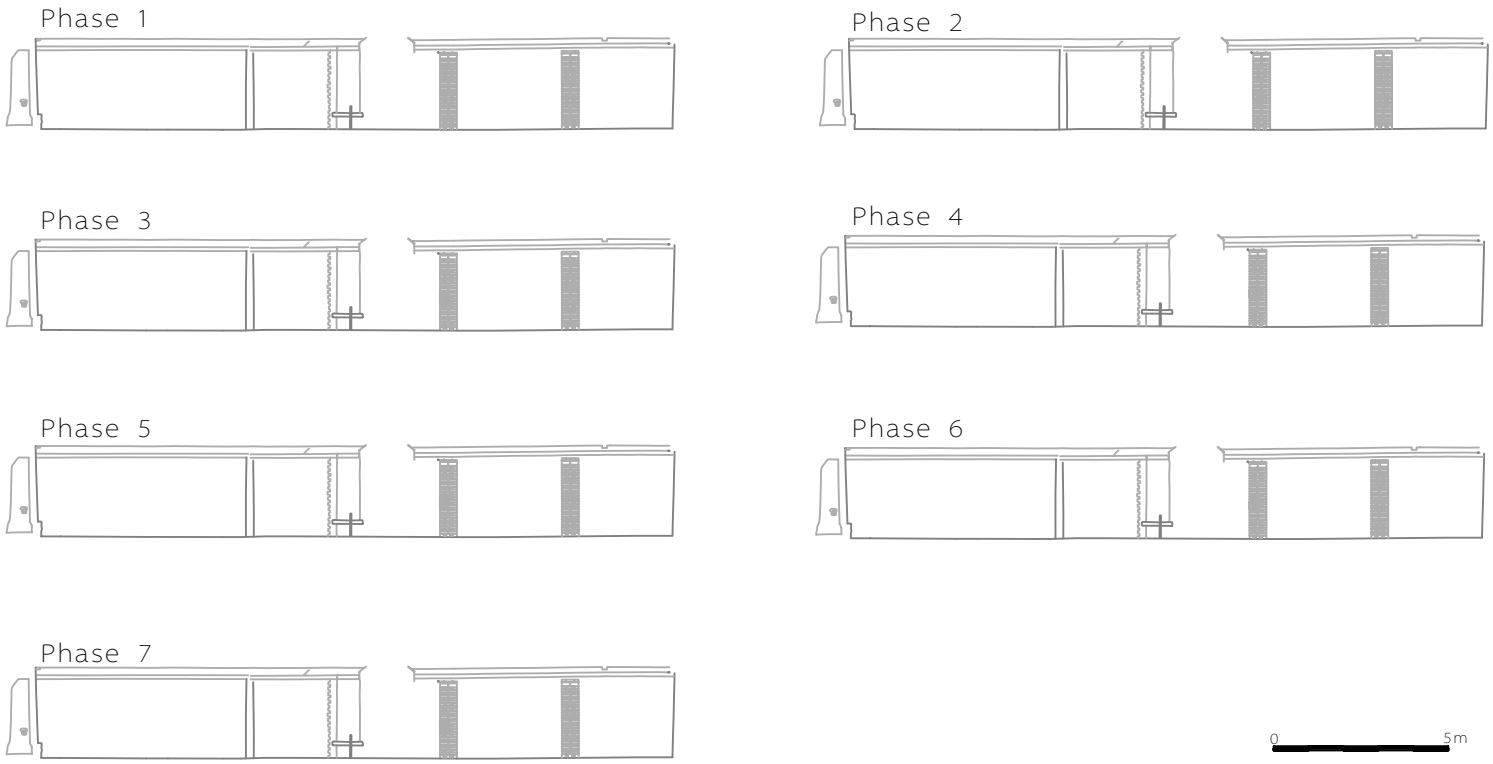


Figure 6 Phased South Face of the South Elevation of the Wagon Shed



Vagon Shed

Figure 5 Phased North Face of the South Elevation of the Wagon Shed



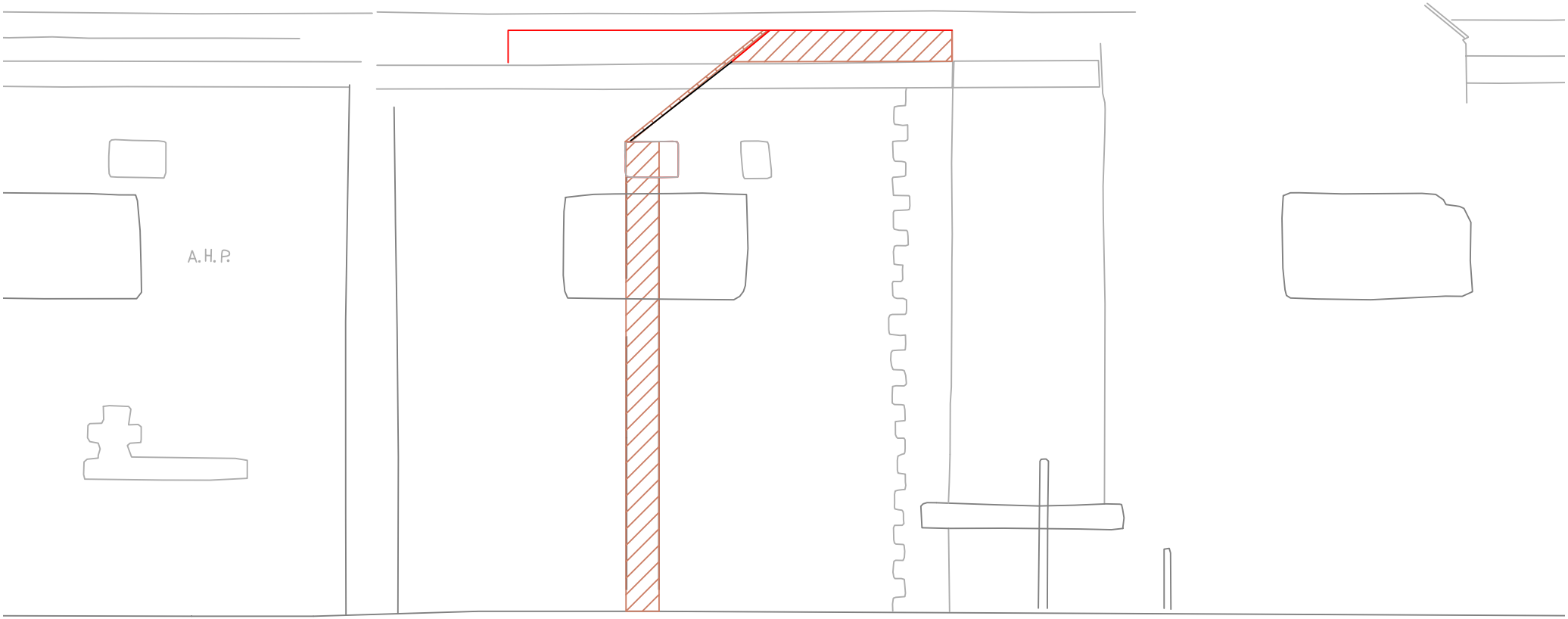

A. H. P.

Figure 4 Phased Plan of the Wagon Shed and Related Structures

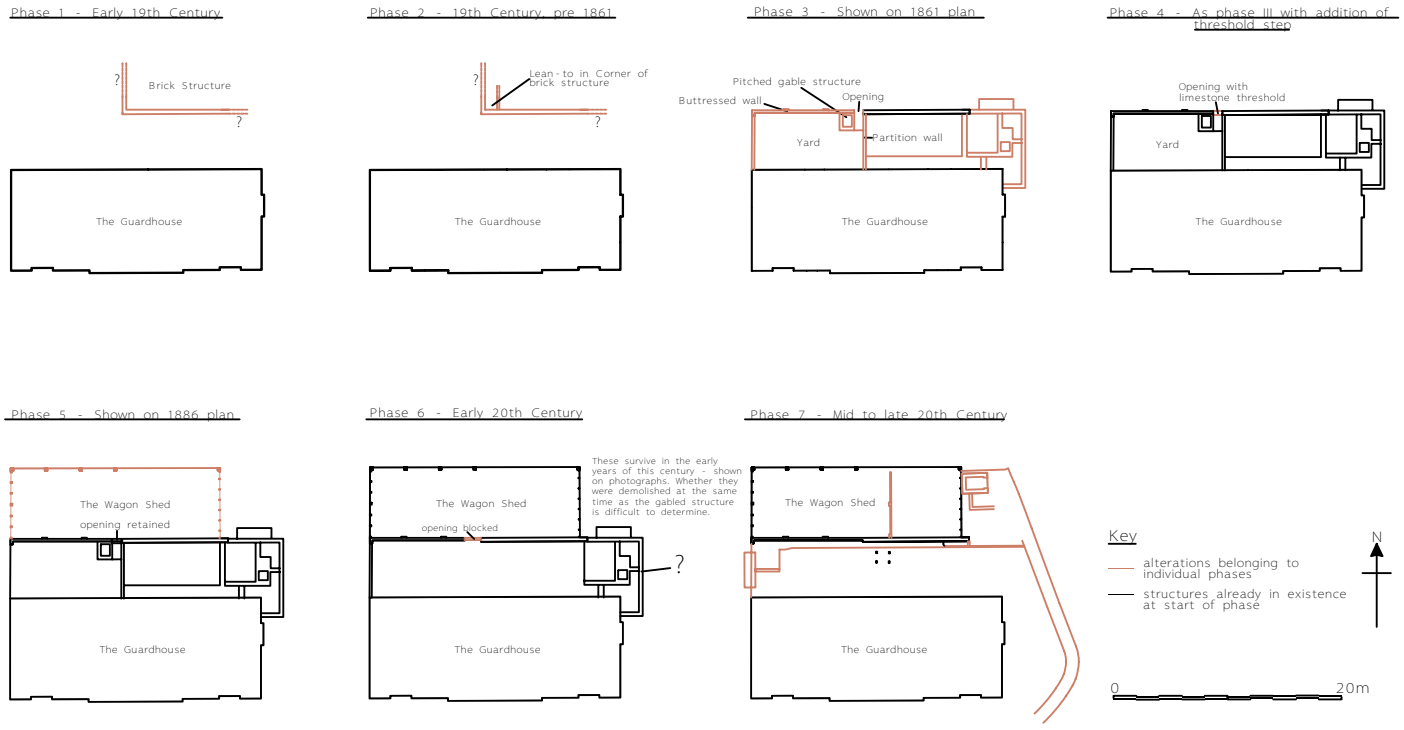
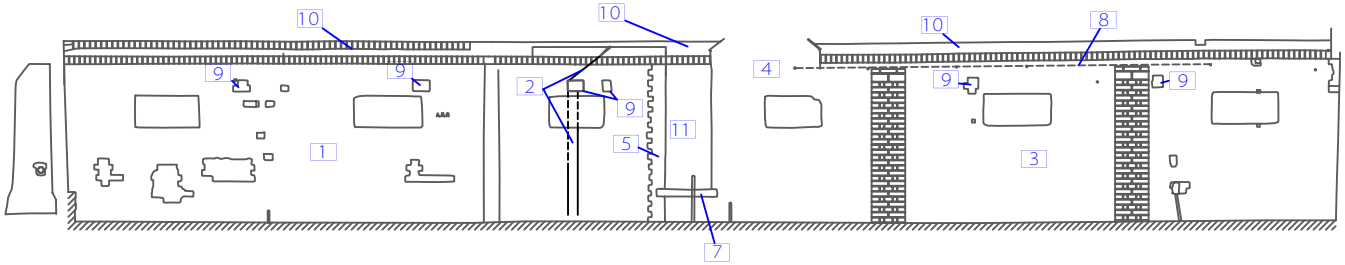


Figure 3 Elevations of the Wagon Shed Showing Context Locations (see Table 1 for descriptions)

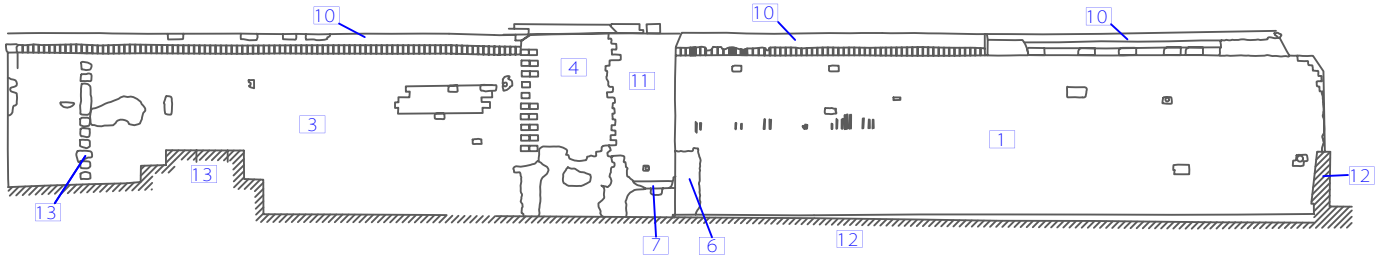
North Elevation

East West



South Elevation

West East

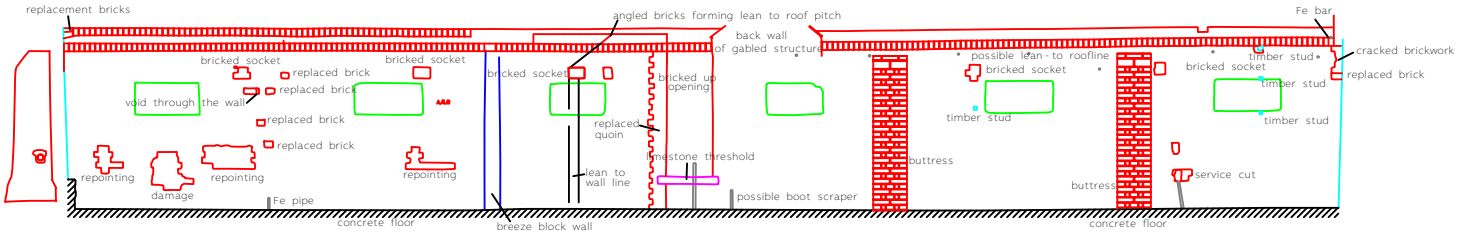


0 5m

Figure 2 The North and South Faces of the South Elevation of the Wagon Shed

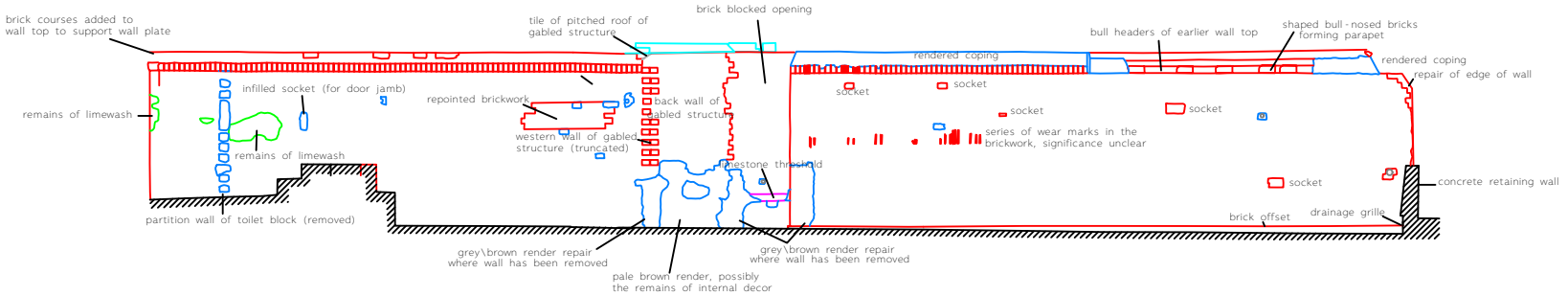
North Elevation

East West



South Elevation

West East



Key

- brick
- render
- timber
- limestone
- concrete
- paint

0 5m

Figure 1 Plan of Fort Cumberland showing the location of the Wagon Shed

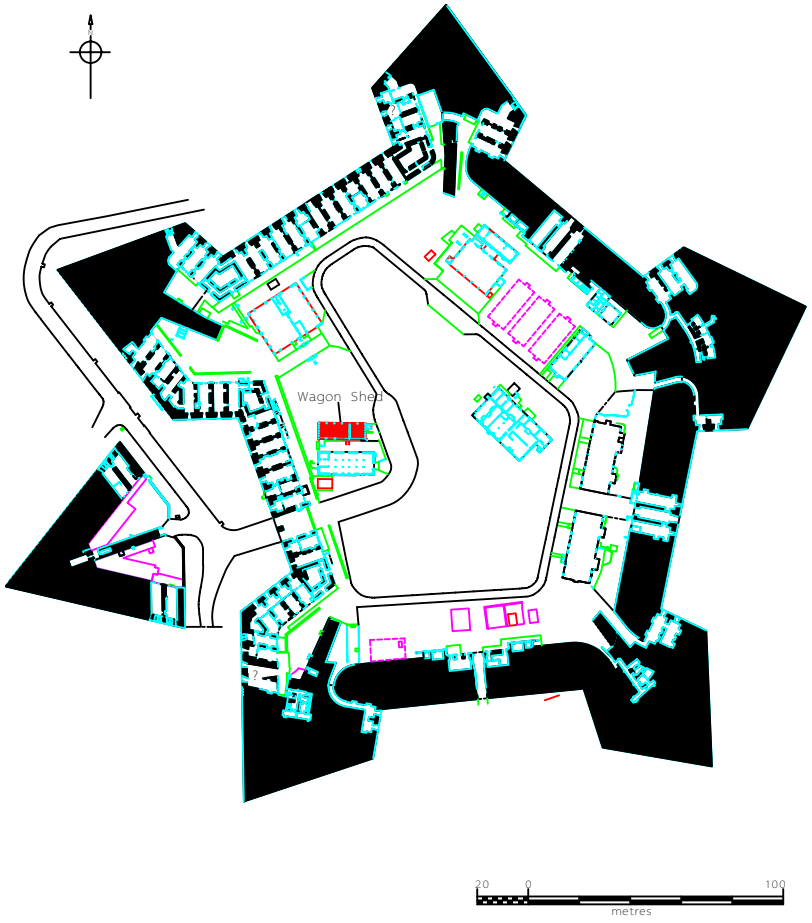


Figure 10 View of the Wagon Shed from the north-west, Pre- and Post-Conservation

late 1999

April 2000