FORMER FISONS FACTORY SILLOTH CUMBRIA

WATCHING BRIEF REPORT
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Quality Assurance

This report covers works as outlined in the brief for the above-named project as issued by the relevant authority, and as outlined in the agreed programme of works. Any deviation to the programme of works has been agreed by all parties. The works have been carried out according to the guidelines set out in the Institute for Archaeologists (IfA) Standards, Policy Statements and Codes of Conduct. The report has been prepared in keeping with the guidance set out by North Pennines Archaeology Ltd on the preparation of reports.

REVISION SCHEDULE			
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SUMMARY

North Pennines Archaeology Ltd were commissioned by W A Fairhurst and Partners, to undertake an archaeological watching brief on geological test pits and bores relating to possible future development work at the former Fisons Factory, Silloth, Cumbria (NGR NY 1130 5310).

Jocelyn Strickland of North Pennines Archaeology Limited undertook a desk-based assessment in December 2009 (North Pennines Archaeology Report 748/09). In April 2010 an Environmental Impact Assessment was carried out by Fiona Wooler and Jocelyn Strickland of North Pennines Archaeology (North Pennines Archaeology Report 1106/10). Both reports established the scope of possible archaeological work required in order to fulfil any future planning decision. They identified a number of historic structures and features within the former Fisons Factory development area which were likely to be impacted upon. The most notable remains are likely to be from the Solway Chemical and Manure Works and the Border Counties Chemical and Manure Works. Both these structures date to the latter part of the 19th century. Adjacent to these, on the northern edge of the site ran the Carlisle and Silloth Bay Railway. Initially constructed in 1856, spurs from this line served the chemical factory. A drill shed once stood in the north-west corner of the site in the vicinity of the extant railway bridge. The Fisons buildings, many of which remain standing, date from the mid 20th century.

The Archaeological Watching Brief was undertaken over three days between the 22nd and 26th April 2010. The watching brief monitored the excavation of fifteen geological test pits and the sinking of six bore holes. Archaeological remains were identified in and immediately adjacent to Test Pit #9, in the form of a red brick wall and concrete floor surface. These appear to relate to the Chemical and Manure Works constructed in the 1870s.

As this archaeological watching brief was conducted as part of a recommendation to observe ground investigations in association with the possible development of the former Fisons Factory, no further work is deemed necessary. However, given the high archaeological potential of the area, it is recommended that any future work be subject to a programme of archaeological investigation.

ACKNOWLEDGEMENTS

North Pennines Archaeology Ltd would like to thank W A Fairhurst and Partners, Portland Street, Manchester, for commissioning the project, and for all assistance throughout the work, particularly that provided by Michael Eniojukan.

North Pennines Archaeology Ltd would also like to extend their thanks to Dunelm, Geotechnical and Environmental Site Investigations, for their help during this project.

The archaeological watching brief was undertaken by Kevin Mounsey. The report was written and illustrated by Kevin Mounsey. The project was managed by Martin Railton, Project Manager for NPA Ltd., who also edited the report.

1 INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 In April 2010, North Pennines Archaeology were invited by W A Fairhurst and Partners, on behalf of their client, to maintain an archaeological watching brief at the Former Fisons Factory, Silloth, Cumbria (NGR NY 1130 5310) (Figure 1), during groundworks associated with a geotechnical survey. The proposed works lie on and within the immediate vicinity of the Former Fisons Factory, constructed in the mid 20th century. A previous Desk-Based Assessment (Strickland 2009) and an Archaeological Environmental Impact Assessment (Strickland and Wooler 2010) produced by North Pennines Archaeology, both identified a number of historic structures and features within the proposed development area.

1.1.2 Hadrian's Wall Turrets 11A and B are located 282 metres northwest and 356 metres southwest of the site boundary respectively. Silloth Farm and the Scheduled Ancient Monument No. 6487 (Roman Frontier Defensive System) are located 833 metres to the north of the site boundary.

1.1.3 The Carlisle and Silloth Bay Railway opened in 1856 and ran within the northern edge of the site boundary. Branches of the railway line ran directly into the two chemical and manure works. A signal box associated with this railway line was situated just outside of the development area to the north-west. As early as 1856 a chemical manure works has been present at Silloth. Within the proposed site boundary were the Border Counties Chemical and Manure Works managed by William Crabb and J. and W. Maxwell and Sons Solway Chemical and Manure Works. Crabb's manure works were documented within the local papers by 1871. Tenders for the construction of Maxwell's manure works were documented in 1878. In 1899 Maxwell and Sons bought Crabb's manufactory. J and W Maxwell and Sons' Solway Chemical and Manure Works remained in business until the mid-1900s when it was converted into Fison's Fertilizers Factory. Two semi-detached buildings were present on the 1900 and 1926 Ordnance Survey maps.

1.1.4 The potential for archaeological features within the development area gave cause for the County Archaeologist of Cumbria County Council's Historic Environment Services (CCCHES), to request that all ground reduction be subject to a programme of archaeological

observation and investigation. This is in line with government advice as set out in the DoE Planning Policy Guidance on Archaeology and Planning (PPG 16).

1.1.5 All groundworks associated with the development of the The Former Fisons Factory had to be excavated under full archaeological supervision and all stages of the archaeological work were undertaken following approved statutory guidelines (IfA 2002), and were consistent with generally accepted best practice.

1.1.6 This report outlines the monitoring works undertaken on-site, the subsequent programme of post-fieldwork analysis, and the results of this scheme of archaeological works.

2 METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 North Pennines Archaeology Limited was commissioned by W A Fairhurst and Partners to carry out a watching brief during the excavation of geological test pits and bore holes on the Former Fisons Factory site. Silloth, Cumbria. This work was carried out at the pre-planning stage, no project design having been issued. All work was consistent with the relevant standards and procedures of the Institute for Archaeologists (IfA), and generally accepted best practice.

2.2 THE WATCHING BRIEF

2.2.1 The works involved a structured watching brief to observe, record and sample excavate any archaeological deposits from the development site. A watching brief is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons, on a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed (IfA 2002).

2.2.2 The aims and principal methodology of the watching brief can be summarised as follows:

- to establish the presence/absence, nature, extent and state of preservation of archaeological remains and to record them;
- to carry out further excavation and recording work in adequate time, if intact archaeological remains are uncovered during the project;
- to accurately tie the area watched by the archaeologist into the National Grid at an appropriate scale, with any archaeological deposits and features adequately levelled;
- to sample environmental deposits encountered as required, in line with English Heritage (2002) guidelines;
- to produce a photographic record of all contexts using colour digital and 35mm monochrome formats, each photograph including a graduated metric scale;
- to recover artefactual material, especially that useful of dating purposes;

- to produce a site archive in accordance with MAP2 (English Heritage 1991) and MoRPHE standards (English Heritage 2006).

2.2.3 The geological survey required the excavation of fifteen test pits and sinking of six bore holes. Thirteen test pits measured 2.00m by 0.60m and were excavated using a toothed bucket. Two test pits measured 2.00m by1.60m and were excavated using a ditching bucket. The six bore holes all measured 0.15m in diameter and were all sunk to a depth of 5.00m. A summary of the findings of the watching brief is included within this report.

2.3 THE ARCHIVE

2.3.1 A full professional archive has been compiled in accordance with the specification, and in line with current UKIC (1990) and English Heritage Guidelines (1991) and according to the Archaeological Archives Forum recommendations (Brown 2007). Copies of the report will be sent to the County Historic Environment Record at Kendal, Cumbria, where viewing will available upon request.

2.3.2 North Pennines Archaeology, and Cumbria County Council, support the **O**nline **A**cces**S** to the **I**ndex of Archaeological Investigation**S** (**OASIS**) project. This project aims to provide an on-line index and access to the extensive and expanding body of grey literature, created as a result of developer-funded archaeological work. As a result, details of the results of this project will be made available by North Pennines Archaeology, as a part of this national project.

3 BACKGROUND

3.1 LOCATION AND GEOLOGICAL CONTEXT

3.1.1 Silloth lies approximately 23 miles west of Carlisle, on the western fringes of the North Cumbria Plain. The North Cumbria Plain lies to the north and west of the Lake District massif and encompasses the coastal fringes forming the Solway Coast Area of Outstanding Natural Beauty. Silloth itself is part of the extensive areas of salt marsh running along the coast to the Scottish border. Land use is predominantly pasture, though significant sections of land around Silloth are given over to arable cultivation (Hodgkinson *et al* 2000). The intensification of arable practices has lead to the widespread destruction of monuments in the agricultural belt. However, the use of aerial photography has proved invaluable in the identification of extensive areas of cropmarks across the Solway Plain (Bewley 1994).

3.1.2 The solid geology of the area consists predominantly of Stanwix Shale. The drift geology consists of a deep accumulation of Devensian till, predominantly boulder clay interleaved with alluvial sands and gravels that forms a gently undulating landscape of low ridges, intersected by a mainly northeast to southwest orientated drainage system. The soils consist of mainly Clifton and Brickfield Associations, the former comprising seasonally waterlogged soils, which developed over tills (Hodgkinson *et al* 2000).

3.1.3 The proposed development area is the former Fisons Factory located to the southeast of the town proper (Figure 1). The area of the site boundary measures a total of 8.26 hectares (ha) and includes a dismantled railway/informal footpath to the north. The site consists of a number of buildings with open storage areas to the central and rear areas of the site. The proposed development site is considered brownfield in need of immediate regeneration. The site is also on a list of sites included within Allerdale District Council's Derelict Property Strategy.

3.2 HISTORICAL CONTEXT

3.2.1 ***Introduction***: this historical background is compiled mostly from secondary sources, and is intended only as a brief summary of historical developments around the study area.

3.2.2 ***Place Name Evidence:*** Silloth comes from the Scandinavian *Selathe*, thought to mean a grain store or barn by the sea, around which a small hamlet of fisher folk dwelled. The name is thought to have referred to one of the granges of Holm Cultram Abbey. Through the years Silloth has been documented as many different names. *Selathe* was first recorded in 1292. In 1361 it was known as *Selathes*, *Seelet Meddo* in 1538, *Selythe* in 1552, *Silluthe* in 1576, *Silleth* in 1589, *Selleth* in 1605, both *Sillath* and *Sellath* in 1649 and *Silloth Grange* in 1718 (Scott-Parker 1998).

3.2.3 ***Prehistoric (up to 43AD):*** the earliest known occupation of the Solway Plain was during the Neolithic period. Excavations at a settlement at Plasketlands, near Mawbray uncovered an extensive palisade, suggesting possible domestic settlement. Radiocarbon analysis has dated the site to 3,970 BC (Hodgkinson *et al* 2000, Holme St. Cuthbert History Group, 2004).

3.2.4 Polished Stone axes from the Langdale axe factory in the Cumbrian mountains were traded extensively throughout the British Isles. It is likely that by the 3rd millennium BC, the inhabitants of Cumbria were part of an extensive trans-European trading network. Evidence for settlement is primarily inferred by the distribution of these polished stone axes. Over 100 stone axes have been recovered from the Solway Plain. Flaked flint axes were recovered from raised beach deposits on the west side of Silloth. These flint axes have been assumed to have come from the Langdale Axe Factory (Bewley 1994).

3.2.5 Occupation during the Bronze Age is evidenced by tools from this period that include a stone hammer found at Plasketlands, a boat-shaped axe hammer found at Wolsty, a blue whinstone axe hammer found near Silloth and a stone-battle axe made from granite found on the Solway Moss (Holme St. Cuthbert History Group 2004).

3.2.6 A cluster of prehistoric roundhouses have been identified between Silloth and Allonby. Excavations at Wolsty, between 1950-1958 have revealed evidence of enclosures and circular huts dated to this period and even being used during Roman occupation (*ibid*).

3.2.7 ***Romano-British (43 AD- 410 AD):*** during the Roman period there was a heavy military presence in Cumbria. Hadrian's Wall was built between 122-130 AD as part of the attempt to construct a permanent frontier border. Shortly after the Wall was completed it was largely abandoned and the Antonine Wall was constructed between the Rivers Forth and Clyde. The Antonine Wall's period of use was

short. By 155 AD it was abandoned and Hadrian's Wall was reoccupied (Daniel 1978).

3.2.8 The Wall with its associated forts, turrets and milecastles were originally constructed of turf and timber, later being replaced with stone. However, the section of the wall west of the River Irthing remained a turf construction, presumably due to the added security provided by the Solway Firth. The turrets on the Wall west of Drumburgh, as well as sections of the Wall and *Vallum*, have been excavated. To the west of Drumburgh the line of the Wall was disturbed by the development of Port Carlisle. Between Port Carlisle and Bowness-on-Solway, the line of the wall is entirely invisible due to developments and deliberate destruction, although in the early 1900s it was stated that the line of the wall was visible as a slightly elevated ridge (Bulmer 1901, Daniels 1978).

3.2.9 The coastal road down the west coast has been identified as the seacoast extension of the Wall thought to connect with the Roman Military Way at Bowness (Margary 1973). This road has been seen at Beckfoot, extending for one kilometre in either direction from the fort gates, then lost to ploughing (Breeze 2004). Two phases of coastal defences have been suggested through excavation and cropmark evidence although this phasing is open to debate (*ibid*).

The first aspect of this phasing consisted of an early palisade constructed along the coast thought to date to the primary Hadrianic phase, and said to correspond closely to the descriptions of palisades in Germany recorded in the *vita Hadriani*, a contemporary account of Hadrian's tactics (Jones 1982). It is argued that the palisade was replaced by a known system of towers that extended down the coast between milefortlets. The Moricombe estuary marks the first strategic break in the south Solway shoreline. It is suggested that installations south of this may be a secondary phase of installations (Breeze 2004).

3.2.10 Excavations by Bellhouse failed to reveal any evidence of installations between Skinburness (Milefortlet 9) and Blitterlees (Milefortlet 12, Site 5). The position of Milefortlet 10 is annotated at NGR NY 1188 5520 on Ordnance Survey maps. In 1955 a poorly defined rectilinear platform, represented by a 20cm high bank with rounded corners was identified between East Cote farmhouse and the road that follows the modern sea wall. Deposits identified during the evaluation were interpreted as a dune formation and that the platform observed on Ordnance Survey mapping was a

truncated dune, similar to several other dune-like mounds in the immediate vicinity (Turnbull 1991). Excavations in 2005 and 2006 at Solway Lido and Solway School did not uncover any further remains of milefortlets (Dodd 2005, Town 2006b). Bellhouse thought that the tower and milefortlet line through Silloth would have been located close to the sea and could have possibly been destroyed by erosion (Wooliscroft and Jones 2004).

3.2.11 Until recent decades, the Roman military sites of Cumbria are the ones that have received the most attention from archaeologists. As a result, the nature of rural settlement during the Roman period is poorly understood. Environmental studies suggest that woodland clearances begun in the Iron Age continued, implying large-scale cultivation of the land (Philpott 2004). A large percentage of the potential Romano-British rural sites around Silloth have been identified through aerial photography; rectangular field systems have also been identified (Bewley 1994). Where rural sites have been excavated, it has been found that the traditional Iron Age building form, the roundhouse, continued to be in use into the Roman period. Excavations at Silloth Farm (1977) found a rectangular enclosure, formed by a ditch and bank, surrounding a series of roundhouses and attached to a substantial field system. By the late 3rd century roundhouses were being superceded by rectangular timber buildings, an example of which is at Crosshill (Higham and Jones 1983).

3.2 12 ***Early Medieval (410 AD-1066 AD)***: following abandonment of the coastal forts by 410AD, it is believed native Britons gradually reverted to their own autonomy. Angles had begun to enter eastern Cumbria by the 7th century AD and they were successful in implementing their organisation on areas such as Northumberland. The west of the county appears to have been more politically stable (Crowe 1984).

3.2.13 There is little in the way of direct settlement evidence from the early medieval period in Silloth; however, it is thought that settlement was continuous. North Cumbria fell under the aegis of Anglo-Saxon, Scandinavian and Scottish influences. In the 7th century the region was absorbed into the Kingdom of Northumbria (Hodgkinson *et al.* 2000). Old Silloth Farm to the north of the site boundary is thought to be the location of an early medieval/medieval settlement or farmstead. This is based on the surrounding field strips visible on early cartographic evidence, some of which still survives. Excavations at Solway Lido have also identified extensive medieval

field systems dated back to at least the 10th century (Jones 2004a, Town 2006a).

3.2.14 ***Medieval (1066-1485):*** during most of the medieval period the northwest of England was passed back and forth between the English and the Scottish. At this time the history of Silloth is essentially intertwined with that of the abbey of Holm Cultram, to the southeast of Silloth, in the demesne of Allerdale (OAN 2004).

3.2.15 In 1092 William Rufus had taken control of Carlisle, although his hold was tenuous. With the death of Henry I in 1135, Civil War broke out. David I of Scotland took advantage of this instability to reassert Scotland's claim to Cumberland. David I's son, Prince Henry founded the Cistercian monastery of Holm Cultram (Rollinson 1996). Prince Henry owned most of the Holm district. With the Lord of Allerdale, who owned the remaining parts, the land was granted to the monks from Melrose Abbey in Scotland (Holme St. Cuthbert History Group 2004). In c. 1150 this grant of land was confirmed by Henry II when the area came under English control (Rollinson 1996).

3.2.16 The abbey is recorded as retaining the favour of the king, being exempt from shires and hundreds, wapentakes and tolls (Nicholson and Burn 1777). The monks of Holm Cultram Abbey cultivated the large areas of marshland that dominated the Silloth landscape into agricultural land that supported sheep and produced grain. The monks established a busy port at Skinburness in order to export their wool (Scott-Parker 1998). Documentation suggests that by 1175 five grange farms had been established in the area, with one at Skinburne possessions. Following the destruction of Skinburness between 1301 and 1304, a sea dyke was constructed to protect the village (Fletcher and Miller 1997). Throughout the 13th century the abbey was lavished with land, quarries, iron ore works and houses left to them by benefactors (Holme St. Cuthbert History Group 2004).

3.2.17 In the 13th century, the abbey was caught up in the ongoing wars between the English and the Scottish. After the signing of the Great Charter, King John marched to Scotland, reaching Berwick in 1216. As he returned south, Alexander II of Scotland set off in pursuit. They moved westward towards the abbey of Holm Cultram and laid waste to the area (Gilbanks 1899). The abbey was again wasted in 1316 when border raiders attacked the northwest coast, plundering everything as far as Furness. Six years later, Robert the Bruce led

another savage campaign, again laying waste to the abbey (Dickinson 1965).

3.2.18 Post-medieval to Modern (1485-present): in 1538 Holm Cultram Abbey, along with 1600 acres of land was surrendered to the Crown as part of Henry VIII's Dissolution of the Monasteries. At this time the abbey was valued at £427 19s 3d. The abbot of Holm Cultram maintained detailed accounts that contained all of the tithes, meal, oats and money that had been paid by the parishioners to the abbot and convent; in which Silloth paid 14s. in money (Nicholson and Burn 1777).

3.2.19 At the time of Elizabeth I, the lands of Holme Cultram were leased out to tenant farmers. There were no freeholders in the lordship at this time. The manor of Holme Cultram was retained in crown hands until after the Restoration of Charles II and in 1732 it was purchased by the Stephenson family (ibid). Carved stone purportedly from the abbey is recorded in the Old Vicarage at Silloth.

3.2.20 In 1847 Silloth was mentioned as a hamlet that belonged to Charles Joliffe, Esq. At that time it consisted of a few farm houses of which five were recorded in the historical trade directories (Parson and White 1829, Mannix and Whellan 1847). In 1855 a local farmer wrote in his diary 'Silloth Bay is a very wild place in dry and windy weather. The sand blows very little short of the deserts of Arabia. There is now at present four farm houses, that is all there is at Silloth' (Holme St. Cuthbert History Group 2007). This is one less house than was present eight years earlier. By the time of the 1862 census, there were 128 recorded houses at Silloth (ibid). This was due to the arrival of the railway.

3.2.21 Until 1823 ships of 100 tons destined for Carlisle could get no further than Port Carlisle. In 1823 the Carlisle Canal opened that allowed ships to sail to the heart of Carlisle. By the late 1840s the canal was facing competition from railway lines that had direct access to the coast. In order to compete, the shareholders of the canal company formed the Carlisle and Silloth Bay Railway and Dock Company in 1852. A scheme was implemented to convert the canal into a railway line (Scott-Parker 1998). In 1853 the directors of the Carlisle Canal Company decided that it would desirable to extend the railway running from Carlisle to Port Carlisle, to Silloth Bay. After much debate it was decided that a dock at Silloth was preferable to one at Maryport as vessels could land their passengers at the end of the

jetty whereas at Maryport this was not possible until high tide. Silloth Bay was regarded as a place of safety, a place where ships could go in any type of weather and at all tides. A dock and railway at Silloth Bay meant that cotton could be shipped easier and cheaper from Liverpool to Carlisle (Webster 1854). The railway was finally opened in 1856 (Scott-Parker 1998).

3.2.22 At the opening day speech, the Mayor stated that the docks would be completed in a couple of years and a city may even one day be established at Silloth (ibid). The foundation stone for the dock was laid in 1857 and it was not formally opened until two years later (Walton 1979).

3.2.23 In 1857 a timber jetty was built around 304 metres in length, and ships began to use this to load and unload their cargo. Work on an enclosed wet dock began the same year and was finished in 1859. Upon completion of the wet dock, named the Marshall Dock, ships no longer used the jetty, but it remained as a pleasure pier (Wright Unknown Date).

3.2.24 The considerable income that the railway line was supposed to bring in never materialized. In order to make a profit on their venture, the directors of the Silloth Railway decided to develop Silloth into a resort. In 1855 the directors bought 46 acres of Blitterlees Common 'for building purposes' (Walton 1979, Scott-Parker 1998). The town was designed and built by the Messrs. J.W and J. Hay, architects from Liverpool. The streets were described as roomy, straight, well-drained and lighted (Bulmer 1883).

3.2.25 By 1860 several streets had been laid out, flagged and paved, with Eden Street being one of the earliest parts of the new town (Whellan 1860, Holme St. Cuthbert History Group 2007). The Gasworks had also been established along with around 100 houses. Many boarding and lodging houses were built in order to accommodate the holiday makers (Whellan 1860). In 1998 the Victorian seaside town was virtually unchanged to the one built in 1857 (Scott-Parker 1998).

3.2.26 The desire for development and business of any kind was so strong that in 1856 a Mr. Bell was granted a 99 year lease for a chemical manure works at Silloth, provided that he did not carry out any offensive trade (Scott-Parker 1998). In the late 1870s and 1880s the manure works and a vitriol factory had been allowed to grow up alongside the town where the local residents complained of 'evil smells,' proving the difficulty of mixing functions of resort and commercial port within this area (Walton 1979).

3.2.27 Trade at Silloth initially included flour and wheat from Europe, timber from the Baltic and Canada and coal going to Ireland. Cargo that included stone and potatoes came from South Scotland and rock salt from Ireland for a saltworks. It was hoped that Silloth would become as big as Glasgow or Liverpool, however this was never realized. The port was fairly quiet until the 1870s when business began to pick up mainly due to the arrival of American wheat. Carr's large bakery was the main customer for the wheat (Wright Unknown Date). By the 1880s principal trade consisted of coal, manure, burnt ore from sulphur ore, imported grain, and phosphorous from South Carolina for the manufacture of chemical manures (Bulmer 1883). Two factories for making chemical fertilizer were built nearby and became big customers of the harbour (Wright Unknown Date).

3.2.28 By 1858 the only manufacturers at Silloth listed within the trade directories was that of Carruthers and Blaylock, salt manufacturers (Kelly 1858). In 1873 William Crabb was listed as a chemical manufacturer (Kelly 1873). In 1883 William Crabb was listed as the proprietor of Border Counties Chemical and Manure Works where sulphuric acid, dissolved bone, superphosphate of lime, and special manures for all crops and soils were manufactured. By this time J. Maxwell and Sons had established Solway Chemical Works where dissolved bone, guano, superphosphate of lime, sulphuric acid, and special manures for all crops and soils were manufactured (Bulmer 1883).

3.2.29 An undated advert in the Carlisle Journal showed timber buildings connected with the railway with a tall chimney, with William Crabb written in large letters on the outside of the building. William Crabb came to Silloth from Scotland where he had previously been involved with manure manufacturing. As early as 1871 he was listed in newspapers as the manager of Border Counties Chemical Works at Silloth. In 1884 fire broke out at Crabb's manure works where it was reported that most of the buildings burnt as well as a large quantity of machinery and 'a large shed mostly of wood and covered with four contiguous roofs,' the plant used for the manufacture of sulphuric acid was saved. The damage was estimated to be between £2000 and £3000. Eventually new buildings replaced the burnt ones (Cumberland News 2009).

3.2.30 The Solway Chemical Manure Works had originally been located at Glasson Creek near Drumburgh. In 1883 John and William Maxwell inherited the business from their father, who began the manure

works in 1840. Tenders to build the Solway Chemical Manure Works at Silloth were advertised in the Journal in May 1878. In 1899, the Carlisle Journal stated '*Messrs J and W Maxwell, manure merchants, have purchased the works at Silloth, adjoining their own, which for some years belonged to W. Crabb*' (*ibid*).

3.2.31 It is thought competition from Maxwell's manure works and the pervious fire, led Crabb to switch to the production of mineral water. The trade directories confirm this when in 1901 William Crabb was listed as a mineral water manufacturer and J Maxwell and Sons were now the only manure manufacturers in Silloth (Bulmer 1901).

3.2.32 In 1928 John Maxwell died followed by his brother William in 1943. The family firm eventually became Fisons Fertilizer Factory. In 1960 the Cumberland News reported that the firm was to stay for another 12 months (Cumberland News 2009).

3.2.33 During World War I a gun testing station was established to the south of the docks, with a railway line running from it. No traces of this are visible today (Nelson 1995).

3.3.34 During World War II a system of defensive structures was established across Britain, aimed at immobilising an invading force and protecting strategic areas. Pillboxes were an important link in this defensive network. Several pillboxes were positioned in order to protect Silloth Airfield that had suffered several air raids in 1940 (OAN 2004). Within the 1km radius surrounding the site boundary there are eight pillboxes, many of which no longer have any visible remains. There is photographic evidence that these pillboxes were brick-built structures with concrete roofs and machine gun slots (*ibid*).

3.3 PREVIOUS WORK

3.3.1 Information of previous archaeological investigations within a 1km radius of the proposed development area was obtained from the Cumbria HER at Kendal.

3.3.2 In 1994 trial trenches were excavated at Silloth in order to investigate features identified on aerial photographs. Silloth School playing field was photographed and revealed parchmarks that consisted of what was thought to be a double-ditched cordon as well as a Roman road that was flanked by side ditches. The theory of the palisade comes from excavations in 1977 that identified the double-ditch cordon and interpreted it to be the foundation for a wooden fence. This entire

area was interpreted as a Roman road running along the coastal system fronted by a timber barrier. The 1994 fieldwork found two substantial slots set 12.5m apart thought to be the palisade ditches. On excavation these were determined to be modern land drains cut in an unusual design (Wooliscroft and Jones 2004). The Roman road was photographed from the air in 1975 running northeast. Excavations confirmed this to be a road by the discovery of side ditches. The road surface had been extensively ploughed out, but loose gravel was evident. The ditches ran parallel to this road. Several nails were found within the vicinity of the northern ditch, but no dateable finds were recovered. Therefore there is no certain evidence that this is a Roman road, although the construction was thought to be similar to that of known Roman work (*ibid*). However, excavations in 2006 at Solway Lido failed to uncover any evidence of the road or palisade. The road ditches were shown to be probable post-medieval field boundary ditches, one of which had a ceramic drain at its base (Town 2006b).

3.3.3 In November 2003 North Pennines Archaeology Ltd. undertook an archaeological field evaluation at Solway School, Silloth prior to the development of a Sports Hall. Four trenches were excavated in which no deposits earlier than 1900 were observed. It was concluded that there had been 0.50m of dune sand redeposited across the site prior to the late 19th century. No archaeological deposits were beneath the deposit of sand (Jones 2003).

3.3.4 In 2004 an archaeological assessment was undertaken at Solway Lido that located 22 sites from the HER. In addition to the known sites a further eight previously unknown sites were identified, four of which were possible pillboxes in various states of disuse and decay (OAN 2004).

3.3.5 In response to the aforementioned desk-based assessment in 2004 (see above) an archaeological evaluation was undertaken on land at Solway Lido, Silloth prior to the construction of a proposed commercial development in 2004. A series of linear ditches were identified that could be interpreted as palisade slots. Three of the ditches contained a significant amount of slag as well as charred grain. The interpretation of the finds suggested that the ditches formed part of an extensive prehistoric landscape. However, radiocarbon dating concluded that the site was 10th century in date (Jones 2004a).

3.3.6 An archaeological assessment in 2004 of land at Greenrow was undertaken prior to a proposed residential development. The

assessment revealed that the site was once used as agricultural farmland until the mid-20th century when a car showroom was built. Borehole data provided by the client showed extensive disturbance occurred during its construction (Jones 2004b).

3.3.7 In December 2004, an archaeological evaluation was undertaken on land at Silloth Primary School prior to the construction of a new childcare facility. One trench was excavated that did not reveal any archaeological deposits (Jones 2005).

3.3.8 The following year an archaeological assessment and field evaluation occurred at Solway School, Silloth that did not yield any archaeological finds or deposits (Dodd 2005b).

3.3.9 A desk-based assessment and walkover survey on land at Fell View, found that the site was partially excavated in 1977. Further evidence was found of a presumed farmstead enclosed by a 3rd century ditch and bank. An archaeological evaluation was recommended (Town 2006a).

3.3.10 A building investigation undertaken at The Old Station, Silloth found that the building dated to at least 1856 when the Carlisle to Silloth railway line opened and had undergone little change throughout its history (OAN 2007).

3.3.11 Independent research of the salt-working industry along the Solway coastline from the Mull of Galloway to St. Bees Head and from St. Bees Head to the Duddon River was undertaken in order to investigate the techniques employed in England and Scotland during the medieval and post-medieval periods. In total 58 sites were investigated, 39 of which were located in Cumbria, that revealed close affinities during the medieval period, compared to later developments, probably arising as a result of tight monastic control (Cranstone Consultants 2005).

4 ARCHAEOLOGICAL WATCHING BRIEF

4.1 INTRODUCTION

4.1.1 The watching brief monitoring was undertaken over three non consecutive days between 22nd April 2010 and 26 April 2010. Fifteen geological test pits were excavated and six geological bore holes were sunk.

4.2 TEST PITS

4.2.1 Test pits #1 to #7 and #9 to #14 were excavated by a 3cx mechanical excavator with a 0.60m wide toothed bucket. Test Pits #8 and #15 were excavated by a 3cx mechanical excavator with a 1.60m wide ditching bucket. Test Pits #1 to #7 and #9 to #14 measured approximately 2.00m in length by 0.60m in width. Test Pit #8 measured 2.00m by 1.60m and Test Pit #15 measured 2.00m by 2.00m (See Appendix 2).. The numbering and location of the pits is shown in Figure 2.

4.2.2 Measurement and context details of each pit are summarized in tabular form in Appendix 2.

Plate 1: Mechanical Excavator Working on Test Pit #12

4.2.3 The only test pit to reveal any significant archaeological features was Test Pit #9. Removal of 0.10m of topsoil **(100)** revealed a concrete floor

surface **(121)** butting up to a redbrick wall **(123)**. The wall ran east-west and was four brick courses wide (0.50m). The wall survived one brick course proud of the concrete surface. The concrete floor had an average thickness of 0.08m and was laid on a layer of gravel sub base **(122)** measuring 0.15m in depth. The sub base sealed 0.20m of made ground **(109)**. This in turn sealed the mottled orange natural substrate **(111)**.

*Plate 2: Site of Test Pit #9 showing Redbrick Wall **(123)** and Concrete Floor Surface **(121)***

4.2.4 It seems likely that the redbrick wall **(123)** is the north wall of a building which formed part of the late 19th century chemical and manure works. The concrete **(121)** is part of an internal floor surface associated with the same buildings.

5.3 BORE HOLES

5.3.1 Six bore holes were sunk using a mobile rig unit. All bore holes measured 0.15m in diameter and were sunk to a depth of 5.00m. The numbering and location of the bore holes is shown in Figure 2.

5.3.2 The relatively narrow diameter of the bore holes prevented any detailed observation of the stratagraphic layers. However observation of extracted soils suggested that no archaeological features or deposits had been penetrated.

Plate 3: Mobile Bore Rig at Bore Hole #5

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

5.1.1 Six bore holes with a diameter of 0.15m were sunk to a depth of 5.00m. Fourteen small test pits all 2.00m in length were excavated. These were located throughout the site according to geotechnical requirements. Test Pit #9 was the only excavation to encounter any significant archaeological features.

5.1.2 Test Pit #9 revealed a four course wide (0.50m) redbrick wall and a concrete surface. Comparing the location of the test pit to the position of structures on the 1900 and 1926 Ordnance Survey maps leads to the conclusion that the exposed features are likely to be the remains of one of the late 19th century chemical and manure works. The redbrick wall is a north wall running east-west and the concrete floor is likely to be internal. Although most of the structures of the chemical and manure works have been demolished the results at Test Pit #9 suggest that the footprint of the various buildings might lie just below the topsoil. A large portion of the former western wall still remains standing and was incorporated as part of the mid 20th century Fisons Factory. The degraded ashphalt encounterd in Test Pits #11 and #13 is also likely to be associated with the former Fisons Factory.

5.2 RECOMMENDATIONS

5.2.1 The six bore holes and fifteen test pits only covered a very small percentage of the total development area of 8.26 hectares. Although significant post medieaval archaeological features were only encountered in Test Pit #9 it is likely that these continue under the topsoil in the immediate vicinity. Only further archaeological investigation would establish their true extent.

5.2.2 Prehistoric, Romano British and Medieval archaeological features were not encountered during the geotechnical survey. However it would be difficult to say with certainty that they do not remain, sub surface, within other parts of the development area.

5.2.3 As this watching brief was conducted as a condition of ground investigations associated with the possible development of the site, no further archaeological work is deemed necessary. However, given the site's location in relation to the Roman coastal defensive network and the proximity of the chemical and manure works and railway, it

is recommended that any work conducted in the future be subject to a similar programme of archaeological investigation.

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APPENDIX 1: CONTEXT TABLE

Context Number	Context Type	Description
100	Deposit	Topsoil
101	Geological	Orange Clay (Natural)
102	Geological	Dry Grey Silt
103	Deposit	Black Asphalt
104	Deposit	Black Industrial Rubble
105	Geological	Yellow/Orange Sand
106	Geological	Grey Clay Band
107	Geological	Yellow/Orange Sand
108	Deposit	Topsoil
109	Deposit	Made Up Ground
110	Geological	Dry Grey Silt
111	Geological	Mottled Orange/Grey Clay
112	Deposit	Dark Brown Topsoil
113	Deposit	Brown Subsoil
114	Geological	Coarse Gravel/Sand
115	Geological	Light Brown Gravelly/Sand
116	Geological	Brown Clay
117	Geological	Wet Grey Silt
118	Deposit	Black Cindery Topsoil
119	Deposit	Orange Gravelly Sand
120	Geological	Narrow Grey Clay Band
121	Structure	Concrete Floor
122	Deposit	Gravel Sub Base
123	Structure	Redbrick Wall
124	Deposit	Unidentified Hard Dark Grey Deposit

Table 1: List of Contexts issued during Watching Brief

APPENDIX 2: TABLE OF CONTEXTS IDENTIFIED IN TEST PITS

Test Pit	Pit Size (Metres)	Total Depth (Metres)	Context Number	Depth of Context (Metres)
1	2.00 x 0.60	2.50	112	0.30
1	-	-	113	0.80
1	-	-	114	0.40
1	-	-	115	1.00
2	Unexcavated	-	-	-
3	2.00 x 0.60	3.20	118	0.25
3	-	-	119	0.85
3	-	-	120	0.30
3	-	-	111	0.80
3	-	-	102	1.00
4	2.00 x 0.60	2.50	112	0.10
4	-	-	109	0.90
4	-	-	111	0.60
4	-	-	117	0.40
4	-	-	102	0.50
5	2.00 x 0.60	2.85	118	0.25
5	-	-	119	0.60
5	-	-	120	0.40
5	-	-	111	1.10
5	-	-	102	0.50
6	2.00 x 0.60	3.45	112	0.10
6	-	-	109	0.25
6	-	-	116	0.30
6	-	-	111	0.95
6	-	-	117	0.40
6	-	-	102	1.45
7	2.00 x 0.60	2.80	118	0.20
7	-	-	111	1.45
7	-	-	102	1.15
8	2.00 x 0.60	0.65	100	0.10
8	-	-	109	0.50
8	-	-	124	0.05
9	2.00 x 0.60	2.50	100	0.10
9	-	-	121	0.08
9	-	-	122	0.15
9	-	-	109	0.20
9	-	-	111	1.20
9	-	-	102	0.77
10	2.00 x 0.60	2.60	108	0.20
10	-	-	109	0.94

Test Pit	Pit Size (Metres)	Total Depth (Metres)	Context Number	Depth of Context (Metres)
10	-	-	102	1.46
11	2.00 x 0.60	2.50	103	0.05
11	-	-	104	0.25
11	-	-	111	1.00
11	-	-	102	1.20
12	2.00 x 1.60	2.80	100	0.25
12	-	-	101	1.45
12	-	-	102	1.10
13	2.00 x 0.60	2.15	103	0.05
13	-	-	104	0.25
13	-	-	105	0.80
13	-	-	106	0.30
13	-	-	107	0.75
14	2.00 x 0.60	2.60	109	1.20
14	-	-	101	0.30
14	-	-	102	1.10
15	2.00 x 2.00	1.00	100	0.05
15	-	-	109	0.95

Table 2: List of Contexts Identified Within the Test Pits

APPENDIX 3: PHOTOGRAPHS OF TEST PIT SECTIONS

Plate 4: Test Pit #1,Oblique Section (Looking South-East)

Plate 5: Test Pit #3, Oblique Section (Looking East)

Plate 6: Test Pit #4, Oblique Section (Looking North)

Plate 7: Test Pit #5 Oblique Section (Looking East)

Plate 8: Test Pit #6, Oblique Section (Looking North)

6.1.2

Plate 9: Test Pit #7, Oblique Section (Looking South-East)

Plate 10: Test Pit #8, Oblique Section (Looking North)

6.1.3

Plate 11: Test Pit #9, Oblique Section (Looking North-East)

Plate 12: Test Pit #10, Oblique Section (Looking East)

Plate 13: Test Pit #11, Oblique Section (Looking North)

Plate 14: Test Pit #12, Oblique Section (Looking North- East)

Plate 15: Test Pit #13, Oblique Section (Looking North)

Plate 16: Test Pit #14, Oblique Section (Looking East)

6.1.4

Plate 17: Test Pit #15, Oblique Section (Looking East)

Plate 18: Test Pit #16, Section (Looking North-East)

Plate 19: Bore Hole #1 (Background) with Extracted Corse Gravel ***(114)*** *(Looking North-West)*

APPENDIX 4: FIGURES