

An Archaeological Building Recording of Fulwell Lime Kilns, Mill Garages, Sunderland



Fulwell Limekilns

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Compiled By:

Claire Carey
Archaeological Research Services Ltd
Baltic Business Centre
Saltmeadows Road
Gateshead
Tyne and Wear
NE8 3DA

Checked By:

Dr. Richard Chatterton
Tel: 0191 447 5111
Fax: 0191 447 7687
admin@archaeologicalresearchservices.com
www.archaeologicalresearchservices.com

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EXECUTIVE SUMMARY

In September 2008, Archaeological Research Services Ltd was commissioned by Inchcape Retail Ltd to undertake an archaeological building recording of Fulwell Lime Kilns at Mill Garages, Fulwell, Sunderland. The work was carried out prior to the proposed demolition of a modern building which was constructed against the lime kilns in the 1950s. The building was used as a car show room and offices but stands empty today. Three drawing arches were visible inside the building and had been used as storage space when the building was in use. The stone façade of the lime kilns was exposed on the ground and first floor. The first floor rear office was built in the style of a conservatory, with fenestration against the façade of the kilns. The stone work was also visible in the first floor male toilets.

The kilns were constructed in phases during the 18th and 19th centuries in order to process minerals from the adjacent Fulwell Limestone Quarry. They are constructed from coarse limestone rubble with rubble and brick dressings. Three kilns were situated within the showroom, making up the southwest wall. These include the two earliest kilns in the range, which lay to the northeast. The kiln at the southwest end within the show room was obscured by the southeast interior wall, which abutted the arch of the kiln. Four kilns were located outside the showroom to the northwest end of the range and were located in the present car forecourt. Two openings comprised round-headed corbelled brickwork arches, which had been blocked with bricks. The remaining two contain square iron girder lintelled roofs. The southeast end of the range contains four round-headed brickwork drawing arches. They had been infilled by the natural silting from the hillside. This work records the area within the showroom only.

The removal of the modern building will be beneficial to the historic kiln structure as it will expose those areas presently hidden and will improve the overall setting of the monument. The removal of the building will also allow air to circulate around the façade, which is currently suffering from damp due to being enclosed by the modern building. A number of frogs were present with the building giving evidence to the damp conditions. The removal of the building will allow the stone work to dry out. The removal should cause minimal damage to the kilns, if carried out with care. The modern building has been built against the kilns and the walls do not appear to penetrate the kiln structure. Three steel girders located at ceiling level on the ground floor support the first floor above. They have been driven into the kiln façade and have removed masonry and mortar as a result. Their removal should be carried out with care to avoid further damage and any masonry and mortar should be sympathetically repaired once they have been removed. A metal frame has been bolted onto the kiln façade at first floor level. Its removal should cause minimal damage, although some mortar may need to be repaired.

1. INTRODUCTION

1.1. Scope of work

- 1.1.1. In September 2008, Archaeological Research Services Ltd was commissioned by Inchcape Retail Ltd to undertake an archaeological building recording of the Grade II Listed Fulwell Lime Kilns at Mill Garages, Fulwell, Sunderland (Fig. 1). The work was carried out prior to the proposed demolition of a building, which was constructed against the lime kilns in the 1950s, and used as a showroom and offices. Three of the lime kilns are situated within the showroom and the stone façade the lime kilns was exposed on the ground and first floor of the building. The first floor rear office was built in the style of a conservatory, with fenestration against the façade of the kilns. The stone work of the lime kilns was also visible in the first floor male toilets.
- 1.1.2. The removal of the former showroom will be beneficial to the Grade II Listed kilns as it will make them fully visible and improve their overall setting. The showroom and kilns are suffering badly from damp and water ingress and the removal of the showroom will enable air to circulate freely around the kilns, which will allow the stonework to dry out. A number of frogs were found living inside the kilns which is a result of their damp condition.

1.2. Location and topography

- 1.2.1. Fulwell Lime Kilns are located at the present Mill Garages on Newcastle Road, Fulwell Sunderland, and are centred at NZ 39178 59580 (Fig. 2). Fulwell is a suburb of northern Sunderland. It borders Seaburn, Southwick, Monkwearmouth, and Roker. Fulwell is located near the district border between Sunderland and South Tyneside. The disused quarries at Fulwell are of national geological importance, displaying a large variety of spectacular dolomites from the Late Permian Concretionary Limestone Formation. Semi-natural Magnesian Limestone grassland is the major vegetation type in the area.

1.3. Research aims and objectives

- 1.3.1. The aim of this work was to record the elements of the kilns that lie within the former showroom in order to provide a record of the structure in its present condition. The record also assesses how the later building was constructed onto and against the kilns in order to assist in advising how the building can be demolished with minimum impact on the kilns.
- 1.3.2. The North-East Regional Research Framework for the Historic Environment (2006) notes the importance of research as a vital element of development-led archaeological work. In line with the scheme, this work will add to the understanding of Magnesian Limestone kilns in the area, which still require further survey on a regional level (NERRF 2006, 96). The recording of the kilns and the documentary searches will contribute to an understanding of how the area of Fulwell developed and grew as a result of the limestone industry (NERRF 2006, 183).

- 1.3.3. The work was undertaken to an English Heritage Level 3/4 recording standard and compiled in accordance with English Heritage's "*Understanding Historic Buildings – A guide to good practice*" (2006).

2. METHODOLOGY

2.1. Survey

- 2.1.1. A survey of the parts of the kilns which lie within the former showroom was produced by direct measurement using tapes.
- 2.1.2. Drawings of the arches and the relationship between the kilns and the later showroom walls were produced at a scale of 1:50 (Fig. 3).
- 2.1.3. Accurate elevations and plans have been produced to show the areas of the kilns which lie within the former showroom, and where the later building is fixed onto the historic structure. Plans and elevation drawings are illustrated in Figures 3, 4 and 5.

2.2. Photographic record

- 2.2.1. A photographic survey was undertaken in order to create a permanent record of the lime kilns prior to the demolition of the former showroom. The record was also made in order to identify the areas of the historic structure which may be affected by the proposed demolition. The photographic recording was carried out using Canon EOS 3000v cameras, in black and white and colour print. A number of photographs were taken in low light conditions, in which case a direct flash was used. An appropriate scale (2 metre alternating red and white ranging rod, and a 1 metre alternating black and white ranging rod), and a chalk board showing the location of the shot, were displayed in the photographs where appropriate. Detailed photographs were taken of individual features or areas of interest, which were given individual feature numbers. Photographic registers can be found in Appendix I.

2.3. Archive searches

- 2.3.1. The information within this report has been gathered from a number of sources, both primary and secondary, in accordance with the project specification. The following archives were consulted:

- Tyne and Wear Archives Service (TWAS)
- Sunderland Local Studies Centre
- Northumberland Museum and Archives
- Durham Record Office
- National Monuments Record (NMR)
- Historic Environment Record (HER)

2.3. Web sources

- 2.3.1. A number of web sources were consulted in order to assist in the archive searches and to obtain additional information relating to the study area. Those consulted were as follows:

Tyne and Wear HER: <http://www.twsitelines.info>

Structural Images of the North East: <http://sine.ncl.ac.uk/>

English Heritage: <http://www.english-heritage.org/NMR>

Archaeological Data Service: <http://ads.ahds.ac.uk/>

British Geological Survey: <http://www.bgs.ac.uk/geoindex/index.htm>

Magic Maps: <http://www.magic.gov.uk/>

2.4. Historic mapping

- 2.4.1. The specification supplied by the County Archaeological Officer stipulated that the final report should include historic map regression to show changes to the site over time. Historic maps were consulted at the archive services listed in section 2.2. Suitable maps were digitally photographed, then scaled and rotated using AutoCAD software. The following maps were included in the regression exercise:

- OS mapping revised 2004
- Ordnance Survey fourth edition map, 25" to 1 mile, 1939
- Ordnance Survey third edition map, 25" to 1 mile, 1919
- Ordnance Survey second edition map, 25" to 1 mile, 1898
- Ordnance Survey first edition map, 25" to 1 mile, 1855

- 2.4.2. Maps showing the area of Fulwell, but at a scale too small to show the study area in enough detail for the regression exercise were also consulted and include:

- Speed's 1610 map of County Durham
- Bill's 1626 map of County Durham
- Morden's 1722 map of County Durham
- Kitchin's 1784 map of County Durham
- Creighton's 1835 map of County Durham

3. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

3.1. Prehistoric

- 3.1.1. A small Neolithic axe was discovered in 1972 near the path that runs from Mill Garages to Fulwell Quarries (Miket 1984, 64). The artefact was donated to Sunderland Museum (Accession number 159.72; TWCMS F 2604). At Carley Hill to the north-west of the study area, excavations carried out in 1990 revealed part of an irregular oval-shaped enclosure thought to date from the Neolithic period (Holbrook 1990). During the construction of Atkinson Road in 1927, a cist thought to date from the Bronze Age was discovered. It comprised a cavity containing a skeleton and two earthenware jars (Miket 1984).

3.2. Romano-British

3.2.1. There is no evidence of settlement within the vicinity of the study area, but a number of finds dating from the Roman period have been found at Fulwell and Carley Hill Quarries. A letter in the *Gentleman's Magazine* dated October 1763, states that in the year 1759 the remains of a gigantic human skeleton were found at Fulwell Quarries. Two Roman coins were discovered close to the hand (Surtees 1820, 12-13). Further Roman artefacts were found at Fulwell Quarry between 1927 and 1933 including a stamped amphora handle and 4th century 'Huntcliff' ware, two querns, a spindle whorl, and a possible refuse pit were found at Fulwell Quarry in 1927 and 1933 (Steer 1938). In 1820, a Roman figurine was discovered at Carley Hill Quarry (Summers 1858, 16). A number of Roman coins were also reported to have been found at the quarries during the 19th century.

3.3. Early Medieval

3.3.1. Wearmouth was the site of St. Peter's monastery, one of the most famous of Saxon Northumbria. Parts of the present Church of St Peter date from the Saxon period and it is likely that the Venerable Bede carried out much of his work here. Despite the Viking raids of Wearmouth and the Norman devastation of the North, the settlement appears to have survived although there is little in the written records for the area during this period. However, there is no evidence of Early Medieval activity in the vicinity of the study area.

3.4. Medieval

3.4.1. The earliest documentary reference to Fulwell appears in 1204 in a confirmation of the possessions of Durham (Summers 1858). The vill then appears in a rental document of 1345-6 when it contained 7 tofts and 2 cottages. It is likely that coal was mined in the region since ancient times, but the earliest known documentary evidence dates from the 13th century. Further evidence states that Fulwell owed tithes to Wearmouth in 1347-8 (*ibid.*). Historic maps suggest the village had once taken the form of two rows with a green, but had perhaps shrunk by the late 18th century. It lay on both sides of what is now Station Road.

3.5. Post Medieval

3.5.1. By the 16th century Wearmouth was a small fishing port, which also began to produce salt using local coal and seawater, both of which were in free and plentiful supply. The coal export trade was one of the first major industries of Sunderland and resulted in many related derivative industries such as glass, pottery, rope and sails, and shipbuilding.

3.5.2. Fulwell was an agricultural village which was also famous for its limestone quarries. At one period Sunderland possessed a monopoly of the lime trade, being the only port from the Humber to the Forth that engaged in the business. By the 19th century Fulwell was held entirely by lease from the Church of Durham. The great tithes of the township were purchased in the general sale of the Hilton property by Sir Hedworth Williamson. They then passed to John

Stafford who passed then to his grandson, Richard Scruton, who held them still in 1820 (Surtees 1820, 12-13).

3.6. The Lime Industry

- 3.6.1. The Romans developed the process of burning limestone to make lime for mortars, concretes, plasters, renders, washes and fertilisers. There are a number of Roman lime kilns in the North East, one notable example was found along Hadrian's Wall at Housesteads (Simpson 1976, 152) and may be associated with that monument. Examples of Medieval lime kilns can be found along the Newcastle Quayside (Ellison *et al.* 1993) and may have been associated with constructing the town walls.
- 3.6.2. Agricultural improvement also created an increase in demand for lime from the late 16th century onwards, as it was spread on fields to reduce the acidity of the soil and so increase the fertility. It also improved the structure of heavy and light soils, making them easier to work with and helped to suppress weeds. Many of the larger farmers had their own lime kilns for this purpose.
- 3.6.3. The 18th century saw a further increase in demand as there was increased urban development as well as industrial and agricultural improvement on a large scale. Up until the middle of the 18th century most lime kilns in the country were temporary structures set up to burn the lime on site. After they had served their purpose many were simply left to decay whilst others were dismantled to be rebuilt elsewhere. The commercial scale of lime export from the 18th century saw the construction of larger, more permanent structures. By the 18th century, the process of lime burning was carried out in two ways (The Archaeological Practice 2000). One way was to pack the kiln with fuel and limestone, heat it through then empty and repeat as requirement demanded. This was ideal for short-term schemes. For larger-scale projects 'continuous' kilns were constructed. These were packed with alternate layers of fuel and limestone which dropped within the kiln as burnt material was emptied out from a grate at the bottom of the structure. When space became available at the top more fuel and limestone was added. As long as demand, raw materials and the structure of the kiln survived, the process could continue. Given the unlimited supply of limestone from the nearby Fulwell and Carley Hill Quarries, along with their commercial-scale lime production and the length of time the kilns were in use (200 years), it is likely that the Fulwell lime kilns were constructed as 'continuous' kilns.
- 3.6.4. The growth of the lime industry in Sunderland can still be seen today on the northern banks of the River Wear in Monkwearmouth. A suite of kilns made up the former Wear Limeworks and Carley Limeworks where limestone from Fulwell and Carley Hill Quarries was carried by wagonway and processed. These kilns were out of use by the 1900s (The Archaeological Practice 2000). The Monkwearmouth kilns were constructed very differently to the Fulwell kilns but functioned in the same way and are the only other surviving example of the Sunderland lime industry. A suite of kilns was constructed at Marsden, South Shields in the 1870s. They were constructed in a very similar style to those at Monkwearmouth with the block being an almost exact counterpart of the rectilinear kilns in the Wear Limeworks (The Archaeological Practice 2000). Southwick kilns are thought to have been built in the early 19th century and were

owned by the Williamson's of Monkwearmouth who owned and operated the Fulwell Quarries. It is thought that the Williamson family had been in the lime business since 1714 and continued to be so for many generations.

4. POST-MEDIEVAL DEVELOPMENT OF THE STUDY AREA

- 4.1. The information in this section has been taken from primary sources including historic mapping, which has been included in a map regression exercise (Figures 9 to 17), pictorial and written sources.
- 4.2. The earliest maps of the study area that were studied during this work date from the 17th century. Speed's 1610 map of County Durham shows that Fulwell existed at this time but the map is at a scale too small to show the study area in detail. Fulwell can also be seen on Bill's 1626 map of County Durham (Fig. 6).
- 4.3. A collection of newspaper articles from 1931 include a small article on the Hedworth Williamson Lime Quarries at Fulwell and describe the industry as being 180 years old, suggesting that it began *c.* 1750.
- 4.4. The first map to show any detail of the study area was a plan of Sir William Williamson's estate dated 1810 (Fig. 7). Fulwell Mill is clearly marked and West House can be seen to the immediate southeast. To the north of the mill two lime kilns are illustrated in the side of the hill.
- 4.5. On Creighton's 1835 map of County Durham (Fig. 8) the village of Fulwell can be seen to the east of the future site of the Fulwell lime kilns. The study area is shown as open fields and no evidence of the lime kilns can be seen, although they certainly existed by this time.
- 4.6. The first edition Ordnance Survey map of 1855 (Fig. 9) illustrates the vast amount of land that was taken up by Fulwell Quarry to the north-west of the study area and Carley Hill Old Quarry to the west, which appears to be out of use by this time. Also illustrated on the map is a man-made reservoir to the east of the quarry. The Fulwell and Monkwearmouth wagonway can be seen leading from Fulwell Quarry through the lime kilns via a turn-table and engine house. The wagonway continued south past Fulwell Windmill, which was being used to process corn at that time. West House and Fulwell Inn are located to the east of the mill and have extensive gardens to the south. The mill is thought to have been built in 1807/8 for Joseph Swan who also had West House built. It has been suggested that an earlier mill stood on the site as a map dated 1785 shows a mill at this location (Sinclair 2000). The map could not be traced during this study.
- 4.7. The second edition Ordnance Survey map of 1898 (Fig. 10) shows that an extra section has been added to the wagonway which leads from Fulwell Quarry into the lime kilns. This section passes round the kilns to the north and terminates at a small building to the east of the kilns. The earlier sections of the wagonway no longer pass by the corn mill to the south, but terminate at the lime kilns. The reservoir to the east of Carley Hill Old Quarry has now been covered and is listed as belonging to Sunderland and South Shields Water Works.

- 4.8. The third edition Ordnance Survey map of 1919 (Fig. 11) marks the lime kilns as old indicating that they may no longer have been in use by this date. The wagonway appears to pass behind the kilns to the west and carries on to a quarried area further south where it terminates. The windmill is disused by this date also. It is also apparent from this map that there has been a vast amount of development within Fulwell Quarry at the western end where an extensive network of wagonways can now be seen.
- 4.9. The fourth edition Ordnance Survey map of 1939 (Fig. 12) reveals that there have been no changes since the 1919 survey, and the revised edition Ordnance Survey of 1960 (Fig. 13) shows that the lime kilns and the associated wagonways are still present but they were out of use by this date following their closure in 1957. The area to the east of Newcastle Road has also been developed with semi-detached residential housing.
- 4.10. The revised edition Ordnance Survey of 1968 (Fig. 14) appears to indicate that the lime kilns have gone out of use by this date and the land where the wagonways leading from Fulwell Quarry passed has been reinstated. A large rectangular building has been erected to the north of the kilns which is likely to be the present Volkswagen garage that stands on the site today. The lime kilns are not marked on this map.
- 4.11. The revised edition Ordnance Survey of 1975 (Fig. 15) shows that the showroom has been constructed onto the side of the lime kilns by this date. The earlier wagonways appear to exist as earthworks and the area to the south of the windmill has been developed with residential housing.
- 4.12. The revised edition Ordnance Surveys of 1984 (Fig. 16) and 2004 (Fig. 17) reveal no changes to the study area since the survey of 1975. The quarries today have been reinstated and a nature reserve has been created.

5. RESULTS OF PHOTOGRAPHIC SURVEY

- 5.1. The site was visited on 8th September 2008. The kilns are constructed from coarse limestone rubble with rubble and brick dressings. Three kilns were situated within the showroom, making up the southwest wall. These include the two earliest kilns (Kilns One and Two) in the range, which lay to the northeast. The kiln at the southwest end within the showroom (Kiln Three) was partly obscured by the southeast interior wall, which abutted the arch of the kiln. Four kilns were located outside the showroom to the northwest end of the range and were located in the present car forecourt (Fig. 18). Two openings comprised round-headed corbelled brickwork arches, which had been blocked with bricks. The remaining two have square, iron-girder lintelled roofs. The southeast end of the range contains four round-headed brickwork drawing arches (Fig. 19). They had been infilled by the natural silting from the hillside. This work records the area within the showroom only.

5.2. Kiln One

5.2.1. Kiln One lay within the showroom at the northwest end and is one of the earliest kilns in the range (Fig. 20). It comprised a round-headed, rough magnesian limestone block arch, which led to an opening beyond with a corbelled roof. The arch was set into the kiln façade, which was made up from roughly-dressed magnesian limestone blocks. The opening beyond the arch had been blocked at the far end by brickwork (Fig. 21). The floor had been covered with concrete but the corbelled roof was still exposed (Fig. 22). On the inside of the arch, a timber lintel was positioned between the arch and the corbelled roof (Fig. 23). This appeared to be placed within a previous opening, which had been sealed with limestone blocks. The walls within the opening were also constructed out of roughly-dressed magnesian limestone blocks (Fig. 24). A modern wooden frame with glass panes and a wooden door had been inserted into the arch opening when the area was in use as offices for the showroom. The wooden panels were placed against the stonework and no evidence of fixtures or fittings could be seen. The panels appeared to have been cut to the shape of the kiln arch and slotted in place. Their removal should cause little or no damage to the lime kilns.

5.3. Kiln Two

5.3.1. Kiln Two was located in the centre of the kiln façade within the showroom (Fig. 25). It was contemporary with Kiln One and had been constructed in exactly the same style. Behind the arch, the opening had been blocked at the far end with bricks (Fig. 26) and the corbelled roof was exposed (Fig. 27). Two thin metal rods were located in the space between the arch and the corbelled roof (Fig. 28). This also appeared to have been a previous opening that had since been blocked with limestone blocks. The floor had been covered with concrete. A modern wooden frame with glass panes and a wooden door had been placed within the arch opening. The frame had been slotted into the space and its removal would cause no damage to the kiln.

5.4. Kiln Three

5.4.1. Kiln Three had been constructed at a later date than Kilns One and Two. The wall into which it was constructed was set 0.80m forward from Kilns One and Two. It was located at the southeast end within the showroom and comprised a round-headed corbelled brick arch at the top with rough limestone blocks on the lower courses (Fig. 29). The opening had been blocked up in recent times with rough limestone blocks and the southeast end was partly obscured by the showroom southeast wall.

5.5. Fixtures

5.5.1. There were three steel girders at ceiling level that had been driven into the façade of the kilns (Fig. 30). They are marked on Figure 3. The girders have already caused damage to the kilns and their removal will need to be carried out with care in order to avoid further damage. The masonry and mortar will need to be replaced once the girders are removed.

- 5.5.2. The north-west brick wall of the showroom rests against the façade of the kilns (Fig. 31) and its removal, if carried out with care should not cause significant damage to the kiln structure. The southeast brick wall of the showroom rests against Kiln Three (Fig. 32) and will also need to be removed with care to avoid damaging the kiln. These walls do not cut into or penetrate the kiln structure and therefore damage should be minimal. The external walls of the modern structure are also built up against the kiln façade and do not appear to penetrate the stone work. Careful removal should cause minimal damage.
- 5.5.3. A section of the stonework was exposed within a ground floor cupboard at the northwest end of the building, revealing that the wall of the showroom only rests against the kiln structure in this section (Fig. 33). A section of the façade was also exposed within the first floor male toilets and revealed the same relationship between the buildings (Fig. 34). The removal of these walls should cause minimal damage to the kilns if removed with care.
- 5.5.4. The front façade of the lime kilns are not vertical and slope back as the structure rises. They slope back slightly as the structure rises. The showroom was built vertically and therefore the first floor office is set slightly away from the façade of the kiln with fenestration against the façade of the kiln (Fig. 35). The first floor of the building is secured onto the kiln structure by a metal frame which has been bolted onto the kiln façade (Fig. 36). The removal of the frame may cause damage to the mortar of the kilns which will need to be replaced after removal.

6. RESULTS OF ARCHIVE SEARCHES

- 6.1. A number of sources were consulted in order to gather information about the historic development of the lime kilns and the surrounding area. Primary sources such as maps, plans and photographs were consulted, as well as secondary sources including county histories and reference books.

6.2. Tyne and Wear Archives Service (TWAS)

- 6.2.1. The TWAS holds a number of maps and plans relating to the study area. A collection of early plans covering Monkwearmouth were consulted. A plan dated 1714 (TWAS ref: DX882/1) illustrated the Manor of Monkwearmouth owned by Sir William Williamson and a windmill is clearly drawn on the plan (Fig. 37). It is possible that the windmill is the earlier mill marked on the above mentioned 1785 map (Sinclair 2000) located on the site of the present early 19th century Fulwell windmill. However, the field boundaries, buildings and roads could not be matched to any of the later maps and it is not certain whether this plan is a survey of the study area. No evidence of the lime kilns was marked on the plan and if this is indeed the study area, it suggests that the earliest kilns were built after 1714. A manor plan of the late Sir William Williamson's estate in the parishes of Whitburn and Monkwearmouth, dated 1810 (TWAS ref: DX882/3) shows the study area beyond doubt (Fig. 7) and given the title of the plan it suggests that it covers the same area as the previous 1714 plan. The lime kilns are clearly marked on this plan suggesting that they were constructed between 1714 and 1810.

6.3. Sunderland Local Studies

- 6.3.1. Sunderland Local Studies section held a number of local history books along with maps and plans of the area. A number of the later Ordnance Survey maps were studied at this archive.

6.4. Durham Record Office

- 6.4.1. Durham Record Office held a number of historic maps, Ordnance Survey maps and plans covering the area of Fulwell. There are also extensive records relating to the Fulwell Quarries but nothing relating directly to the Fulwell lime kilns. A number of county histories that mention Fulwell are also held at the Durham Record Office.

6.5. Northumberland Museum and Archives

- 6.5.1. The Northumberland Museum and Archives held at Woodhorn Colliery in Ashington contained no records relating to the Fulwell lime kilns. Only one record relating to Fulwell Quarry was held and was a letter dated 1822 from William Reid Clanny M.D. presenting and donating to The Society of Antiquaries of Newcastle upon Tyne, a Roman figure found around Bishopwearmouth (SANT/ADM/4/1/2/055). This is the same figure that was found at Carley Hill Quarry in 1820. The letter describes how the figure was discovered with bones and portions of limpet shells.

6.6. National Monument Record (NMR)

- 6.6.1. The NMR held a number of records relating to Fulwell which are listed below:

26193

Roman pottery including a stamped amphora handle and some 4th century 'Huntcliff' ware, two querns, a spindle whorl and a possible refuse pit were found at Fulwell Quarries in 1927 and 1933.

26274

A small Neolithic stone axe found in 1972 near the path that runs from Mill Garages to Fulwell Quarries. It was donated to Sunderland Museum (Accession number 159.72; TWCMS F 2604) by P Jackson of Lunedale Avenue Sunderland.

762395

Prehistoric/Roman inhumation found at Fulwell Quarries

762398

Bronze Age cinerary urn found in Fulwell

762470

A possible Bronze Age barrow containing a skeleton in a cist of four large stones. The cist was thought to be Bronze Age but Roman coins were associated with the burial indicating a possible Roman date.

6.7. Historic Environment Record (HER)

- 6.7.1. The HER was consulted in order to obtain information about further lime kilns in the area as well as the region's lime industry. Archaeological reports relating to Marsden lime kilns (The Archaeological Practice 2000) and Monkwearmouth lime kilns (The Archaeological Practice 2000) were consulted, as well as issues of the Industrial Archaeological Review journal and various other records relating to lime kilns.

7. DISCUSSION

- 7.1. Fulwell lime kilns are certainly of regional importance as they are one of only two surviving suites of kilns in Sunderland. Although there are a number of kilns in the North East, the ranges at Fulwell and Monkwearmouth are specific to the monopoly that Sunderland held over the North-Sea lime-trade and are part of the areas industrial heritage. They are also of interest due to the Magnesian Limestone formation in the Fulwell area makes up some of the greatest variety and most spectacularly developed dolomites from the Late Permian Concretionary Limestone Formation.
- 7.2. The removal of the modern showroom will benefit the lime kilns as it will expose those areas that are presently hidden and will also allow air to circulate around the stonework, which at present is suffering from damp conditions. However, the removal must be carried out with care in order to avoid damaging the façade of the kilns. The walls of the modern showroom are simply built up against the kilns and should cause little or no damage if removed. Three reinforced girders have been driven into the kiln façade within the modern showroom, which appear to support the first floor. Their insertion has already caused some damage to the kilns and they will need to be removed with care to avoid further damage. The masonry and mortar will need to be sympathetically repaired once the girders have been removed. The girder at the south east truncates the brick-work arch of Kiln Three and extra care should be taken during its removal to avoid damaging the arch. The metal fixtures on the first floor appear to have been bolted onto the kiln façade and should also cause little or no damage to the masonry if removed. However, some repairs may need to be made to the mortar. Any damage caused to the structure during the removal of the showroom should be repaired as part of the demolition programme of works.
- 7.3. As the proposed removal of the showroom does not intend to alter the historic fabric of the kilns, no further recording work is recommended at this stage.
- 7.4. Historic mapping reveals that the surrounding area has been undeveloped and the potential for survival of below-ground evidence that could further inform the history of the site and buildings is reasonably high. However, the proposed development does not include any ground works which would require additional mitigation measures.

8. PUBLICITY, CONFIDENTIALITY AND COPYRIGHT

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- 8.2. Archaeological Research Services Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

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- 9.1 All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

10. ACKNOWLEDGEMENTS

- 10.1. Archaeological Research Services Ltd would like to express special thanks to Derek Millican of Inchcape Retail Ltd, Lee Ellison of Dixon Dawson Architects, and all the staff at the Volkswagen Mill Garages. We would also like to thank Jennifer Morrison of Tyne and Wear Conservation Team and all those at the consulted archives.

11. REFERENCES

Brown, R. J. 1982. *Windmills of England*. London. Robert Hale.

English Heritage 2006. *Understanding Historic Buildings – A guide to good practice*.

Holbrook, N. 1990, *Carley Hill, Excavation report*. Unpublished client report.

Miket, R. 1984. *The prehistory of Tyne and Wear: an inventory of prehistoric discoveries in the Metropolitan County of Tyne and Wear*. Wooler, Northumberland Archaeological Group.

Petts, D. & Gerrard, C. 2006. *Shared Visions: The North-East Regional Research Framework for the Historic Environment*.

Steer, K. A. 1938. *The Archaeology of Roman Durham*. Durham

Summers, J. W. 1858. *History and Antiquities of Sunderland*. Sunderland

The Archaeological Practice (2000). *Marsden Limekilns: An Archaeological Survey and Assessment*. Unpublished client report.

The Archaeological Practice (2000). *Monkwearmouth Limekilns: An Archaeological Survey and Assessment*. Unpublished client report.

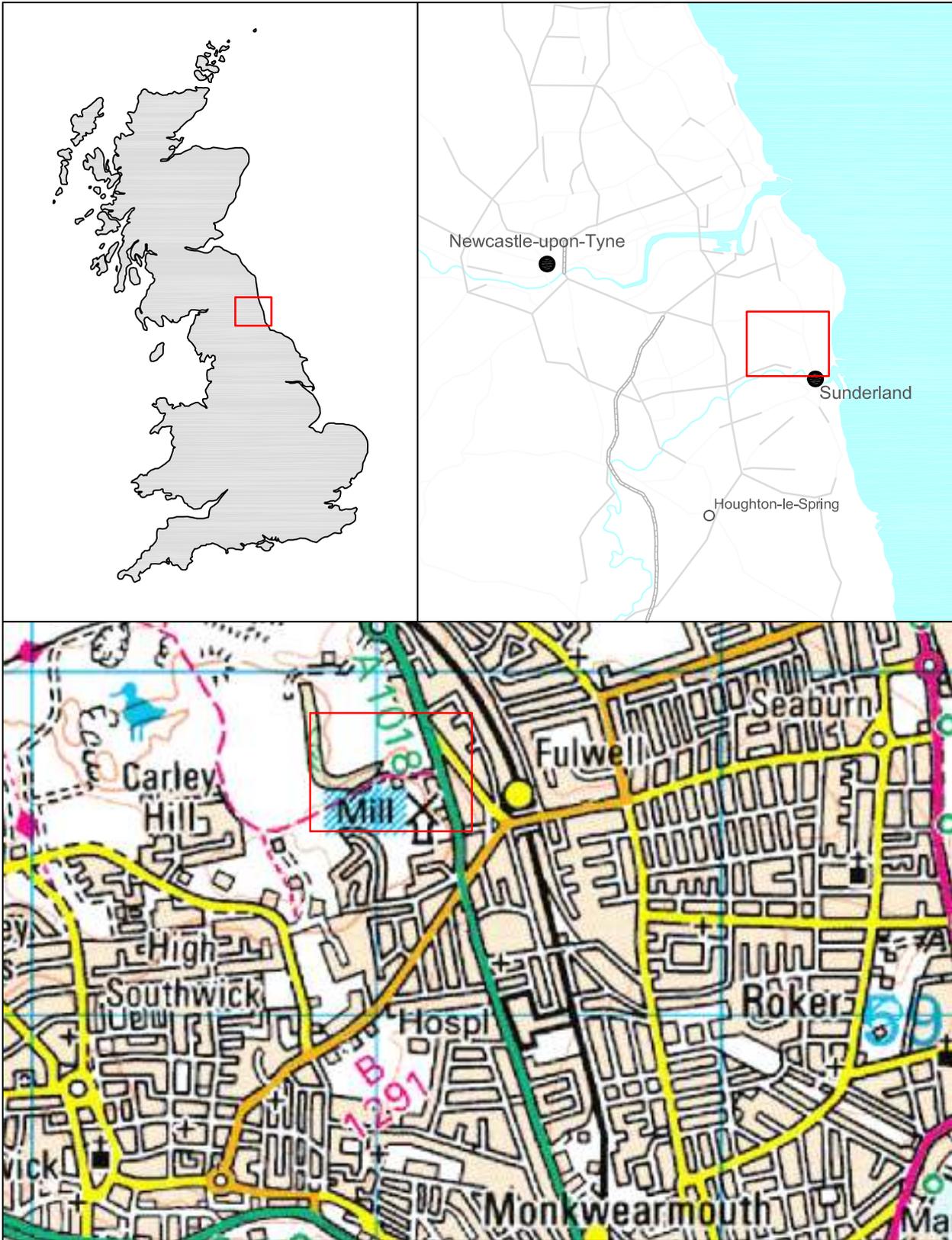


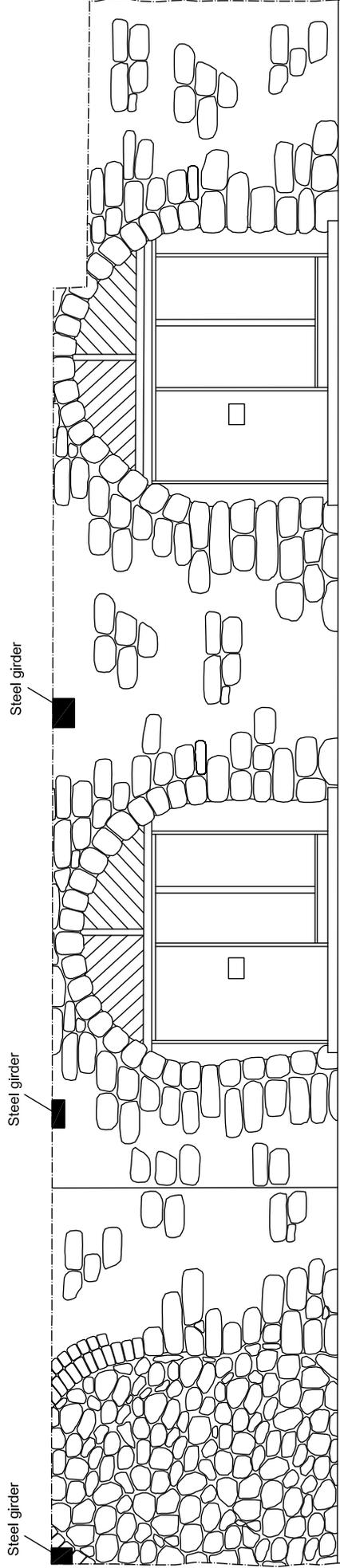
Figure 1. Site Location



<p>Archaeological Research Services Ltd Baltic Business Centre Saltmeadows Road Gateshead NE8 3DA</p>	<p>Figure 2: Site plan</p>	<p>Key:</p> <ul style="list-style-type: none"> Study area Building to be demolished	<p>Copyright/Licensing: This drawing © A.R.S. Ltd</p> <p>Ordnance Survey data if applicable © Crown Copyright, all rights reserved reproduced with permission. Licence No. 100045420</p>
<p>Site Code: MILL08 Drawing Ref: Report Fig. 2 Date: 08 SEP 08 Drawn: CC Scale: 1:1250 at A4</p>	<p>Notes:</p>		

Site Code: MIL08
Drawing Ref: Report Fig. 3
Date: 16 Sep 08
Drawn: CC
Scale: 1:50 at A3

Title:
Figure 3: Elevation within
the showroom

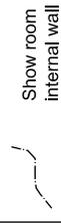


Kiln One
(earliest phase)

Kiln Two
(earliest phase)

Kiln Three
(later phase)

Key:



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Date: 16 Sep 08
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Scale: 1:100 at A3

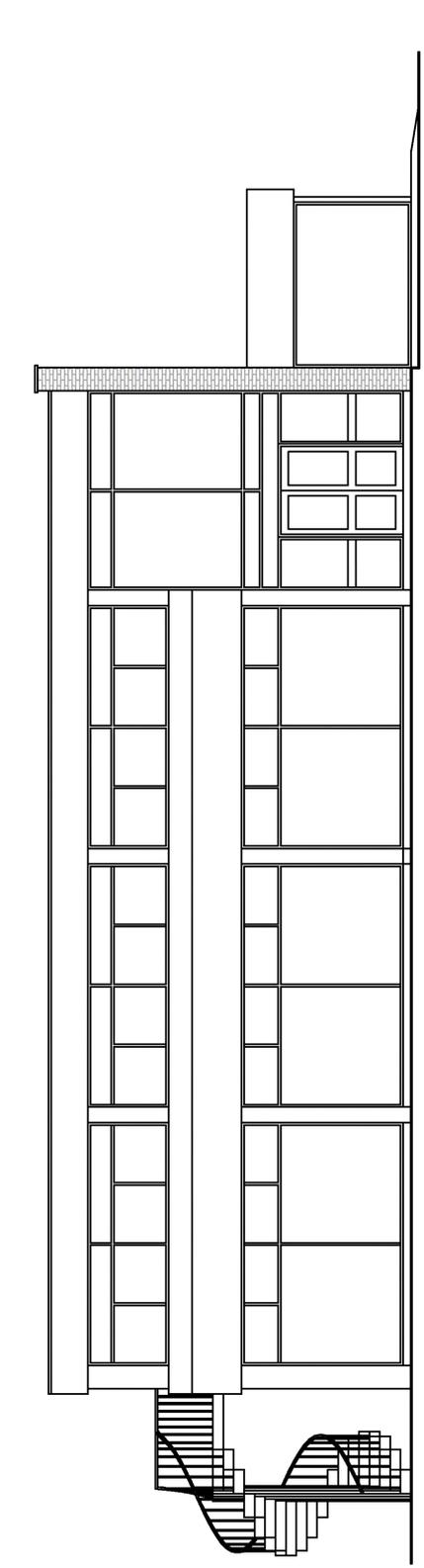
Title:
Figure 4: Existing
elevations

Key:
 Lime kilns

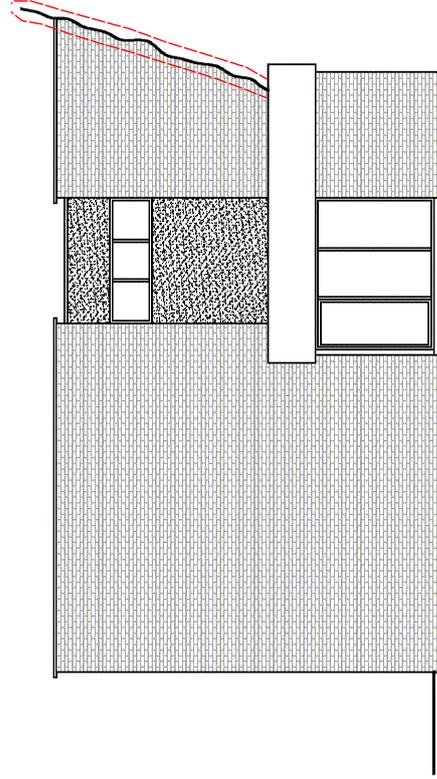
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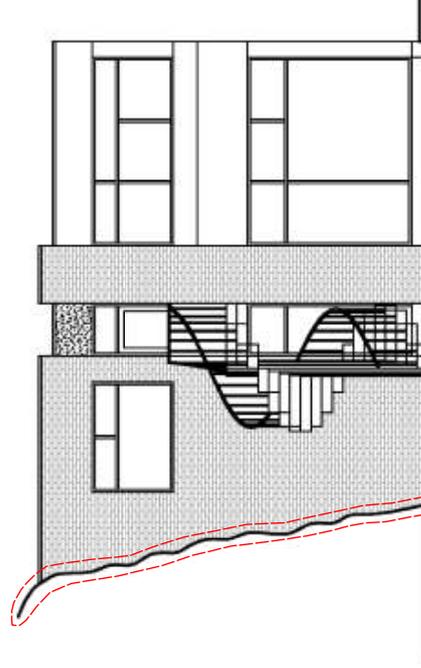
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Northeast elevation



Northwest elevation



Southeast elevation



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Site Code: MIL08
Drawing Ref: Report Fig. 5
Date: 16 Sep 08
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Scale: 1:100 at A3

Title:
Figure 5: Existing floor
plans

Key:
Lime kilns

Notes:

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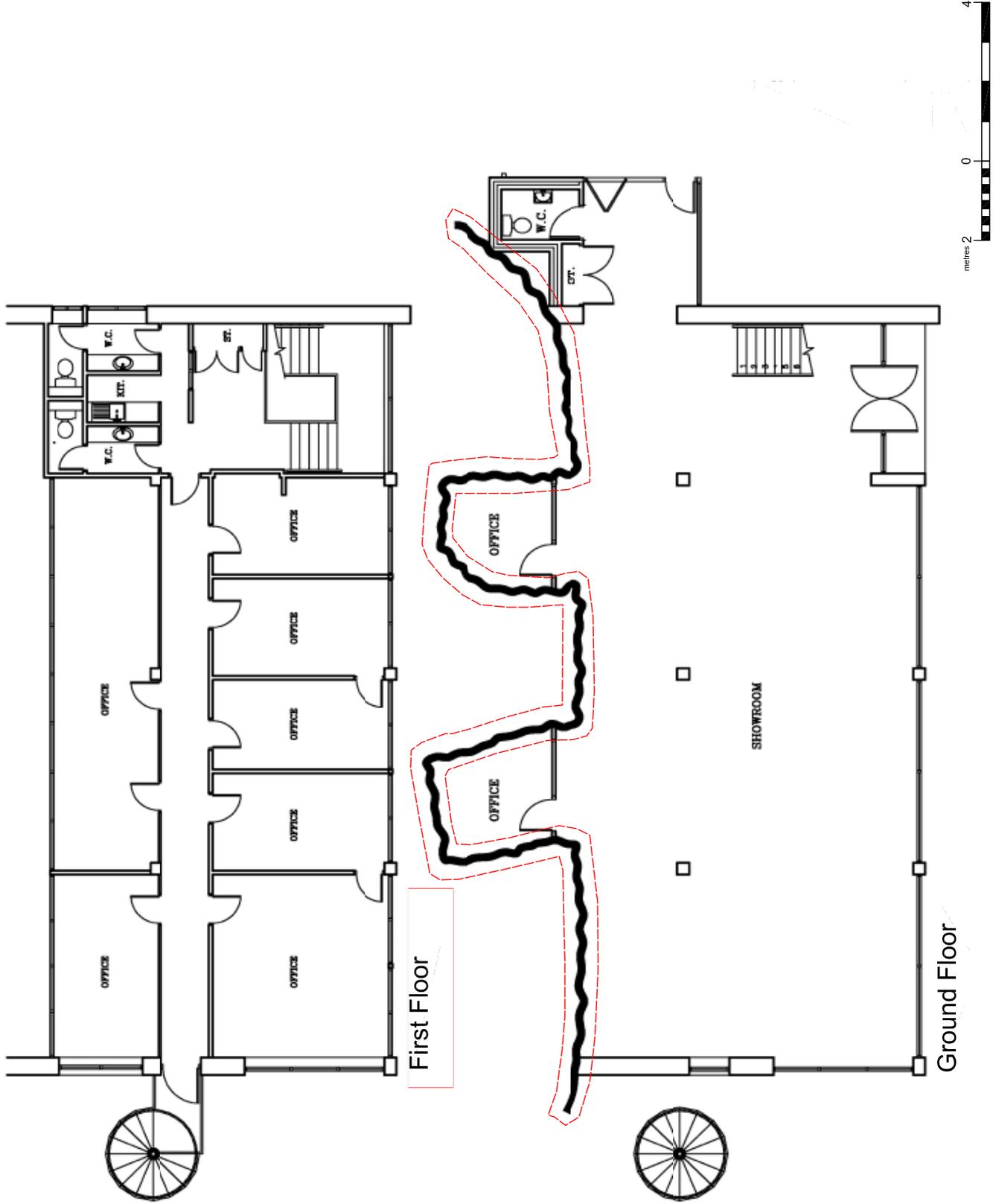




Fig. 6 Bill's 1626 map of County Durham



<p>Archaeological Research Services Ltd Baltic Business Centre Saltmeadows Road Gateshead NE8 3DA</p>	<p>Figure 7: Manor Plan of the Parishes Whitburn and Monkwearmouth 1810</p>	<p>Key:</p> <p> Study area</p>	<p>Copyright/Licencing: This drawing © A.R.S. Ltd</p>
<p>Site Code: MIL08 Drawing Ref: Report Fig. 7 Date: 08 SEP 08 Drawn: CC Scale: 1:2000 at A4</p>	<p>Notes:</p>		<p>Ordnance Survey data if applicable © Crown Copyright, all rights reserved reproduced with permission. Licence No. 100045420</p>

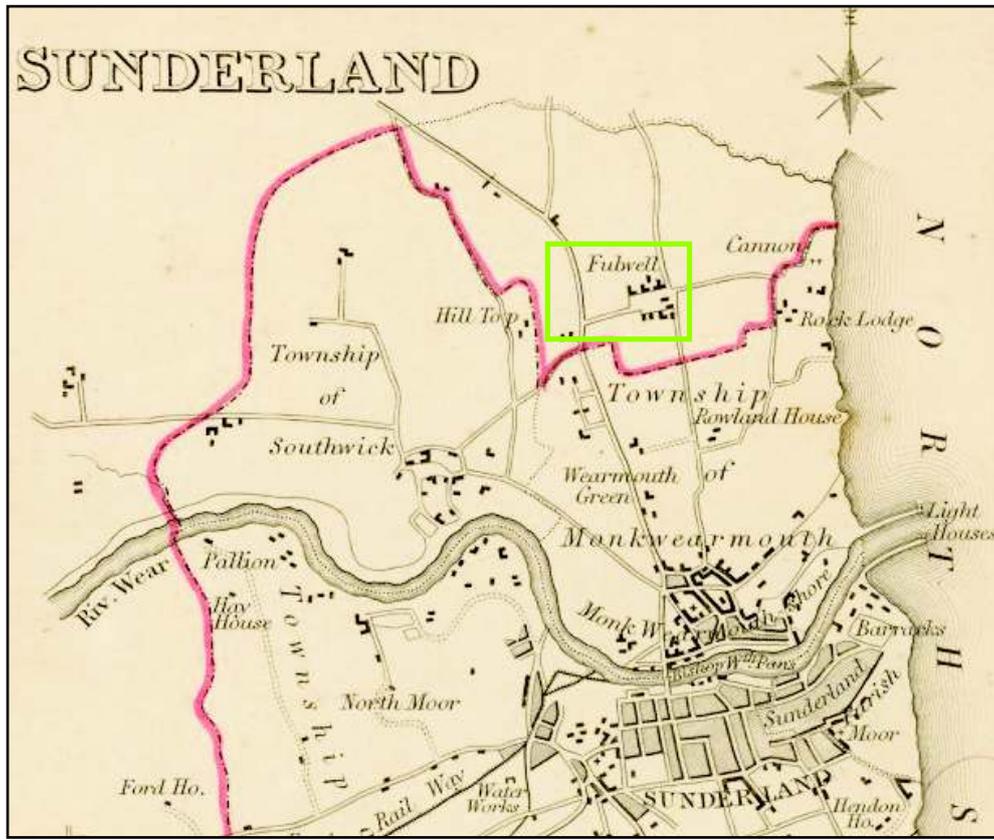


Fig. 8 Creighton's 1835 map of Sunderland

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 Drawing Ref: Report Fig. 9
 Date: 08 SEP 08
 Drawn: CC
 Scale: 1:2000 at A3

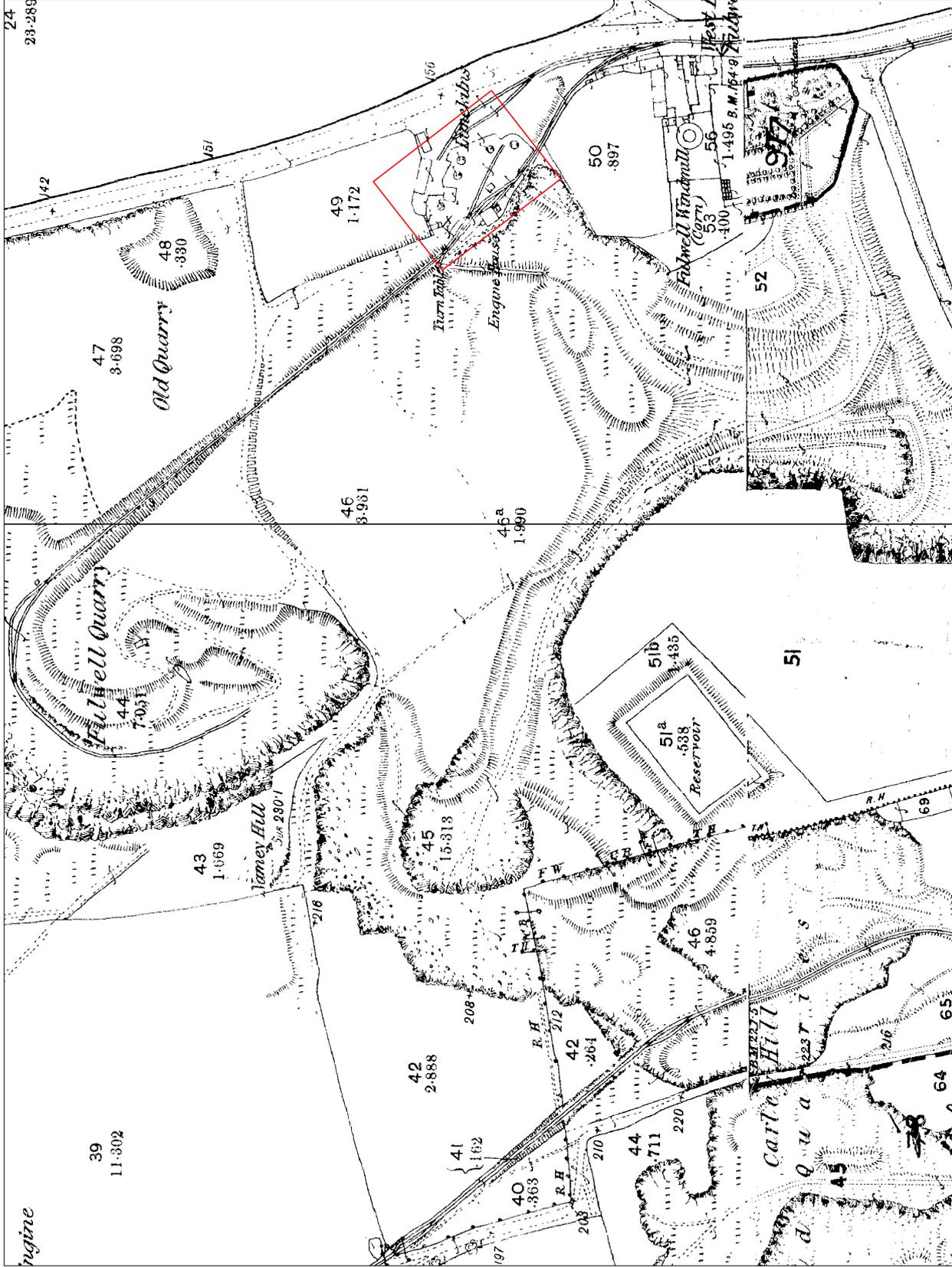
Title:
 Figure 9: First edition
 Ordnance Survey of 1855

Key:
 Study area

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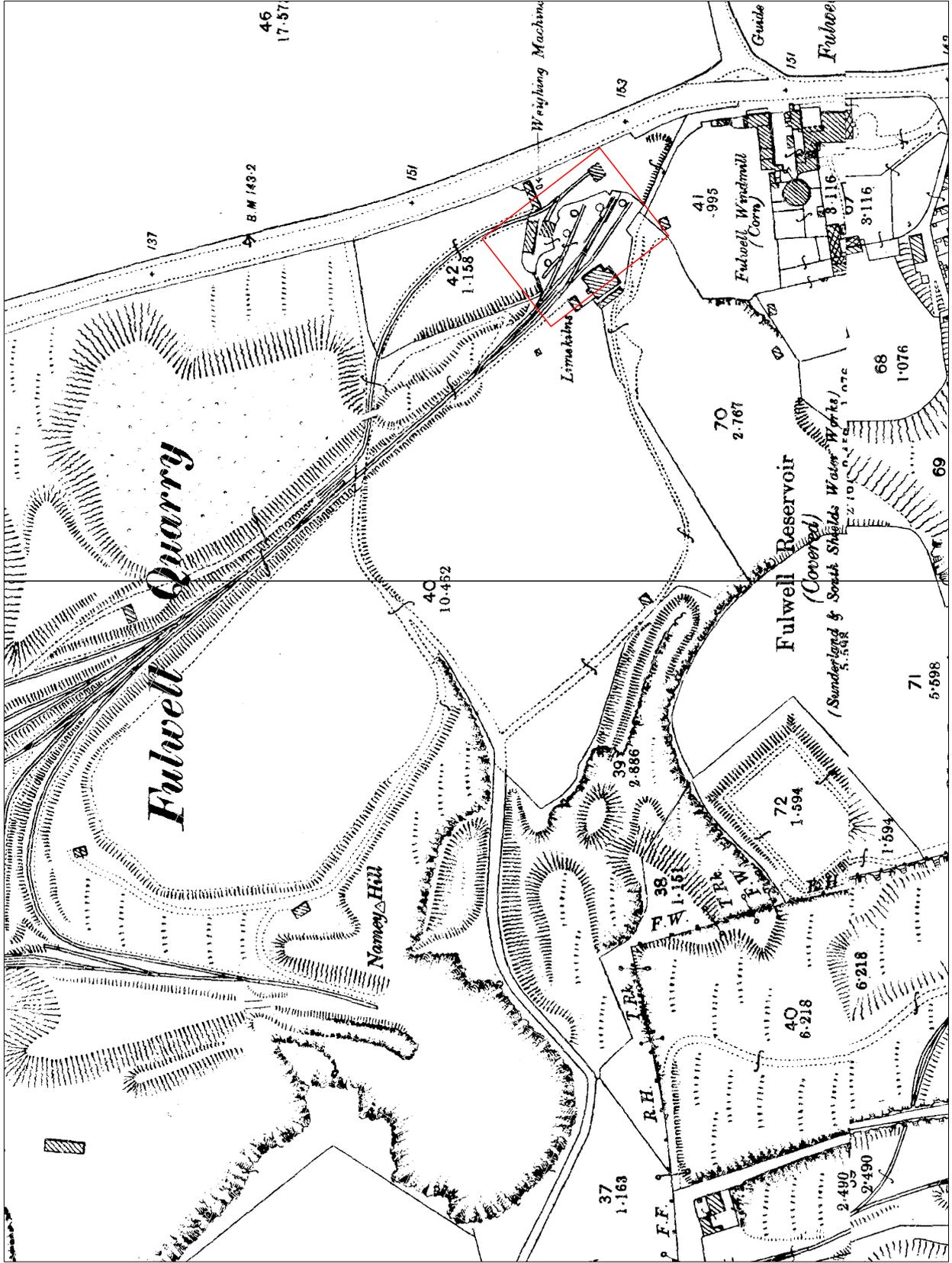
Title:
 Figure 10: Second edition
 Ordnance Survey of 1898

Key:
 Study area

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Title:
 Figure 12: Fourth edition
 Ordnance Survey of 1939

Key:
 Study area

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Figure 13:
Revised edition Ordnance
Survey of 1960

Key:



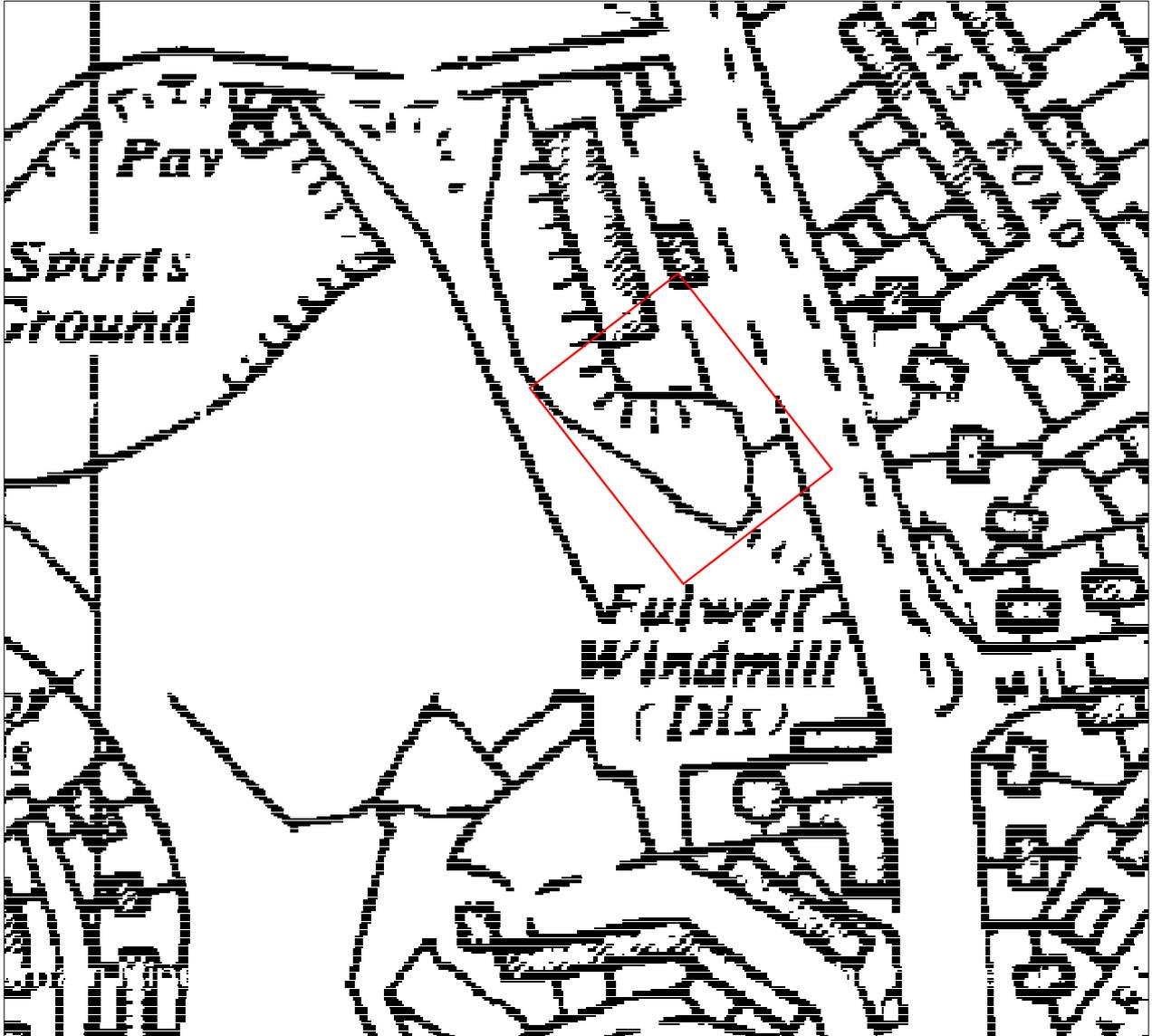
Study area

Site Code: MIL08
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Figure 14:
1968 revised edition Ordnance
Survey map

Key:



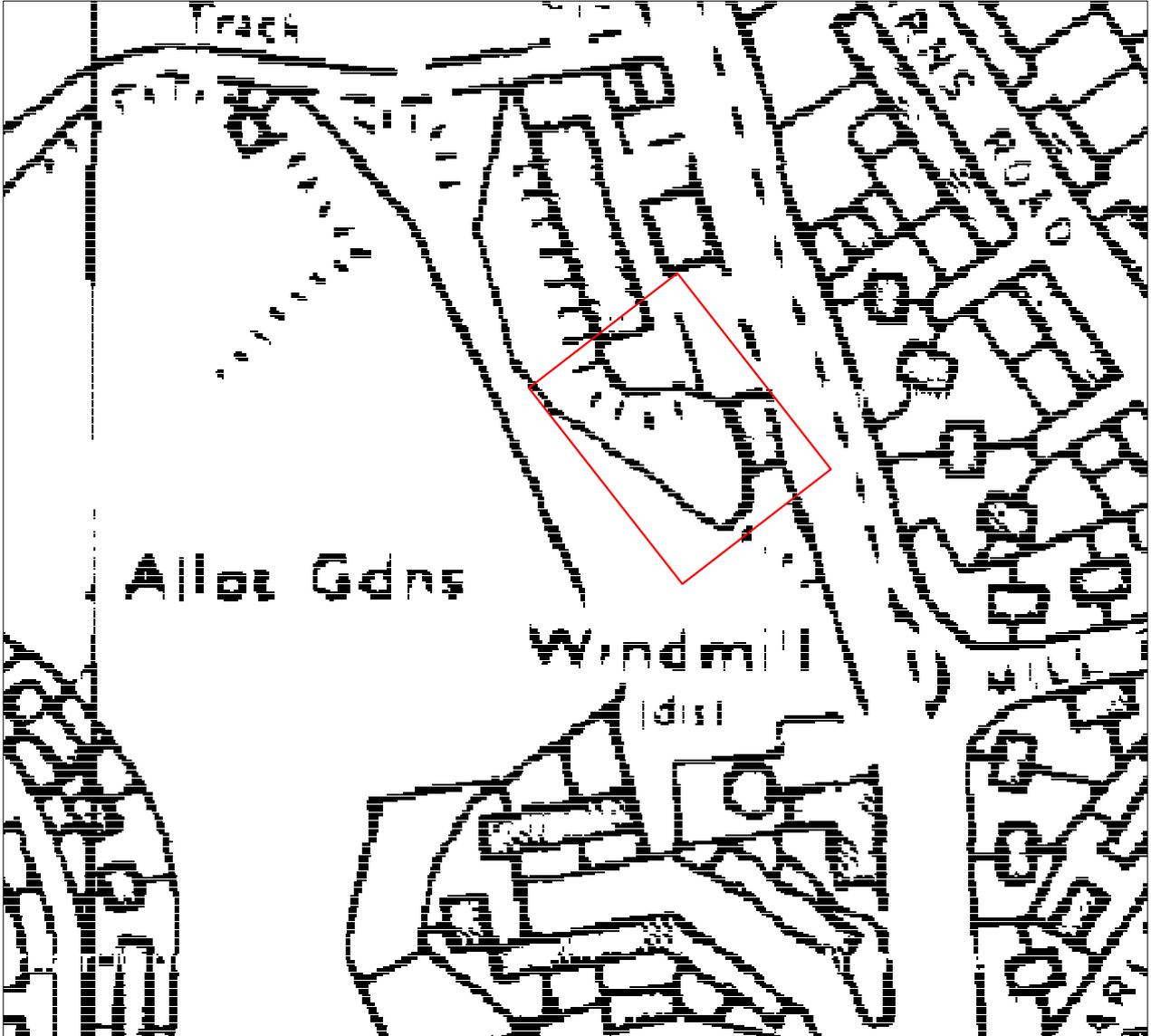
Study area

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Figure 15:
1975 revised edition Ordnance
Survey map

Key:



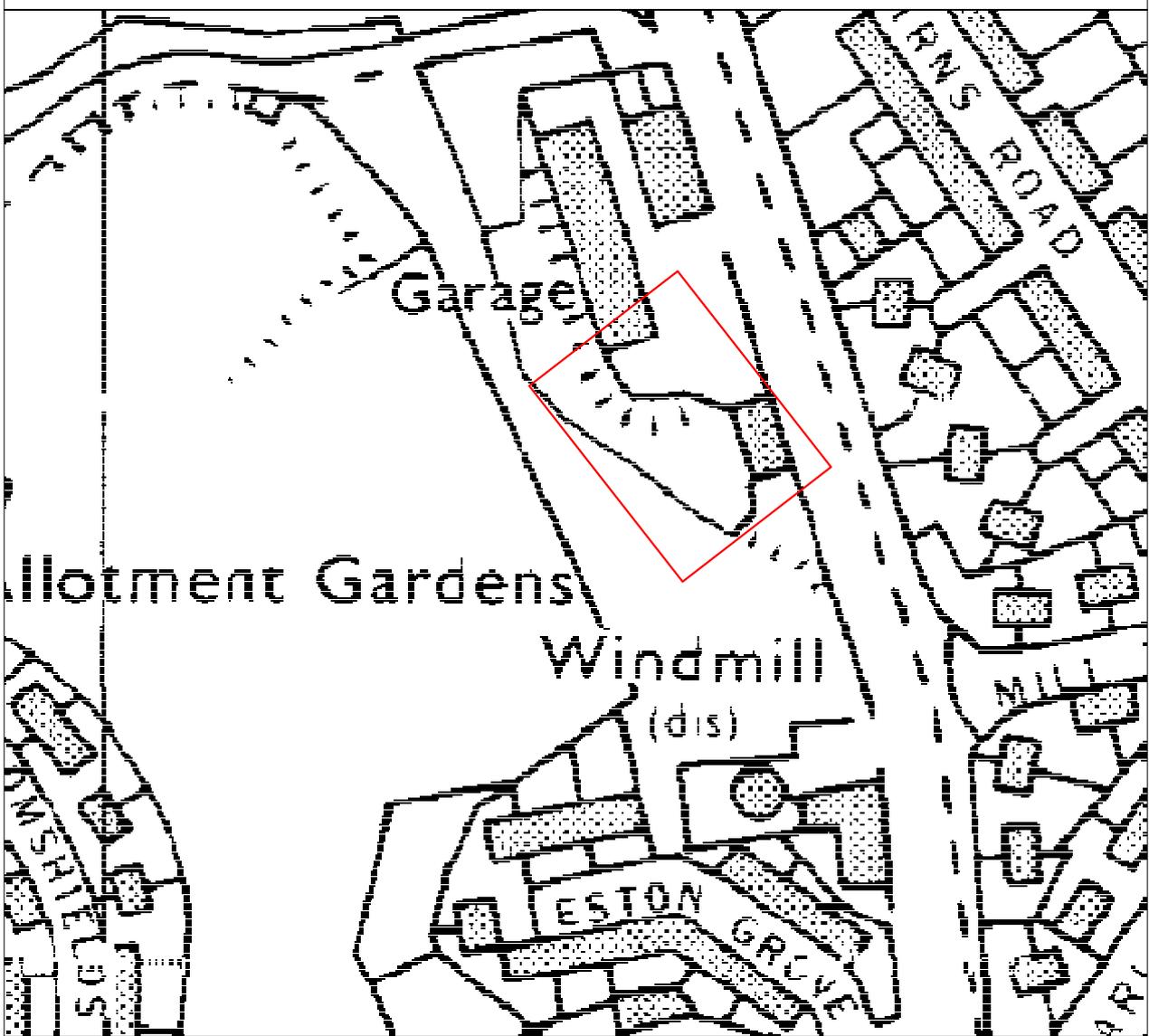
Study area

Site Code: MIL08
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Figure 16:
1984 revised edition Ordnance
Survey map

Key:



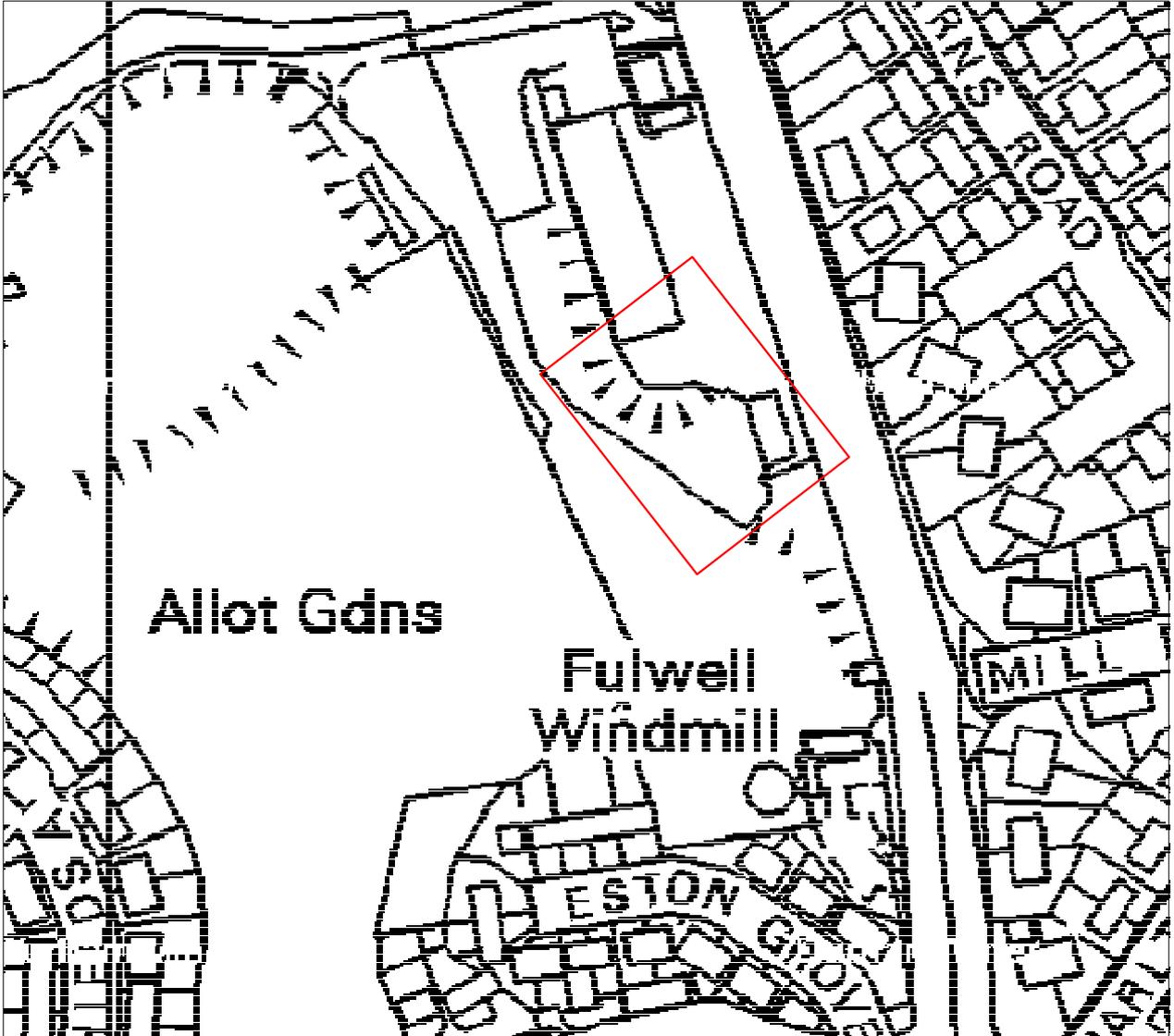
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<p>Archaeological Research Services Ltd Baltic Business Centre Saltmeadows Road Gateshead NE8 3DA</p>	<p>Figure 17: 2004 revised edition Ordnance Survey map</p>	<p>Key:</p> <p> Study area</p>	
<p>Site Code: MIL08 Drawing Ref: Report Fig. 17 Date: 08 SEP 08 Drawn: CC Scale: 1:2000 at A4</p>	<p>Notes:</p>		<p>Copyright/Licensing: This drawing © A.R.S. Ltd</p> <p>Ordnance Survey data if applicable © Crown Copyright, all rights reserved reproduced with permission. Licence No. 100045420</p>



Fig. 18 North west range



Fig. 19 South east range



Fig. 20 Kiln One



Fig. 21 Kiln One, blocked opening



Fig. 22 Kiln One, corbelled roof



Fig. 23 Kiln One, timber lintel in roof

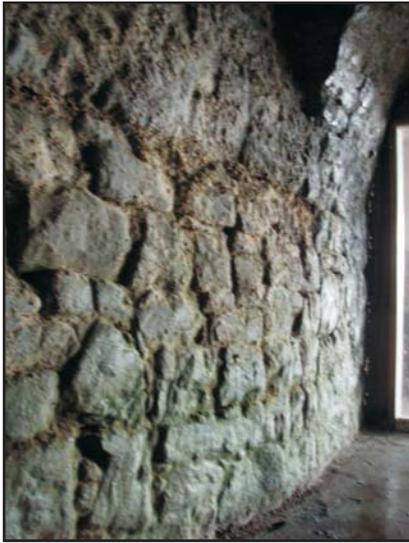


Fig. 24 Wall inside Kiln One



Fig. 25 Kiln Two



Fig. 26 Kiln Two, blocked opening



Fig. 27 Kiln Two, corbelled roof

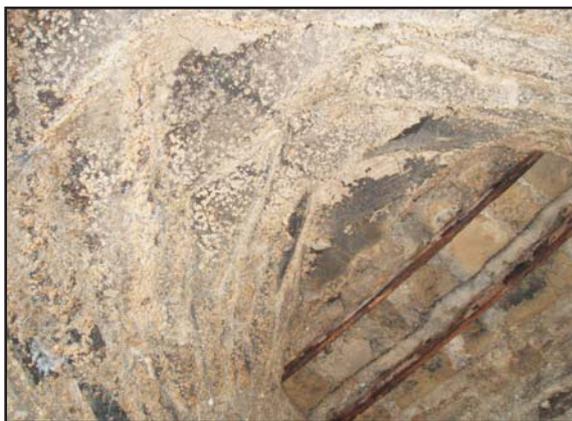


Fig. 28 Kiln Two, metal rods in roof



Fig. 29 Kiln Three



Fig. 30 Reinforced metal girder supporting the first floor



Fig. 31 North west interior wall abutting the kiln facade



Fig. 32 South east west interior wall abutting the kiln facade



Fig. 33 Kiln facade in ground floor cupboard



Fig. 34 Kiln facade in first floor toilets



Fig. 35 First floor office



Fig. 36 Metal frame attached to kiln facade



Fig. 37 Plan of the Manor of Monkwearmouth owned by Sir William Williamson 1714

APPENDIX I: PHOTOGRAPHIC REGISTER

FILM ONE: BLACK & WHITE PRINT

Shot No.	Description	Scale	Date	Name
1	Kiln One	2 x 2m	08/09/2008	Claire Carey
2	Kiln One	2 x 2m	08/09/2008	Claire Carey
3	Kiln One	-	08/09/2008	Claire Carey
4	Kiln One	-	08/09/2008	Claire Carey
5	Kiln One	2m	08/09/2008	Claire Carey
6	Modern building joining kiln façade NW end	-	08/09/2008	Claire Carey
7	Modern building joining kiln façade NW end	-	08/09/2008	Claire Carey
8	Steel girder at ceiling level, ground floor	-	08/09/2008	Claire Carey
9	Modern flooring abutting kiln façade	-	08/09/2008	Claire Carey
10	Kiln One, blocked opening	2m	08/09/2008	Claire Carey
11	Kiln One, blocked opening	2m	08/09/2008	Claire Carey
12	Kiln One, blocked opening	2m	08/09/2008	Claire Carey
13	Kiln One corbelled roof	-	08/09/2008	Claire Carey
14	Kiln One, timber beam in roof	-	08/09/2008	Claire Carey
15	Kiln One inside walls	-	08/09/2008	Claire Carey
16	Kiln One corbelled roof	-	08/09/2008	Claire Carey
17	Kiln One corbelled roof	-	08/09/2008	Claire Carey
18	Frog within kilns	-	08/09/2008	Claire Carey
19	Kiln Two	2 x 2m	08/09/2008	Claire Carey
20	Kiln Two	2m	08/09/2008	Claire Carey
21	Kiln Two	-	08/09/2008	Claire Carey
22	Kiln Two	-	08/09/2008	Claire Carey
23	Kiln Two	-	08/09/2008	Claire Carey
24	Kiln Two, blocked opening	2m	08/09/2008	Claire Carey
25	Kiln Two, blocked opening	2m	08/09/2008	Claire Carey
26	Kiln Two corbelled roof	-	08/09/2008	Claire Carey
27	Kiln Two, metal rods in roof	-	08/09/2008	Claire Carey
28	Kiln Two, metal rods in roof	-	08/09/2008	Claire Carey
29	Kiln Two, metal rods in roof	-	08/09/2008	Claire Carey
30	Kiln Three	2m	08/09/2008	Claire Carey
31	Kiln Three	-	08/09/2008	Claire Carey
32	Kiln Three	-	08/09/2008	Claire Carey
33	Kiln Three	-	08/09/2008	Claire Carey
34	First floor office	2m	08/09/2008	Claire Carey
35	Metal frame fixed to kiln at first floor level	-	08/09/2008	Claire Carey
36	Metal frame fixed to kiln at first floor level	-	08/09/2008	Claire Carey

FILM TWO: COLOUR PRINT

Shot No.	Description	Scale	Date	Name
1	Kiln One	2 x 2m	08/09/2008	Claire Carey
2	Kiln One	2 x 2m	08/09/2008	Claire Carey
3	Kiln One	-	08/09/2008	Claire Carey
4	Kiln One	-	08/09/2008	Claire Carey
5	Kiln One	2m	08/09/2008	Claire Carey
6	Modern building joining kiln façade NW end	-	08/09/2008	Claire Carey
7	Modern building joining kiln façade NW end	-	08/09/2008	Claire Carey
8	Steel girder at ceiling level, ground floor	-	08/09/2008	Claire Carey
9	Modern flooring abutting kiln façade	-	08/09/2008	Claire Carey
10	Kiln One, blocked opening	2m	08/09/2008	Claire Carey
11	Kiln One, blocked opening	2m	08/09/2008	Claire Carey
12	Kiln One, blocked opening	2m	08/09/2008	Claire Carey
13	Kiln One corbelled roof	-	08/09/2008	Claire Carey
14	Kiln One, timber beam in roof	-	08/09/2008	Claire Carey
15	Kiln One inside walls	-	08/09/2008	Claire Carey
16	Kiln One corbelled roof	-	08/09/2008	Claire Carey
17	Kiln One corbelled roof	-	08/09/2008	Claire Carey
18	Frog within kilns	-	08/09/2008	Claire Carey
19	Kiln Two	2 x 2m	08/09/2008	Claire Carey
20	Kiln Two	2m	08/09/2008	Claire Carey
21	Kiln Two	-	08/09/2008	Claire Carey
22	Kiln Two	-	08/09/2008	Claire Carey
23	Kiln Two	-	08/09/2008	Claire Carey
24	Kiln Two, blocked opening	2m	08/09/2008	Claire Carey
25	Kiln Two, blocked opening	2m	08/09/2008	Claire Carey
26	Kiln Two corbelled roof	-	08/09/2008	Claire Carey
27	Kiln Two, metal rods in roof	-	08/09/2008	Claire Carey
28	Kiln Two, metal rods in roof	-	08/09/2008	Claire Carey
29	Kiln Two, metal rods in roof	-	08/09/2008	Claire Carey
30	Kiln Three	2m	08/09/2008	Claire Carey
31	Kiln Three	-	08/09/2008	Claire Carey
32	Kiln Three	-	08/09/2008	Claire Carey
33	Kiln Three	-	08/09/2008	Claire Carey
34	First floor office	2m	08/09/2008	Claire Carey
35	Metal frame fixed to kiln at first floor level	-	08/09/2008	Claire Carey
36	Metal frame fixed to kiln at first floor level	-	08/09/2008	Claire Carey

FILM THREE: BLACK & WHITE PRINT

Shot No.	Description	Scale	Date	Name
1	Kiln façade in first floor toilet	-	08/09/2008	Claire Carey
2	North West end of range	2 x 2m	08/09/2008	Claire Carey
3	North West end of range	2 x 2m	08/09/2008	Claire Carey
4	North West end of range showing join with modern building	-	08/09/2008	Claire Carey
5	North-west end of range showing join with modern building	-	08/09/2008	Claire Carey
6	South-east end of range showing join with modern building	-	08/09/2008	Claire Carey
7	South-east end of range	-	08/09/2008	Claire Carey

FILM FOUR: COLOUR PRINT

Shot No.	Description	Scale	Date	Name
1	Kiln façade in first floor toilet	-	08/09/2008	Claire Carey
2	North West end of range	2 x 2m	08/09/2008	Claire Carey
3	North West end of range	2 x 2m	08/09/2008	Claire Carey
4	North West end of range showing join with modern building	-	08/09/2008	Claire Carey
5	North-west end of range showing join with modern building	-	08/09/2008	Claire Carey
6	South-east end of range showing join with modern building	-	08/09/2008	Claire Carey
7	South-east end of range	-	08/09/2008	Claire Carey

APPENDIX II: SPECIFICATION

Introduction

A car showroom and offices at Mill Garages is proposed for demolition. The land will then be used as a surface car park.

The 1950s building is constructed against the Fulwell lime kilns, which are listed grade 2. The arches of the lime kilns can be viewed inside the building and were used for storage and office space when the showroom was in use. The stone façade of the lime kilns can be seen inside the showroom at ground and first floor level. The first floor rear office has been built in the style of a conservatory, with fenestration against the façade of the kilns. The stonework is also visible inside the first floor toilets.

HER 2695 Sir Hedworth Williamson Lime Kilns, Fulwell

Possibly five lime kilns, as shown on the 1st edition OS mapping. These probably used lime from the nearby Fulwell Quarries (SMR 2691), brought via a wagonway (HER 2692). Generally well-preserved, multi-phased, battery of lime kilns of random, roughly-dressed magnesium limestone masonry, which operated for c200 years until closure in 1957. Kilns, which were formerly linked by three wagonways to the River Wear, burnt magnesium limestone from the adjacent 140 acre Fulwell quarry (now landfilled). North and south ends of the range are visible, central area currently occupied by a garage which employs the kilns façade as its west wall. North end, situated with the forecourt of a car showroom, consists of a series of four openings of different dimensions. Two openings have round-headed corbelled brickwork arches and have been blocked with firebricks except for a later inserted doorway. The other two have square iron girder lintelled roofs. Drawing eyes are obscured by debris. South end has four round-headed brickwork drawing arches and shows much evidence of remodelling. Further draw arches are believed to lie in the central area. Three oval pots are now infilled and grassed over. Site of additional kiln at NZ 391 599 now beneath recent housing development.

A complex of kilns constructed in magnesian limestone to burn the same stone extracted from extensive quarries behind. The kiln structure is now within the Mill Garage site. Much of the quarried area with its unique "cannonball" formation has been reclaimed but formerly the routes of three 19th century wagonways for lime carriage to the Wear could be followed. Listed grade 2 but the English Heritage Monument Protection Programme Assessment advised that the listing should be increased to 2* or that the kilns should be scheduled instead of listed. This was never done.

The removal of the showroom will have a beneficial impact on the listed kilns. It will make them fully visible, and will improve their setting. The garage, and thus the kiln structure, is suffering badly from damp and water ingress. Removing the building will enable air to freely circulate around the kilns thus assisting the stonework to dry out.

Listed building consent will be needed for the demolition of the garage. The removal of the building will need to be carefully planned to ensure that the listed structure is not damaged. Once the garage has been removed, the kilns may need some repair work.

A record is needed of the parts of the kilns which lie within the building both to provide a record of the structure as is and to understand how the garage has been built onto or against the kilns to advise on how it can be removed. The parts of the kilns not affected by the garage building do not need to be subject to detailed recording.

The present owner of the garage has agreed to remove the objects and furniture from inside the arches of the kilns and in front of the kiln façade to allow the recording to take place unimpeded. There is boarding inside the arched openings which is not fixed to the kilns. This too will be removed.

Sunderland City Council owns the kilns and has confirmed that there won't be a problem in trimming the ivy growth back to reveal the join between the garage and the kilns to allow this to be recorded. The ivy will be *slightly* trimmed back by the commissioning client on the exterior of the kilns merely to expose the junction between the garage and the kiln elevations. This must be done by hand. The roots must not be pulled out of the stonework as this will cause damage to the listed structure. The ivy trimming work must be done outside the bird nesting period. The commissioning client can contact Keith Hamilton (Landscape Team Manager, 0191 5538786) for further advice if needed.

In accordance with standard practice, PPG15 and 16 it is recommended that a programme of recording is undertaken prior to the demolition of the garage. The report will need to be submitted with the listed building consent.

Prospective archaeological surveyors must be able to recognise architecturally important features and place these within the chronological sequence of the development of the building. Experience of recording buildings is essential, and a proven track-record in this field must be demonstrated in the tendering process.

All staff employed by the Archaeological Contractor shall be professional field archaeologists with appropriate skills and experience to undertake work to the highest professional standards.

The work will be undertaken according to English Heritage Guidelines - Managing Archaeological Projects 2nd Edition ('MAP2') 1991 (www.english-heritage.org.uk/guidance/map2/index.htm) and Management of Research Projects in the Historic Environment (MoRPHE) – The MoRPHE Project Managers' Guide, Project Planning Notes and Technical Guides 2006 (www.english-heritage.org.uk/publications).

All work must be carried out in compliance with the codes of practice of the Institute of Field Archaeologists and must follow the IFA Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures, revised 2001 www.archaeologists.net

Research Aims and Objectives

The building recording should make reference to Regional and Thematic Research Frameworks.

The North-East Regional Research Framework for the Historic Environment (2006) notes the importance of research as a vital element of development-led archaeological work. It sets out key research priorities for all periods of the past allowing commercial contractors to demonstrate how their fieldwork relates to wider regional and national priorities for the study of archaeology and the historic environment. The aim of NERRF is to ensure that all fieldwork is carried out in a secure research context and that commercial contractors ensure that their investigations ask the right questions.

See Resource Assessment Post-Medieval: Lime, cement and plaster page 96

See Research agenda and strategy Post-Medieval PMii Industrialisation page 183

See <http://www.algao.org.uk/Association/England/Regions/ResFwks.htm>

Ideally and where possible the evaluation should cross-reference its aims and objectives to national priorities, defined in SHAPE (Strategic Frameworks for Historic Environment Activities and Programmes in English Heritage), and the English Heritage Research Agenda 2005-2010.

Where appropriate note any similar nationwide projects using ADS, internet search engines, ALSF website, HEEP website, OASIS, NMR excavation index.

Marsden Lime Kilns and Monkwearmouth Lime Kilns have both been recorded (The Archaeological Practice, 2000). Copies of these reports are held by the HER.

All staff on site must understand the project aims and methodologies.

Association of Local Government Archaeological Officers 1997 “Analysis and recording for the conservation and control of works to historic buildings”.

The finished report must comply with English Heritage, 2006, “Understanding Historic Buildings – A guide to good recording practice” (revised and expanded version of Royal Commission on the Historical Monuments of England’s 1996 document “Recording Historic Buildings – A Descriptive Specification (Third Edition)”), and must:

- Chart the historical development of the building or site and adequately explain and illustrate what is significant. Where possible significant parts and phases of development should be dated
- Aim at accuracy. The level of record and its limitations should be stated
- A record should make a clear distinction between observation and interpretation, thereby allowing data to be reinterpreted at a later date
- Be produced on a medium which can be copied easily and which ensures archival stability

Health and Safety

Because this is a detailed specification, the County Archaeologist does not require a Project Design from the appointed archaeologist. However a health and safety statement and risk assessment, identifying potential risks in a risk log (see template in appendix 2 of The MoRPHE Project Manager’s Guide) and specifying suitable countermeasures and contingencies, is required to be submitted to the commissioning client.

The Management of Research Projects in the Historic Environment (MoRPHE) – The MoRPHE Project Managers’ Guide 2006 contains general guidance on Risk management (section 2.3.2, Appendix 2).

Risk assessments must be produced in line with legislative requirements and best practice e.g. as set out in the SCAUM (Standing Conference on Archaeological Unit Managers) Health and Safety Manual <http://www.scaum.org/uk>

The appointed archaeological contractor must be mindful at all times of the health-and-safety implications of working in historic buildings.

A risk assessment must be carried out.

The appointed archaeologist must comply with current H&S legislation.

A hard hat and safety boots are to be worn at all times.

Only enter the building if the commissioning client has confirmed that it is safe to enter. Abandon the visit if conditions are worse than expected.

Useful checklist of potential H&S issues (from ‘Safety in Buildings Archaeology’ Paul Jeffrey, The Archaeologist, Winter 2005, Number 55

- Is the building secure?
- Are the electric and gas services off?
- Are you able to get in and out without being accidentally locked in?
- Is the fabric of the building safe or are there potential hazards?
- Are there uneven surfaces, unlit steps or rotten timbers?

- Are you working in an isolated area with difficult access for bringing in equipment?
- If using scaffolding are you sure that it is safe, has it been checked by a competent person and are you trained to use it correctly?

The Health and Safety Executive website has downloadable leaflets www.hse.gov.uk

The Standing Conference of Archaeological Unit Managers has two manuals “Health & Safety in Field Archaeology” and “Employment Manager”.

Royal Institute of Chartered Surveyors has a manual “Surveying Safety – Your guide to personal safety at work” www.rics.org.uk/Management/Healthandsafety/surv_safe.htm

Recording level

The survey is to be broadly in accordance with an English Heritage Level 3/4 recording.

Level 3 – an analytical record. Includes an introductory description, account of origins, development and use. An account of evidence, drawn and photographic records, draws on readily accessible documentary sources but will not include a detailed documentary search.

Level 4 – comprehensive analytical record for buildings of special importance. Will draw on all available resources and will discuss the building’s significance in architectural, social, regional and economic history terms.

Notification

The County Archaeologist needs to know when archaeological fieldwork is taking place in Tyne and Wear so that he can inform the local planning authority and can visit the site to monitor the work in progress. The Archaeological Contractor must therefore inform the County Archaeologist of the start and end dates of the Building Recording exercise. He must also keep the County Archaeologist informed as to progress on the site. The Client will give the County Archaeologist reasonable access to the development to undertake monitoring.

Fieldwork - General Conditions

The Archaeological Contractor must detail measures taken to ensure the safe conduct of the work. The Client may wish to see copies of the Archaeological Contractor's Health and Safety Policies.

The Archaeological Contractor must be able to provide written proof that the necessary levels of Insurance Cover are in place.

All staff employed by the Archaeological Contractor shall be professional field archaeologists with appropriate skills and experience to undertake work to the highest professional standards.

The Survey

Surveys are made by direct measurement using tapes and rods and can be supported by Electronic Distance Measuring equipment (EDM or REDM theodolites) on larger and more complex sites.

Detailed measured survey may be augmented by other techniques designed to record detail such as photogrammetry and rectified photography.

The scale of the drawings derived from a survey must be appropriate to the building, typically 1:100 or 1:50 for plans, 1:50 or 1:20 for sections.

The finished drawing should be legible when reduced for publication, the degree of reduction being dependent on the level of detail required.

It is recommended that drawings aiming to convey historical understanding or to support historical interpretation adopt the drawing conventions set up in section 8 of English Heritage's 2006 guidance document.

All drawings must include metric drawn scales, with a north point on all plans.

Use polyester based film for drawings (lasts longer than plastic).

Use low-acid paper.

Original drawings on film must be made with a hard pencil, at least 4H.

Do not ink over original pencil drawings.

The following tasks comprise the building survey.

1 *Site location plan*

2 *Produce accurate elevations and plans of the parts of the kilns which lie inside the garage building, showing how the showroom is built against the kilns and where it is fixed onto the historic structure*

Outline elevations (not detailed measured survey) should be produced, based on a combination of sketching and some measured survey, sufficient to demonstrate phasing, proportion and location of arched openings.

Structural phasing, changes in building material, evidence of any fixtures and fittings, features of historic significance must be noted on elevations and plans. Historic fabric and features should be identified and numbered and presented in a table within the finished report (see para 7 below). The feature numbers should then be added to the plans.

Two possible formats are acceptable: CAD files from a package supporting AUTOCAD DWG files or exporting as DXF files; Drawing film, inked-in to publication standard and labelled with transfer lettering for reproduction on A4 size.

3 *Produce a photographic record*

Photographs should be used not only to show a building's appearance, but also to record the evidence on which the analysis of its historic development is based.

All photographs forming part of a record should be in sharp focus, with an appropriate depth of field. They should be adequately exposed in good natural light or, where necessary, sufficiently well-lit by artificial means.

An experienced archaeological photographer should produce a record of the structure as is in b/w (which is preferable for permanent archival purposes) **and** colour print, (digital images are **not** acceptable in view of the currently unproven archival performance of digital data).

The photographic record will include duplicate shots taken in colour and black and white.

Black and white film processed to British Standard 5699 is the archival ideal, as it is recognised as suitable for long-term storage.

Use processing companies that develop film to high specifications. Commercial, automatic processing techniques do not meet archival standards and must not be used.

Used films should be processed as soon as possible to counter the effects of film deterioration.

All photographs must be marked with the project identifier (e.g. site code), film number and frame number.

Mark negative holders, not negatives

Mark prints on the back

Include an index of all photographs, in the form of running lists of frame numbers

The index should record the category of film, film number, frame number, title and subject, date the picture was taken and who took it

Silversafe-type paper envelopes are ideal storage media for negatives (or polyester packets)

Store prints in acid-free paper enclosures or polyester sleeves

All photographs must include a scale and where appropriate a north sign or other means of location/orientation

All photographs must have the a record number of the structural component clearly visible.

{reference: Duncan H. Brown, 2007, "Archaeological Archives – A guide to best practice in creation, compilation, transfer and curation"

The photographic record will include:

- General views of the whole kilns in their wider setting or landscape
- The kiln's external appearance – typically a series of oblique views will show all external elevations of the kilns to give an overall impression of its size and shape. Where an individual elevation embodies complex historical information, views at right angles to the plane of the elevation may also be appropriate
- Close up views of where the exterior of the garage joins the kiln structure
- Detailed close-up coverage of the parts of the kilns which lie inside the showroom – at ground floor, first floor office and toilet
- Overall appearance of rooms with elements of the kilns visible

4 *Context list phasing tables, cross-referenced to the plans and photographs.*

A minimal recording methodology should number each feature on the photographic record, group the features by phase, and locate their position on the floor plans and elevation drawings.

5 *Survey report*

A report will be produced, detailing the recording methodology and outlining the structural sequence, as observed from the survey.

- Precise location of the site, by name, street, town
- National grid reference
- Details of listing
- Date the record was made and name of the recorder
- Summary statement describing the kiln's type or purpose, materials and possible date(s) so far as is apparent
- An account of the kiln's plan, form, function, age and development sequence
- Description of those parts of the kilns which are affected by the showroom
- Names of architects, builders, patrons and owners should be given if known
- An account of the building's overall form and of its successive phases of development, and of the evidence supporting this analysis
- Copies of other records of the kilns, or a note of their existence and location
- Relevant information from other readily available sources – from books, documents, plans, from other people who may be familiar with the kilns
- A note of the significance of the building locally, regionally or nationally, in terms of its origin, purpose, form, construction, design, materials or status
- An assessment of the potential for further investigative or documentary work, and of the potential survival of below-ground evidence for the history of the building and its site
- An assessment of the condition of those parts of the kilns which are within the garage and the repair work which may be needed
- Historic map regression
- Copies of any historic photographs of the kilns
- Full bibliographic references and list of sources consulted
- Glossary of architectural terms likely to be unfamiliar to readers.

The appointed archaeologist will consult:

Northumberland Museum and Archives at Woodhorn, Queen Elizabeth II Country Park, Ashington NE63 9YF (open Wed-Sun) 01670 528041

Tyne and Wear Archives at Blandford House, Blandford Square, Newcastle upon Tyne NE1 4JA (tel. 0191 2326789 ext 407)

Durham Record Office, County Hall, Durham DH1 5UL (tel. 0191 3833253)

Sunderland Local Studies Centre, City Library and Arts Centre, Fawcett Street, Sunderland SR1 1RE (tel. 0191 5148439)

National Monuments Record, Kemble Drive, Swindon SN2 2GZ (tel. 01793 414600)

www.english-heritage.org.uk/NMR

Useful websites:

www.twsitelines.info - **not** to be used instead of visiting the HER in person because it is only updated every six months and does not include event data

www.sine.ncl.ac.uk

The appointed archaeologist should also consult Ian Ayris, County Industrial Archaeologist (0191 2777190 or ian.ayris@newcastle.gov.uk).

The advice of local industrial archaeologists such as Stafford Linsley and David Cranstone might also be useful (contact Ian Ayris for contact details).

The results may also warrant publication in a suitable archaeological journal. The tender should therefore include an estimated figure for the production of a short report of, for example 20 pages, in a journal such as *Archaeologia Aeliana*, the *Arbeia Journal*, *Industrial Archaeology Review* or *Durham Archaeological Journal*. This is merely to give the commissioning client an indication of potential costs.

Before preparing a paper for publication, the archaeological contractor must discuss the scope, length and suitable journal with the County Archaeologist.

The report must have the following features:-

1. Location plan or plans
2. Details of visits to the site undertaken by the contractor
3. Photographic prints and negatives in conservation grade transparent plastic wallets suitable for storing in A4 ringbinders (all four copies require a full set of prints, but only one set of negatives is required and these should be included in the copy for the Archives)
4. A card cover with title, date, author, contractor organisation and commissioning client
5. Some form of secure binding, preferably of the spiral or ring type.
6. Recommendations for any further archaeological work required.
7. Copy of this specification

Four copies of the report need to be submitted:

- one for the commissioning client
- one for the planning authority (Sunderland City Council) – give this copy to the commissioning client to submit
- one for deposition in the Tyne and Wear County HER. A digital copy of the report is also required on CD by the HER (in a plastic case and not attached to the report)
- one for Tyne and Wear Archives – this is the copy with the negatives in it. Please send this to the HER as TWAS will collect reports from the HER on an annual basis

The report and CD for the HER and TWAS must be sent by the archaeological consultant or their client directly to the address below. If the report is sent via the

planning department, every page of the report and all the photographs will be stamped with the planning application number which ruins the illustrations and photos. The HER is also often sent a photocopy instead of a bound colour original which is unacceptable.

OASIS

The Tyne and Wear County Archaeologist supports the Online Access to the Index of Archaeological Investigations (OASIS) project. This project aims to provide an online index/access to the large and growing body of archaeological grey literature, created as a result of developer-funded fieldwork.

The archaeological contractor is therefore required to register with OASIS and to complete the online OASIS form for their building recording at <http://www.oasis.ac.uk/>. Please ensure that tenders for this work takes into account the time needed to complete the form.

Once the OASIS record has been completed and signed off by the HER and NMR the information will be incorporated into the English Heritage Excavation Index, hosted online by the Archaeology Data Service.

The ultimate aim of OASIS is for an online virtual library of grey literature to be built up, linked to the index. The unit therefore has the option of uploading their grey literature report as part of their OASIS record, as a Microsoft Word document, rich text format, pdf or html format. The grey literature report will only be mounted by the ADS if both the unit and the HER give their agreement. The grey literature report will be made available through a library catalogue facility.

Please ensure that you and your client understand this procedure. If you choose to upload your grey literature report please ensure that your client agrees to this in writing to the HER at the address below.

For general enquiries about the OASIS project aims and the use of the form please contact: Mark Barratt at the National Monuments Record (tel. 01793 414600 or oasis@english-heritage.org.uk). For enquiries of a technical nature please contact: Catherine Hardman at the Archaeology Data Service (tel. 01904 433954 or oasis@ads.ahds.ac.uk). Or contact the Tyne and Wear Archaeology Officer at the address below.

Jennifer Morrison
Tyne and Wear Archaeology Officer
West Chapel
Jesmond Old Cemetery
Jesmond Road
Newcastle upon Tyne
NE2 1NL
Tel 0191 2816117
jennifer.morrison@newcastle.gov.uk

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Planning Application: pre-application