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AND CHESTER

THE ALLIANCE AND LION SALT WORKS, MARSTON, NORTHWICH

Volume III: The Archaeological Excavations, 1992-2015 |
Chris Hewitson

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THE ALLIANCE AND LION SALT WORKS, MARSTON, NORTHWICH

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THE FINAL REPORT:

VOLUME III: THE ARCHAEOLOGICAL EXCAVATIONS, 1992-2015

REPORT NO 2015-01



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Contents

1. THE BELOW-GROUND ARCHAEOLOGICAL REMAINS	4
2. 1992, 1993, 1994 AND 1995 EXCAVATIONS	9
3. 2006-2009 WATCHING BRIEFS	27
4. 2011 EVALUATION TRENCHES	35
5. 2011-2013 TEST-PITTING	46
6. 2012 WATCHING BRIEF – PHASE 1B, ENABLING WORKS.....	65
7. 2012-2014 WATCHING BRIEF ON THE HISTORIC CORE	67
8. 2012-2014: WATCHING BRIEFS ON PERIPHERAL AREAS.....	126
9. 2013 EXCAVATION OF STOVE HOUSE 5 FOOTPRINT	137
10. 2014 WATCHING BRIEF ON EXTERNAL WORKS	144

1. THE BELOW-GROUND ARCHAEOLOGICAL REMAINS

1.1 Introduction

Excavations were first conducted at the site included a series of test pits and small excavations in 1992, 1993, 1994 and 1995. These were not fully reported on at the time of excavation and the surviving records are extremely poor. A short summary was presented in the desk-based assessment,¹ but the details appear to be inaccurate. Further detailed analysis based on the photographic record and recovered finds has been undertaken and is reported on in this volume for the first time.

In 2006, a new electricity high voltage cable was laid across the site. The excavation was conducted with scheduled monument consent, but reporting and archiving of the details was again inadequate. A short summary of the results has been presented here based on photographic evidence and excavations conducted in 2014 that have confirmed the location of this cable.

During Phase 1a of the enabling works in 2009 a series of below-ground excavations were conducted under a watching brief these are briefly described in a report submitted to English Heritage as part of Scheduled Monument Consent.² The report was predominantly a photographic record, with no written description or geographic indication of the location of the remains. This has been fully updated as part of the current work.

Prior to Phase 1b of the enabling work in 2011 a desk-based assessment of the site³ was produced to inform the process of restoration, development and the mitigation strategy for the preservation and protection of the Scheduled Monument. As part of the initial phase of enabling work a series of evaluation trenches and test pits were excavated to inform the work in November and December 2011 by Oxford Archaeology North.⁴

The test pits were completed by the Project Archaeologist, Chris Hewitson in February and March 2012.⁵ Test-pitting and below-ground interventions were also conducted in Phase 2 of the enabling works (the pre-commencement works) between April 2012 and July 2013.⁶

The reporting of the watching briefs on below-ground archaeological remains uncovered in the Phase 2 main works has been discussed in three sections. These are the historic core (i.e. the buildings including Pan and Stove Houses 1-4 and the Packing Area); the peripheral buildings and areas; and the external works (i.e. services and landscaping works conducted at the end of the project). This work was conducted between October 2012 and August 2014.

A full open area excavation was conducted by Oxford Archaeology North in January and February 2013, on the footprint of the rebuilt visitor and conference centre of Stove House 5.

1.2 Extent of survival

During the interim reporting an assessment of below-ground test-pitting and watching briefs was undertaken in order to understanding the nature of below-ground deposits. This produced a summary model of the deposits encountered (see Table 1.1 below).

Historic Core South

The Historic Core South included all below-ground deposits in the area of Pan and Stove House 3 and Pan and Stove House 4. The remains were associated with the Lion Salt Works. The remains were located during test-pitting in advance of work and during the watching brief on the historic core. Significant archaeological deposits were revealed at depths around 0.60-1.0m (24.20m AOD) below the current ground level of Pan House 3 and Pan House 4. This included remains of the Rhomboid Building (Phase 4), the Butter Pans (Phase 4) and earlier remains of Pan House 3 (Phase 5) and the Butter Pans (Phase 5). No significant deposits in the area below Stove House 3 and Stove House 4 have been found due to a

¹ Matrix 2011; Section 5

² Fielding 2010

³ Matrix 2011

⁴ Phase 1, 2011/ 2012, administered under Scheduled Monument Consent Class 7, English Heritage 2011; Oxford Archaeology North 2012

⁵ Chris Hewitson, CWAC 2012-001

⁶ Chris Hewitson, CWAC 2012-006, CWAC 2012-009, CWAC 2013-001

depth of c. 2m (24.20m AOD) of overlying material below the floor level of the Stove Houses. The material within the stove houses is very hard conglomerated made-ground consistent with their construction.

Table 1.1: Matrix of Areas Excavated

	HC - South	HC - North	HC Periphery	HC North-East Area	South Area
1992-1995 Excavations					
2006 Watching Brief					
2009 Watching Brief					
2011 OAN Evaluation					
2011-2013 Test Pits					
2012 WB Pre-Enabling					
2012-2014 WB Historic Core					
2012-2014 WB Peripheral Areas					
2013 OAN Excavation					
2014 WB External Works					

Historic Core North

The Historic Core North included all deposits below the Pan Garden, Stove House 1 (also known as the Link Block), Stove House 2 and the Packing Area/ Loading Bay. The remains were associated with the Red Lion Hotel and the Lion Salt Works. The remains were located during test-pitting in advance of work and during the watching brief on the historic core.

Significant archaeological remains in the Pan Garden were located at a depth of 0.50-1.0m below the current ground level. The remains were of Pan House 1 (Phase 4) demolished in the 1980s. Little detail could be added due to the limited below-ground excavation.

Significant archaeological remains within the building outlines were revealed at a depth of 0.60-1.5m below current ground levels. The remains included the boundary wall of the Red Lion Inn (Phase 2), deposits associated with the construction of Stove House 1 and the Tunnel (Phase 4), Pan and Stove House 2 (Phase 5), the realigned flue systems and the Loading Bay (Phase 7).

Historic Core Periphery

The Historic Core Periphery was the area directly east of the buildings, but to the west of the mound of the Nodding Donkey Complex. It also included the area between the Red Lion Inn and Pan House 3 and 4, this extended to the area adjacent to the Pump House. The remains were associated with the Lion Salt Works.

The remains were located initially during the 2006 excavation for an electricity cable and then during the soft strip of the Occupation Road in 2009 as part of the Enabling Works. Detailed archaeological recording of remains was undertaken during the evaluation in 2011, the excavations of Stove House 5 in 2013, the watching brief on peripheral buildings in 2012-2013 and during the watching brief on external works in 2014. Significant archaeological remains were revealed at depths of less than 0.2m below current ground levels. These included remains of the Rhomboid Building (Phase 4), the Butter Pans (Phase 4), the Fishery Pans (Phase 5) and the rail tracks (Phase 5). The watching brief on the Brine Shaft revealed preserved remains at a depth of c. 0.7m (23.20m AOD) below current ground level. Remains of pipes associated with the distribution of brine were also located from various time periods.

North-Eastern Area

The North-Eastern Area of the site was in a line roughly east of the Engine House/ Brine Tank, around the location of Stove House 5 and south towards the former boundary of the Occupation Road. For practical purposes the southern edge was in a roughly east-west direction from the north-east corner of the Manager’s House, a line that also constituted the Scheduled Monument Boundary. This area of the site consistently revealed evidence of the Alliance Salt Works (Phase 3) but also evidence for later phases of cottages and stables (Phase 4-6) that survived the closure of the Alliance Salt Works and Pan and Stove House 5 (Phase 7) of the Lion Salt Works.

The remains were initially located during excavation from 1992-1995 in a series of small test pits and larger excavation trenches. Some remains were uncovered during the 2009 enabling works.

More detailed remains were located during the 2011 evaluation and the subsequent detailed excavation under Stove House 5 in 2013 by Oxford Archaeology North. Finally the watching brief during the External Works in 2014 revealed further remains of the Alliance Works.

Significant archaeological deposits in this area range from <0.5m below current ground level in the central area of the site to 0.5-1.5m below current ground level in the northern area of the site. Further remains have been encountered during the excavation of Stove House 5 footprint associated with the Alliance Works including outbuildings and a smithy (Phase 3). These were preserved beneath the later remains of Stove House 5 and Pan House 5 (Phase 7) footprint where the construction of the new building in the 1960s appears to have been on top of previous remains of the earlier salt works. The central area of the eastern half of the site produced evidence of below-ground archaeological remains at depths of 0.2-1.0m below the current ground level. These include remains of the Accommodation Road and the southern pan and stove houses of the Alliance Salt Works (Phase 3).

Southern Area

The southern area of the site included all the area south of the Red Lion Inn, the Manager's House and the boundary of the Scheduled Monument that followed the Occupation Road. There was a low possibility of remains of the Alliance Works (Phase 3). The Scheduled Monument boundary passes through the area to include the surviving remains of the Smithy (Phase 5) and the rail tracks (Phase 5) that served the works. Historic mapping suggests the area had low archaeological potential for remains. Little archaeological work has been undertaken. Soft stripping of the ground surface occurred during the 2009 enabling work uncovered limited archaeological remains. Some trenches were excavated during the evaluation in 2011 and test-pitting in 2011 and 2012. The external works in 2014 excavated a series of service trenches in the area. Some remains attributable to the Alliance Works (Phase 3) were uncovered in 2009 at depths of 0.2-0.5m below the current ground level. The remains of the rail

tracks (Phase 5) were uncovered in 2009 and 2014 at depths of 0.2-0.5m below current ground level.

1.3 Method statement below-ground archaeology

The below-ground archaeology method statement was produced in response to the Updated Mitigation Strategy.⁷

Earlier Archaeological Excavations

The site has been subject to previous below-ground excavations which included a series of test pits and small excavations in 1993, 1994 and 1995. Details of these were presented in the desk-based assessment.⁸ All these pieces of work were inadequately reported, lack detailed plans and sections and had little or no finds analysis.

Subsequently during Phase 1 of the enabling works in 2009 a series of below-ground excavations were conducted under a watching brief. These were briefly described in a report submitted to English Heritage as part of Scheduled Monument Consent.⁹ They were inadequately reported and required updating to the standards and guidance presented in IFA Guidelines.¹⁰

During enabling work (Phase 1, 2011/ 2012, administered under Scheduled Monument Consent Class 7) a series of evaluation trenches and test pits were excavated to inform the work.¹¹ These were completed as an addendum to the current work.¹²

As part of the current work all these previous archaeological reports were required to be amalgamated into the overall project and have been incorporated into the overall archaeological understanding of the site. To this effect the results have been incorporated into the overall site survey in the first instance (see above, section 14). The overall results were included in the future updated project design at the post-excavation assessment stage and in the case of the pieces of work undertaken as part of Scheduled Monument

⁷ Matrix 2012, version 3

⁸ Matrix 2011; Section 5

⁹ Fielding, A P, 2010

¹⁰ IFA 2008

¹¹ OAN 2011

¹² CWAC 2012-01

Consent all finds, environmental and industrial samples have been incorporated into the overall finds, environmental and industrial assessment (see section 16 below).

Below-Ground Excavations

The mitigation strategy for archaeology during below-ground excavations was detailed in the Updated Mitigation Strategy ¹³ in particular in *Appendix 1: Table of Mitigation Responses*. This was informed by the evaluation undertaken in 2011 by Oxford Archaeology North (OAN). Archaeological recording after 2012 has followed a methodology laid out in the Project Design. All excavations were conducted to the standards and guidance outlined by the IFA. ¹⁴ The approach to the mitigation responses involved with below-ground interventions can be classified as follows:

Type 1 – Evaluation: These were regarded as individual evaluations which informed further work. Initial excavation was conducted by machine using a toothless bucket removing individual spits of 100-200mm depth to the highest significant archaeological horizons. Once reached these were cleaned using hand tools, sampled and recorded (see method below). Further machine excavation was in cases necessary in order to complete the evaluation to the depth required and was conducted as above prior to re-recording.

Type 2 – Watching brief in the historic core of the building: All excavations in the historic core were conducted under watching brief conditions. Excavation was conducted by construction workers, but were monitored by a suitably qualified archaeologist (either the Project Archaeologist or sub-contracted archaeologist from OAN) and cleaned and recorded in an archaeological manner as for all other excavations using the methodology below. All interventions will be planned in 3-dimensions.

Type 3 – Watching brief during machine excavations: Large-scale shallow (e.g. the car park) or linear (e.g. service trenches) excavations conducted in the first instance using a toothless bucket and monitored by a suitably qualified

archaeologist. Where archaeologically significant deposits were encountered work ceased in the area and remains were recorded (as below) and mapped in 3-dimensions. Only once the archaeological remains had been fully recorded could excavation continue.

Type 4 – Strip, map and record during machine excavation: Some larger excavations the area was stripped by machine using a toothless bucket to the significant archaeological horizon under the direct supervision of a suitably qualified archaeologist. This was then archaeologically cleaned and any features recorded in 3-dimensions, sampled and recorded. Only once the archaeological remains had been fully recorded could excavation continue. The methodology was included in the Project Design for this stage of work (see task list below).

Type 5 – Large-scale excavation: The approach to this work was an initial phase of evaluation work followed by more detailed archaeological work. It involved large-scale excavation, namely the raft for Stove House 5.

General Methodology for machine excavation

Modern overburden was removed under archaeological supervision using a 360° excavator or JCB to expose the uppermost significant archaeological horizon. This was carried out in successive spits, under archaeological supervision using a toothless ditching bucket. The machine was placed in such a way that it did not damage archaeologically sensitive layers. This horizon was the top of brick structures associated with the earlier Red Lion Hotel, Alliance Works or Lion Salt Works. These were then cleaned by hand as appropriate and archaeological features and deposits excavated by hand. Overburden within the interior of structures was removed by machine if it was of less significant archaeological material. Once a record has been made of these deposits they were removed by machine as necessary. If there was any danger that significant deposits would be damaged, all machine excavation ceased and the remainder of the excavation was undertaken by hand.

¹³ Matrix Archaeology 2012

¹⁴ IFA 2008

General Methodology for Hand Excavation and Archaeological Recording

The general methodology for excavation applied to all archaeological work undertaken on site by the Project Archaeologist or other archaeological contractors (e.g. Oxford Archaeology North). Excavation was undertaken by hand, excavating individual contexts using shovel, pick and trowel. All sections were cleaned and all spoil was removed from the immediate area. All spoil was placed at a safe distance from excavation edges. All brick structures were cleaned sufficiently to allow a high quality photographic record. The principals of archaeological recording conformed to guidelines produced by the IFA.¹⁵

The written record: This consisted of a full written record of all elements of all below-ground excavations. This was done on pro-forma sheets, using a numeric system of recording equivalent to contextual recording.

The excavation and recording of the archaeological remains adopted a system of context recording, giving each individual element, be it structural member (i.e. wall foundation, timber post etc...) and each stratigraphic unit (i.e. soil layer, fill of pit etc...) an individual number to which a detailed description, including geographic location, size and extent were assigned. The record will be descriptive, detail the relationship with other contexts to facilitate a broad stratigraphic overview of the site archaeology, relevant documents, and interpretation. It should also include a sketch plan as applicable for later referencing. Separate contracting units adopted their own cards but these will function in a similar manner to the CWAC recording system. These numbers were used across all excavations and have been applied to historic excavations retrospectively. They are:

- 0000-0999 Archaeological evaluation and test pits, 2011-2013
- 1000-1999 Watching brief on peripheral areas and structural elements, 2012-2014
- 2000-2999 Stove House 5 excavations, 2013; External works watching brief, 2014

- 3000-3999 Historic core watching brief, 2012-2014
- 4000-4999 Historic excavations, 1992-1994

In addition a broad narrative of the understanding and interpretation of groups of contexts was written. This was interpretive and analytical in form.

The photographic record: Photography of all relevant phases and features was undertaken in both 35mm monochrome and colour digital formats, as described above. General working photographs were taken during the duration of the archaeological works, to provide illustrative material covering the wider aspects of the archaeological work undertaken. These included photographs before, during and after each piece of work.

The drawn record: In the first instance the drawn record comprised the pre-existing survey drawings of the site. A full master plan of the site was produced (see section 13 above). New surveys of all interventions were produced and integrated into the master plan as part of a constant updating process. These were digitised and saved as individual layers in an electronic master plan. These further surveys have produced by a combination of EDM survey and hand survey as appropriate. All surveys were rectified onto the master plan survey (and hence the national grid). Where EDM surveys have been produced it was appropriate to add detail with additional hand drawings. Drawn hand plans contained sufficient level information (using a dumpy level) to form a 3-dimensional master plan. In addition section drawings were produced of deep stratigraphy. Individual section drawings of hand-excavated sondages and features were also produced.

Plans and sections were recorded on pro-forma draughting sheets at an appropriate scale of 1:10, 1:20, or 1:50, depending on the complexity of the data and features encountered. All drawings were individually numbered and cross referenced, with contexts enumerated and principal layers and features annotated with site grid and relative levels information.

¹⁵ IFA 2008

2. 1992, 1993, 1994 AND 1995 EXCAVATIONS

2.1 Introduction

A series of excavations were undertaken in 1992, 1993, 1994 and 1995 in the eastern part of the site outside the Scheduled Monument Boundary in what was the Alliance Works (see AS001). Observations had indicated that there were lines of bricks visible in the ash and cinder surface of the area to the east of the Pump House in what would have been the southern area of the yard of the Alliance Salt Works. Initial excavation was carried out in 1992 and 1993 and funding was secured through the Vale Royal Education and Industry Committee to establish a training excavation for local schools during the early summer of 1994, with some additional work carried out in 1995. The excavations were summarised and used as part of the assessment by English Heritage as to the value of the site as part of designation as a Scheduled Monument, the Conservation Management Plan¹⁶ and the Archaeological Desk-Based Assessment.¹⁷

Excavation work was undertaken as part of a community led project in conjunction with school children from Hartford High School and Weaverham High School organised by the Trident Trust and supervised by Gareth Davies. The supervisor was involved in a serious accident shortly after work was completed and for this reason the work was never fully written up.

The surviving records are poor. Consultation with the Archaeologist and Project Manager employed by Vale Royal Borough Council (VRBC) through the Lion Salt Works Trust, Andrew Fielding, indicated that much of the records of the work may have been lost. This possibly occurred during the move out of the temporary classrooms that existed on site between 1992 and 2006 or at a later date when the site was transferred from Vale Royal Borough to Cheshire West and Chester Council. At the current time the archive consists of:

- A single interim report produced in August 1993 on the first season of work.

- A few plans of excavated trenches dating to 1994.
- The photographic archive from 1992 to 1995.
- Outreach images and newspaper articles.
- The material archive.

Few original plans and no context records of the excavations now exist.

2.2 Excavations in 1992 and 1993 (LSW93)

As part of the initial evaluation for the archaeological project excavations were conducted in November 1992 and completed from the 2nd to 29th August 1993. This period of excavation was given the overall site code LSW93. These were undertaken to determine the extent of the Alliance Works preserved below the ground east of the main complex of buildings associated with the Lion Salt Works. The excavations were conducted by a series of volunteers (see above).

This consisted of eleven excavated trenches referred to as Area I – XI. An interim report of the works was begun but not completed due to an accident to the site supervisor. The incomplete report forms the basis of the trench descriptions below. This has been supplemented by examination of the photographic slide archive.

Subsequent analysis of the finds has shown a confusing repetition between the numbering systems. This led to the 1994 and 1995 excavations using an identical trench numbering system (i.e. Trenches I – VIII). The numeric system of contextual numbering was also identical (i.e. 1, 2, 3, 4) or non-existent (i.e. finds were listed by trench only, unstratified). This has meant that confusion has occurred during the marking of the finds and it is difficult to equate finds to specific trenches and contexts with confidence.

In order to prevent any further confusion during analysis of the finds it has been decided to prefix the numbering system and contextual data from the 1992-1993 trial excavations. The trenches have roman numerals pre-fixed with 93 (i.e. Area I becomes Trench 93-I).

¹⁶ Donald Insall 2005

¹⁷ Matrix 2011



Table 2.1: Excavated Areas in 1992-1993

Trench	Original 1993 Reference	Location	Dimensions
Trench 93-I	Area I	South of SH5, over Building 19	6.5 x 1.5m; 1.0m deep
Trench 93-II	Area II	South of SH5, to the east of Building 19	7.0 x 1.5m; 0.75m deep
Trench 93-III	Area III	To the east of the Pump House	2.0m, 1.5m??
Trench 93-IV	Area IV	South of SH5 and Building 19	2.0 x 0.5m; 0.2m deep
Trench 93-V	Area V	To the east of the Pump House	2.0 x 1.0m;
Trench 93-VI	Area VI	To the east of the Pump House	
Trench 93-VII	Area VII	South-west corner of Building 12	0.2m deep
Trench 93-VIII	Area VIII	South-west corner of Building 12	1.0m deep
Trench 93-IX	Area IX	South-east corner of Building 12	
Trench 93-X	Area X	West side of Building 12	
Trench 93-XI	Area XI	North-east of Building 12	

An entirely new and arbitrary system of contexts has been adopted in keeping with the numeric system adopted from 2011 (AS001).

Numbers from 4000-4999 have been adopted for all historic excavations from the 1990s. In particular the 1993 excavations use numbers 4200 onwards (see 1994 and 1995 for numbers 4000-4199). The contexts containing finds have been renumbered and pre-fixed with 42xx (i.e. context 1 becomes 4201). The actual finds have not been remarked as this would have involved too much work for the reduced significance of these finds. The contextual descriptions have been entirely renumbered from 4300 (ie. 4301, 4302 etc.).

Trench 93-I

The trench was excavated to investigate Building 19 (see above), described as the ‘old stable’. The trench was located a short distance south of Stove House 5 and c. 28m (92ft) north of the Accommodation Road. The trench was 6.5m (east-west) by 1.5m (north-south) and excavated to a depth of c. 1.0m below current ground level (2.1, 2.2, 2.3).

The earliest deposit was a grey-brown clay deposit (4300). At the western side of the excavation was a hand-made red brick wall foundation (4301), orientated north-south. On the eastern side was a brick drain (4302). These features were overlain by clinker-ash (4303), possibly derived from the stoves or boilers associated with the site.

At the eastern side of the trench a hand-made red brick path (4304) c. 0.35m below the ground had been built on top of this layer. The path and remainder of the trench were covered with a layer of brick-rubble, clinker-ash and pan-scale (4305).



2.1: Trench 93-I, East facing



2.2: Trench 93-I, west facing section



2.3: Trench 93-I, western end, north-west facing

Trench 93-II

Trench 93-II represented an extension of Trench 93-I to the east to uncover the remains of an open or fishery pan, the southernmost of a series of three (A3, see above). The trench was 7.5m east-west and 1.5m north-south and excavated to a maximum depth of 0.75m below current ground level (2.4).

A similar series of deposits were located in Trench 93-II as the previous Trench 93-I. The earliest deposit was a grey-brown clay deposit (4306). This was overlain by clinker-ash (4307), and a layer of brick-rubble, clinker-ash and pan-scale (4308).



2.4: Trench 93-II, north-west facing

Trench 93-III

Trench 93-III was designed to investigate the remains of the south-eastern butter pans from Henry Ingram Thompson's Lion Salt Works that dated to c. 1910 (Phase 5). It was located on the eastern side of the fishery pan on the line of the Lion Salt Works property boundary. It was excavated in two parts, 93-IIIa and 93-IIIb,

separated by a single brick pier. The excavation was still visible in 2012 (2.5, 2.6).



2.5: Trench 93-III, west facing



2.6: Trench 93-III, north facing

The earliest deposit was clinker-ash material (4309). This was overlain by brown-grey clay surface (4310). The clay surface appears to have been up-cast from the excavation of trenches for the walls of the furnace of the fishery pan (4311).

Cut into this clay surface were the remains of the timber supports (4312) for the hurdles that ran along the eastern side of the fishery pan. The timber survived intact at the northern end of the trench. In the middle, the wood had decayed but still survived as a cast. Pan-scale was found between the hurdle supports and along the side of

the fishery pan wall. Subsequently this layer was overlain by an earth bank of loose clinker and ash (4313) that butted up against the brick walls of the fishery pan.

Trench 93-IV

The small trench was laid out to discover the south-eastern corner of the stable building (Building 19, see above). It was 2.0m (east-west) x 0.5m (north-south) and excavated to a depth of 0.2m below current ground level (2.7, 2.8).



2.7: Trench 93-IV, south facing



2.8: Trench 93-IV, west facing

The earliest deposit was a cobbled surface of river pebbles (4314), possibly associated with the brick path (4304) located in Trench 93-I. This was overlain by clinker-silt and brick rubble (4315).

Trench 93-V

The trench was excavated to investigate the depth of existing stratigraphy and determine the surface and level of the original field described as the 'Outlet' on the Marston Parish tithe map of 1846. It was not clear where the trench was located and no plans of it were available. The trench was 2.0m (east-west) x 1.0m (north-south) and excavated to a depth of 1.0m below current ground level (2.9).

At a depth of 1.0m below current ground level was a grey-brown clay layer (4316) that appeared to equate to the natural ground surface. The bowl of a clay tobacco pipe and a short piece of pipe stem were found resting on the ground surface. This was overlain by a deposit of sooty ash-clinker (4317) derived from furnace waste. Above this was a compacted spread of brick rubble (4318). An upper level of ash, clinker, sand and mortar (4319) lay above this.



2.9: Trenches 93-V, 93-VI, west facing

Trench 93-VI

This was a small trench designed to investigate brickwork originally encountered during the excavation of a foundation for a signpost in 1991. The trench was located to the east of the pump house. It appears to have been a small area but no records exist of its size (2.9). The excavation uncovered the remains of a hand-made red brick wall (4320). This was covered by black clinker-ash (4321).

Trench 93-VII

Trench 93-VII was excavated to uncover the south-western corner of Building 12 (see above). The excavation was 1.0m (east-west) by 1.0m (north-south) and was excavated to a depth of 0.2m

below current ground level (2.10). It was later subsumed into excavation Trench 94/95-IV (see 2.3 below).

The earliest deposits encountered were a solid mass of hand-made, red brickwork (4322) that suggested the vaulted remains of a furnace or flue. The brick was degraded and the excavation was ceased. Excavation was continued in subsequent seasons (see below, Trench 94/95-IV). The brickwork was covered by a shallow layer of black clinker ash (4323).



2.10: Trench 93-VII, detail of brickwork uncovered

Trench 93-VIII

Trench 93-VIII was excavated to the west of Trench 93-VII. It was again designed to locate the south-west corner of Building 12. It was 1.5m (east-west) by 1.5m (north-south) and was excavated to a depth of 1.0m below current ground level. It was later subsumed into excavation Trench 94/95-IV (see 2.3 below). The earliest deposit uncovered was the grey-brown clay subsoil (4324).

Cut into this was the remains of a series of wall foundations equating to Building 12. The hand-made red brick wall ran north-south (4325). It was 0.4m (15 inches) wide, had a row of header bricks forming the foundation of the wall and was taken up for another nine surviving courses in English Garden Wall bond (2.11, 2.12).

It turned a corner at the south-west and then continued as a wall (4326) that ran east-west. This wall was slighter, being 0.23m wide (9 inches) but of similar construction, notably leaning to the south as it had become collapsed. It continued to the east as a red line of brick dust incorporated within the surface of the car park. Trench 93-VIII

was excavated to locate the south-east corner of this wall (see below).



2.11: Trench 93-VIII, with Trenches 93-X and 93-XI to the north, north facing



2.12: Trench 93-VIII, east facing

Yellow-clay (4327) was excavated piled into the south-west corner of the building at the internal junction of the walls. The clay may have been used to reinforce the internal wall. The clay continued to the south of the east-west wall (4328) and abutted a line of bricks laid east-west that appeared to form a curb (4329), probably associated with the Accommodation Road. Two, un-halved, soft-wood posts with bark still attached (4330, 4331) were revealed in the space between

the wall and the curb. These would appear to demarcate a fence line.

The interior of Building 12 was filled with a layer of collapsed brick rubble containing voids and interspersed with clinker-ash (4332). This layer was consistent with the demolition of Building 12. Within the layer were the remains of a ferrous metal skimmer, used in processing salt. The area overall was covered with a similar black clinker-ash (4333) derived from the furnaces as previously.

Trench 93-IX

Trench 93-IX was located to uncover the east-west wall (4326) uncovered in Trench 93-VIII (see above) and identify its return at the south-east corner. It was 1.0m (east-west) by 1.0m (north-south) and was excavated to a depth of 0.2m below current ground level (2.13).

The east-west wall (4334) turned towards the north as hand-made red brick wall foundation (4335). Only the top course was uncovered at a depth of 0.2m below the current ground level. It was 0.23m (9 inches wide). The wall was covered with a layer of black clinker-ash (4336) as before.



2.13: Trench 93-IX, during excavation, south facing

Trench 93-X

Trench 93-X was located to the north of Trench 93-VIII, and was designed to locate the continuation of the north-south wall (4325). It was 1.0m (east-west) by 1.0m (north-south) and was excavated to a depth of 0.2m below current ground level (2.11).

The north-south, hand-made, red brick, wall (4337) was revealed at a depth of 0.2m below the current ground level. It was two skins of brick, 0.23m (9 inches) wide. Only the top course of bricks was

uncovered. The trench was again overlain by a layer of black clinker-ash (4338).

Trench 93-XI

Trench 93-XI was designed to locate the continuation of the north-south wall (4325, 4337) revealed in Trenches 93-VIII and 93-IX respectively. It was 1.0m (east-west) by 1.0m (north-south) and was excavated to a depth of 0.2m below current ground level (2.11). The trench revealed deposits of black clinker-ash material (4339) but failed to reveal the continuation of the wall.

2.3 Excavation 1994 and 1995 (LSW94, LSW95)

After the initial evaluation phase of the work further excavation work was conducted. This lasted for 12 weeks in May, June and July 1994 and a subsequent fieldwork season for 12 weeks in May, June and July 1995. The work was given the site codes LSW94 and LSW95. It focused on the buildings located in the south-western area of the Alliance Salt Works (c. 10m west of the standing Pump House) located in the 1992-1993 investigations.

Analysis of the finds suggests that seven new trenches were undertaken in 1994. These were originally and confusingly numbered I, II, III, IV, V, VI and VII, but do not appear to have correlated to the earlier areas undertaken in 1993. These trenches were continued in 1995 with the addition of a further trench VIII to make eight in total. Subsequently they have been referred to as Trench A, B, C and D in the Conservation Management Plan.¹⁸ The trench locations come from Figure 13, in Appendix E of the Conservation Management Plan. This numbering system was continued in the desk based assessment by Mark Fletcher of Matrix Archaeology.¹⁹

The location of these trenches is clearly confused. However, a layout document has been provided by Andrew Fielding (Vale Royal Borough Council, Archaeologist at the Lion Salt Works) that has enabled a plan to be established along the lines of the original trenches. In order to avoid further confusion the original numbering system has been

¹⁸ Donald Insall 2005

¹⁹ Matrix 2011

adopted with a year pre-fix as with the 1993 trenches (i.e. Trench I becomes Trench 94/95-I) (AS001).

Table 2.2: Excavated Areas in 1994-1995

Trench	2005/ 2011 Ref	Equivalent to 1993 Trenches	Location	Dimensions
Trench 94/95-I	Trench A		On the western edge of Building 13	
Trench 94/95-II	Trench B	Trench 93-II, Trench 93-IV	South of Stove House 5 over the remains of Building 19	
Trench 94/95-III	Trench B			
94/95-IV	Trench D	Trench 93-G, Trench 93-H	On the south-western corner of Building 12	3m (N-S) x 4m (E-W), c. 1.0m deep
94/95-V				
94/95-VI	Trench C		On the eastern edge of Building 13	4.0m (N-S), 2.0m (E-W), 1.0m deep

Examination of the finds from all of the trenches suggests that a continuous numbering system starting at 1 had been adopted (i.e. 1, 2, 3, 4, 5 etc...). There appears to be a lot of cross-referencing of finds between trenches, so that higher numbers particularly 1, 2, 3, 4 and 5 have been used variously in Trenches 93-B, 94/95-I, 94/95-II and 94/95-III. These layers should therefore be seen as unstratified.

An entirely new system of contexts has been adopted in keeping with the numeric system adopted from 2011. The 1994 and 1995 excavations use numbers 4000 to 4199. This means the finds have been numbered with the prefixed 40xx (i.e. context 1 becomes 4001, context 39 becomes 4039). Entirely new arbitrary numbers from 4100 to 4199 have been used to describe deposits and structural elements.

Trench 94/95-I

Trench 94/95-I was located on the west edge of Building 13 on Thomas Ward's c. 1880 plan. It was 4.0m x 4.0m in size and excavated to a depth of c. 1.2m below current ground level. A further trench separated by a narrow baulk was located 0.3m to the north, referred to as Trench 94/95-III, on the same alignment on the western side of Building 13 on Thomas Ward's c. 1880 plan. The trench was originally excavated in 1994 as an open area excavation taken down in spits across the excavation. The western side of the trench was excavated to a depth of c. 0.3m and the eastern side was excavated to c. 1.0m (2.14, 2.15; AS001; AS008).



2.14: Trench 94/95-I, laying out of the site, north facing



2.15: Trench 94/95-I, east facing prior to excavation

The earliest layer of brick-rubble and silt (4102), was 0.6m deep, directly equivalent to layer (4111) described below, in Trench 94/95-III. This was also located in Trench V in the subsequent season's excavation.



2.16: Trench 94/95-I, after initial layer of excavation, including wall 4104, south facing



2.17: Trench 94/95-I, after initial layer of excavation, including wall 4104, south facing



2.18: Trench 94/95-I, after excavation, north facing

A mixed layer of brick rubble and silt (4103) covered the trench for a depth of c. 0.4m. Within this deposit was a preserved plank of wood, c. 300mm x 150mm. This appeared to be the remains of an elm board from a salt tub (2.18, 2.19).

A narrow north-south, hand-made, red-brick wall (4104), two skins thick (0.22m), ran for c. 3.5m before discontinuing at the southern end (2.16, 2.17). This was again, overlain by a shallow layer of clinker silt material (4105). It was overlain by the

same layer of black clinker-silt, c. 0.2-0.3m deep, previously encountered in 1993 across the site.



2.19: Trench 94/95-I, Trench 94/95-III, during excavation 1995 season, north facing

Trench 94/95-II

Trench 94/95-II was located south of Stove House 5 and adopted and expanded the previous excavations undertaken in 1993, in particular Trench 93-IV. It was denoted as 'II' and 'IIa' in the 1994 excavations as it included a subsequent expansion of the excavation. It was c. 6.0m north-south, by c. 4.0m east-west (2.20, 2.21, 2.22, 2.23, 2.24, 2.25).

The earliest deposit was a matrix of brown-black clinker-silt (4106) and brick rubble (Equivalent to layer 4009 that contained finds) that covered this area of the site. A cobbled surface of river pebbles, originally located in Trench 93-IV (see above 4314) was set within this layer. The 1994 excavation revealed the full extent of these cobbles to be 1.8m (north-south) by 1.2m (east-west). Either side were two shallow brick wall foundations indicative of the border to a pathway. These were constructed of hand-made brick, three courses wide on the eastern side (4107) and two courses wide on the western side (4108). Overlying the cobbles were a series of ferrous metal plates, laid

side by side, on a narrow layer of concreted material (4109). It appears as they had acted as a walkway for the area. This was overlain by clinker-silt and brick rubble (4110).



2.20: Trench 94/95-II (reopened Trench 93-IV), prior to expansion, south facing



2.21: Trench 94/95-II (reopened Trench 93-IV), prior to expansion, west facing



2.22: Trench 94/95-II, extension during de-turfing, north-east facing



2.23: Trench 94/95-II, with extension, south facing



2.24: Trench 94/95-II, excavated extension, east facing



2.25: Trench 94/95-II, extension during excavation, north facing

Trench 94/95-III

Trench 94/95-III was separated by a narrow baulk from Trench 94/95-I and located 0.3m to the north. It was on the same alignment on the western side of Building 13 on Thomas Ward's c. 1880 plan. It was also c. 4.0m by 4.0m in size. The trench was originally excavated in 1994 as an open area excavation taken down in spits across the excavation to a depth of c. 0.4m (2.26, 2.27, 2.28, 2.29; AS001; AS008).

The trench revealed layers of brick rubble and black clinker silt across the entire area (4111), c. 0.3m deep. Running along the edge of the north-west baulk was a north-south aligned near collapsed hand-made red brick wall foundation (4112). This was the continuation of wall 4101 to the south in Trench 94/95-I.



2.26: Trench 94/95-III, prior to excavation, south-west facing



2.27: Trench 94/95-III, initial layer, south facing



2.28: Trench 94/95-III, post excavation, south-west facing



2.29: Trench 94/95-III, during excavation, north-west facing

Patches of white pan scale (4113) overlay the brick rubble that may have formed a rudimentary working surface after the end of the Alliance Works, possibly associated with mixing mortar for the construction of structures in the Lion Salt Works. These were located at a very shallow depth, c. 0.1m below the ground surface. The trench was finally overlain by a shallow layer of black clinker silt (4114).

Trench 94/95-IV

Trench 94/95-IV was located over the south-west corner of Building 12 on Thomas Ward's plan. The building was initially investigated in Area VIII of the 1992-1993 work. Its initial excavation was subsequently expanded in size. The trench was c. 3.0m (N-S) and 4.0m (E-W) (2.30, 2.31; AS001, AS008).



2.30: Trench 94/95-IV, initial strip, north facing



2.31: Trench 94/95-IV, during excavation, south-east facing

The earliest remains were described above in Trench 93-VIII as (4325), a north-south wall and in the south-west wall (4326). These were revealed to be the remains of an east-west (4115) and north-south (4116) walls. These were revealed to be three courses wide (c. 0.4m, 15 inches) and laid in English Garden Wall bond. Extending west of these walls were two hand-made, red-brick, wall foundations (4117, 4118), two skins (0.23m, 9 inches) thick, orientated north-south. Between was a square hand-made, red-brick, structure (4119), two skins (0.23m, 9 inches) thick, that represented an underground flue (2.32, 2.33).

Within the interior of Building 12 were revealed the remains of a curved hand-made red brick wall (4120) that underlay the yellow clay deposit (4121) described above. This appeared to be the curved remains of a flue passing around the corner of the building. To the south, the early accommodation road running eastwards from Ollershaw Lane was identified from compacted soot deposits (4122) later covered by brick rubble (4123) from the collapsed or dismantled walls of the stove house.



2.32: Trench 94/95-IV, initial strip, north facing



2.33: Trench 94/95-IV, post excavation, east facing

A jigger tool (SF117) was found south of east-west wall (4115), and a second one could be seen in the eastern baulk (4125), but was left in place. Small parts of the jigger tool survive but the remainder has corroded (2.34, 2.35).



2.34: Trench 94/95-IV, jigger tool, SF117, south facing



2.35: Trench 94/95-IV, jigger tool, SF117, east facing

Trench 94/95-V

In 1995 a slot was placed to the east of Trench 94/94-I that was later connected to this trench to create an east-west profile. This was excavated for

a length of c. 6-7m (east-west) and to a depth of c. 1.2m (2.36).



2.36: Trench V, during excavation, north-west facing, 1995 season



2.37: Trench V, overhead of wall 4101, 1995 season



2.38: Trench V, after excavation, 1995 season

At a depth of about 1.2m, a brickwork floor (4100) was encountered, which would have been located to the front (west) of the open pan. The floor was made of hand-made, red brick, laid on side in

Stretcher bond. It extended for c. 1.2m from the western edge of the trench. A fragmentary, narrow brick wall overlay the floor surface, two courses wide, of hand-made red brick (4101). This appeared to correspond with the original western wall of the furnace (2.37, 2.38, 2.39).

Overlying these structures was a layer of brick-rubble and silt (4102), 0.6m deep, directly equivalent to layer (4111) described below, in Trench 94/95-III. This appeared to be the collapse of the furnace walls of the structure that made up Building 13 (2.40, 2.41).



2.39: Trench V, wall 4101, east facing, 1995 season



2.40: Trench V and Trench I, after they were joined, west facing, 1995 season



2.41: Trench V, after excavation, east facing, 1995 season



2.43: Trench 94/95-IV, 94/95-VI and 94/95-I, west facing, 1995 season

Trench 94/94-VI

Trench 94/95-VI was located at the eastern side of Building 13 on Thomas Ward's Plan of c. 1880. The building was not investigated in the 1992-1993 season. It was 2.0m (E-W) by 4.0m (N-S) and excavated to a depth of 1.0m below current ground level.

Initially it was excavated in plan during the 1994 season. During the 1995 season a profile was excavated across the northern side of the trench (2,42, 2,43, 2,44).



2.44: Trench 94/95-VI, initial excavation, south-west facing, 1995 season



2.42: Trench 94/95-VI, with Trench 94/95-IV, initial excavation, east facing, 1995 season

The earliest deposit in the trench was grey-brown silt clay material (4126) associated with the subsoil of the original field. This was overlain by a layer of brown mixed silt, c. 0.15m deep (4127). This was overlain by a narrow deposit of black clinker ash, c. 0.2m deep. Over this was a layer of red silt-clay, 0.2m deep (4128) (2.45, 2.46).

Above this layer were the remains of a series of four east-west flues (4129, 4130, 4131, 4132) at a depth of c. 0.3m below the current ground level. They were coarsely built of hand-made red brick laid in English Garden wall bond, two skins thick. They were severely heat affected and had

laminated in places. The northernmost of these (4132) was visible in section only (2.47, 2.48).



2.45: Trench 94/95-VI, sondage in north-east corner, east facing



2.46: Trench 94/95-VI, excavated flues, west facing



2.47: Trench 94/95-VI, southern wall of pan house and flue wall, west facing, 1995 season

The trench was overlain with black-grey mixed silt-clinker material, with laminated salt layers (4133). These were typical of layers of material that built up between the individual flues where the block-salt was stored. Between alternate flues were black clinker-ash layers of deposits that built up in the individual flues (4134, 4135). The whole trench

was overlain by mixed brick rubble and black clinker-ash furnace waste deposit (4136) associated with the demolition of the salt pan and subsequent levelling of the site. Within this layer the remains of a preserved elm wood salt tub were discovered (SF142) (2.49, 2.50).



2.48: Trench 94/95-VI, during planning, west facing, 1995 season



2.49: Trench 94/95-VI, salt tub, SF142, in north-west corner, 1995 season



2.50: Trench 94/95-VI, salt tub, SF 142, during excavation in north-west corner, 1995 season

2.4 Phased interpretation of the 1992-1995 excavations

Phase 1 – the ‘Outlet’ Field

Originally the site was open fields as described as the ‘Outlet’ field described in the Great Budworth Parish Tithe Map of c. 1844. It was revealed in some of the trenches as a subsoil of grey-brown clay. This was seen as (4316) in Trench 93-V and (4126) in Trench 94/95-VI.

Phase 3 – The Alliance Works

The Alliance work was constructed on the site from 1857. Initially a series of structures were constructed on the southern boundary of the ‘Outlet’ Field adjacent to the east-west track, from Ollershaw Lane known as the ‘Accommodation Road’. These were first visible on the first edition Ordnance Survey map as a large block. The more detailed plan by Thomas Ward of c. 1880, describes some of the individual buildings but not these (see Volume II, the Alliance Works for details). The Buildings associated with the 1992-1995 excavations are numbered Building 12, Building 13 and Building 19. Trench 93-V was overlain by a clinker-silt layer (4317) associated with the Alliance Works.

Building 12

Trenches 93-VII, 93-VIII, 93-IX, 93-X and 93-XI had a series of brick walls and remains in this area that represented Building 12. Trench 93-VIII was expanded in 1994 as Trench 94/95-IV. The brick remains of walls (4115/ 4325, 4116/ 4326) in Trench 93-VIII represent the south-west corner. The southern wall continued to the east and were visible as (4334) in Trench 93-IX, before turning north (4335). The wall continued to the north as (4337) in Trench 93-X, but discontinued slightly further north in Trench 93-XI. Overall this suggests Building 12 was broadly rectangular and corresponded with that depicted on plan in c. 1875. Along the southern edge of the building were posts (4330, 4331) representing a fence and the remains of the curb (4329) of the Occupation Road.

The interior was composed of a series of flues. In the south-east corner of the building was a curved flue (4120). A layer of yellow clay (4121/ 4327)

found inside was probably deposited to reinforce the corner of the wall, or may have been material derived from the collapse of the building.

In OAN Evaluation Trench 4 (East) brick walls 181, 183, 185, 187, 189, 191, 195, 196, 197 were all aligned roughly north-west to south-east. Between were heat affected clay deposits 184 and 186. These appear to be reminiscent of the base of flue runs seen at drying level in Stove House 2, 3 and 4 and excavated under Stove House 1 (the Link Block) and Stove House 5. This suggests Building 12 was a Stove House possibly with attached Pan House. A brick floor surface 192, 1m wide may be a surviving element of the flue ditches. Overall they suggest the flues from the adjacent pans were carried under the building to and used to heat and dry the block salt. The fact the flues were built directly on ground level is in contrast to later stove houses. This suggests that a much simpler design was adopted in the 19th century. The jigger tools (4124 and 4125), were designed to lift the pan when it was due for repair, allowing a man to climb underneath whilst others inserted new plates into the iron pan (see Volume I, section 8). This suggests that the pan associated with the stove house was located to the west. See Building 13 below.

Overall the building appears to have been associated with a stove house, with a pan house attached to the west. This would make these buildings fine pans designed to produce higher grade salt as opposed to the more simple structures associated with a common pan.

Building 13

The remains of Building 13 were visible in Trench 94/95-I and 94/95-III, red brick wall foundation 4101 and 4112. This probably represented the fragmentary remains of a sill wall around the exterior of the building, carried upward in timber, in a similar manner to Pan House 3 and 4, in the later Lion Salt Works.

The furnace, under the open pan, within the interior of the building, was represented by some brickwork structures. A brickwork floor (4100), located at a depth of c. 0.6m, appears to have functioned as a stoking floor, at the front (west) of the furnace. The front end of the furnace was

represented by the remains of a hand-made red brick wall foundation (4101). The remains of the furnace were shown to be fragmentary, in later pan houses and collapsed easily. It is therefore not surprising that so little remains.

The remains of the back-end of the furnace under the open pan were within Trench 94/95-VI. This consisted of a series of flues built on a layer of red silt-clay (4128). This layer acted as the 'caulk' for the furnace. The caulk was a loam material designed to allow the ground to expand and contract, during heating. The layer has become oxidised due to the temperature of the furnace above and created an even uniform red colour. This layer was also found under Pan House 4. It is commonly associated with glass and pottery kilns. Above this were four brickwork walls that acted as flues (4129, 4130, 4131, 4132), running east-west. They were originally interpreted as the remains of a brick vault (4322) in Trench 93-VII. The flues were typical of the excavated examples between Pan and Stove Houses 3, 4 and 5, recorded during restoration work. This suggests that these were flues that led from the furnace into the stove house where the heat was recycled to dry the block salt.

Subsequent evaluation in 2011 (OAN 2011) uncovered remains of the southern exterior of the furnace within the pan house. In OAN Evaluation Trench 4 (West) A series of machine-pressed brick walls 112, 114, and 115 and two post-holes with associated timbers would have lain on the southern exterior and may have been associated with the hurdles for the pan. Overall, Building 13 is depicted on Thomas Ward's plan of c. 1880 as a series of two pans. The exterior would have consisted of a low sill wall with wooden sides and pitched roof. Inside would have been two adjacent pans, orientated east-west with brick flues underneath which carried on into the adjacent stove house (Building 12). Either side of these pans would be a series of wooden hurdles.

Yard/ Building 19

Building 19 does not appear to have been excavated. However, in Trenches 93-I and 93-II, the wall and drain are almost certainly associated Building 19. They are located in a similar area to

the buildings excavated in 2013 (Buildings 17 and 18; OAN 2013) and relate to the most southerly of the group of three. The northernmost of the three was identified as a workshop during excavations by Oxford Archaeology North in February 2013.

The southernmost has been interpreted previously as the 'Old Stable' and it would appear that the area outside was a cobbled yard surface. The remains originally uncovered in Trench 93-I and 93-IV, and later uncovered in Trench 94/95-II (path 4304, cobbles 4314) appear to be more indicative of a pathway as opposed to a track, and were probably associated with the southern building suggested to have been an 'old' stable. A similar cobble surface was also identified in excavations beneath Stove House 5 in 2013 (2072, see below). This was located outside of Building 18 to the east. It suggests that the area was a yard or part of a north-south access way between the Accommodation Road at the south of the Alliance Works and the canal towpath of the Trent and Mersey Canal at the north of the site.

Phase 5 – Demolition of the Alliance Works

Buildings 17, 18 and 19 continued to be used into the mid-20th century and were not demolished until the 1950s. The demolition remains over the path may relate to a later episode of landscaping in the area. However, elsewhere Trench 93-V had a spread of brick rubble (4318) that probably equates to the demolition of the structures associated with the Alliance Works.

The brick rubble (4332) within the walls of Trench 93-VIII represented the demolition layers from Building 12. The presence of the skimmer clearly suggests that these buildings were related to salt-processing by the open pan method. In Trench 94/95-I, 0.7m depth of brick rubble (4103) was associated with the demolition of the open pans. The trench revealed layers of brick rubble and black clinker silt across the entire area (4111), c. 0.3m deep. Thin layers of white panscale (4113); formed a rudimentary working surface after the end of the Alliance Works which according to Henry Lloyd Thompson produced a hard standing, even in wet weather. The rubble layers (4123) in

Trench 94/95-IV represented the demolition of the stove house.

Phase 6 – The south-eastern fishery pan

In Trench 93-III, the excavated remains suggest that the south-eastern fishery pan had a wooden hurdle structure supported on north-south sill beam (4312). A similar arrangement has been identified on the opposite side of the south-eastern fishery pan (see External Works, below, Area G1), and the south-western fishery pan on its western side (see the Historic Core, below, Area HC15).

Phase 7 – Levelling deposits

Black clinker-ash visible across the entirety of the site covered the trenches and these upper deposits relate to levelling in the 1970s and 1980s. Conversations with former workers from the 1980s suggest that the car park was used as a dump for furnace and pan waste.

In OAN Evaluation Trench 4 (West) cinder deposits 108, 109, 110 and 111 that filled the trench were deposited across the site throughout the early and middle 20th century according to the oral reminiscences of Henry Lloyd Thompson. They were used in the construction of Stove House 5.

3. 2006-2009 WATCHING BRIEFS

Between 2006 and 2009 a series of watching briefs were conducted on work around the site external to the core of historic buildings.

3.1 2006 Watching brief on electricity mains

An electricity cable was excavated along the line of accommodation road between Ollershaw Lane and the electricity sub-station. It extended from the south-western corner of Pan House 3, ran WNW to ESE adjacent to the corner of the north-eastern corner of the Red Lion Inn, continued under the railway lines and ran east to the electricity sub-station (see AS003).

The surviving records of the watching brief are poor and limited to some photographs reproduced in the Conservation Management Plan and a brief summary description.²⁰

A trench cut through from the Occupation Road in 2006 revealed no structures. The trench was cut through made up ground of ash and cinders with some broken brick deposited over a clay ground surface. There were no finds. The trench provided access for a new power cable between the sub-station and Ollershaw Lane.

The photographs reveal the remains of the rail tracks, uncovered on a number of occasions that curve from the south-east to run east to west parallel to the entrance of Pan Houses 3 and 4. Subsequent excavation in the area (2014, external works, see below) suggests that the rail tracks were almost certainly encountered but their location was not recorded during the work.

Phased Interpretation

Phase 2-3: The trench ran through an area that historically has never been built upon. In Phases 2 and 3 (19th century) it lay south of the Red Lion Hotel complex.

Phase 4: With the development of the Lion Salt Works (Phases 4-7) it became the 'Occupation Road' the main access route to the eastern half of the site and it continues to be open ground up

until the present day. The deposits encountered almost certainly relate to build-up layers for the construction of accommodation road.

Phase 5-7: The rail lines bisected the trench in at least one location, although they appear to still be *in situ*. These are shown on the 3rd edition Ordnance Survey map of 1910 and continued in use until the transfer from coal to oil of the fuel source in Pan House 3 and 4.

3.2 2009 Watching brief – phase 1a, enabling works

In 2009 enabling works on the site were undertaken as part of the preliminary element of the restoration and development. These involved the dismantling of a number of structures that had become unsafe, notably the Link Block, the Loading Bay, the western element of Pan House 2, Stove House 5 and Pan House 5. The majority of the work undertaken during the enabling works will be discussed in the individual sections below about the standing buildings (AS002).

Part of the 2009 enabling works involved shallow excavations around the site. The below-ground works involved in the 2009 enabling works were as follows:

- Excavation to 200mm depth to create a gravel-surfaced car park at the rear of the site with an access road from the existing road
- Excavation to 200mm depth to provide an area of hard-standing for the construction of a temporary white store on the site
- Excavation to 200mm depth to create access roads along the side of Pan House 4 (east) and along the 'Accommodation Road' between the Red Lion Inn and the Historic Core
- Excavation of fence posts 600mm depth along a new permanent fence line at the east of the site
- Creation of the ground surface to the butterfly garden to a depth of 200mm

²⁰ Donald Insall 2005



An archaeological watching brief was undertaken by Andrew Fielding (Vale Royal Borough) during the work and the record comprises extensive photographic recording and brief written description. The locale of excavated archaeological remains has been added by the current author based on interpretation of the photographs.

Car Park and Access Road

Excavation of the car park and access road was undertaken in September 2009. This involved the soft-stripping of the ground surface of an area defined by the current gravel surface and an access road of similar construction to link the current access road (3.1, 3.2). The area was machine-stripped using a toothless ditching bucket to a depth of 0.2m below the previous ground level. Terram matting was laid beneath the surface and a layer of gravel was laid on top and compacted.



3.1: Stripping of car park access road, west facing



3.2: Stripping of car park access road, east facing

The remains of the former lines of the rail tracks were uncovered at the western end of the site c. 5m east of the Red Lion Inn. The tracks ran from

the far south-east of the site to the southern elevation of Pan House 3 and Pan House 4. These were located buried at a depth of 100-200mm below the current ground surface and continued in a line curving from NNW-SSE to N-S towards the butterfly garden.

Only the ferrous metal tracks were uncovered. They involved four ferrous metal rails (431, 432, 433, 434), forming two set of tracks. The tracks were set 1.45m apart. These were laid on a series of wooden sleepers (435, 436). The eastern set of rails (433, 434) was discontinuous as they passed south of the Manager's Office.

The ground surface over the area was mixed black-brown rubble and humic topsoil (437).

During the 2012 enabling works the remains of the rail tracks were once again uncovered. The tracks are now protected by a series of metal plates and blocks that cover their location. The remaining salt wagon continues to be positioned over these remains. It has now been moved c. 2m to the north during the 2012 enabling works to allow better access for articulated lorries to the car park and delivery area at the rear of the site.

Phased Interpretation

Phase 5-7: The rail tracks are shown on the 3rd edition Ordnance Survey Map of 1910 and continued in use until the transfer from coal to oil of the fuel source in Pan House 3 and 4.

Hard-Standing Area for White Store

A large area of ground at the eastern side of the site was soft-stripped to allow the laying of hard-standing prior to the construction of a large white temporary store. This was undertaken in September 2009. The store was designed to house timber and ferrous metal elements of Stove House 5 during its dismantling. The area also extended to the north towards Stove House 5 where vehicular access would be required to allow the dismantling of the building (3.3, 3.4). The area was machine-stripped using a toothless ditching bucket to a depth of 0.2m below the previous ground level. Terram matting was laid beneath the surface and a layer of gravel was laid on top and compacted.

The vast majority of the area revealed no archaeological remains.



3.3: Stripping of car park and hard-standing for temporary building, south-east facing



3.4: Stripping of hard-standing for temporary building, north facing

The exception was an area of cobbles exposed just below ground level, to the south of Stove House 5 and to the north-east of the nodding donkey and pump house complex. The remains were revealed during clearing of this area prior to the enabling works. The exposed area of cobbles was 2.0m (N-S) by 1.0m (E-W) and comprised rounded river cobbles 50-100mm in diameter, set in a black-brown silt matrix (438, 3.5).

Remains of a brick surface were revealed in a trench cut for telephone cables and a water pipe. It ran south-west to north-east, south-east of the Manager's House. The surface was constructed of hand-made red brick, laid on-side in Stretcher bond (439). It extended for c. 3m north-south (3.6, 3.7, 3.8). The trench turned sharply and then ran south-east to north-west, as a very shallow trench across the area to the east of the Manager's House

to a depth of less than 200mm (3.9, 3.10). It did not reveal significant archaeological remains in this section.



3.5: Cobble surface 438 north-east of pump house, west facing



3.6: Brick-surface west of Manager's House (439), south facing



3.7: Detail of brick surface west of Manager's House (439)

Just to the north was a hand-made red brick wall foundation, two courses wide (0.25m), which ran east-west (440). This was the line of the southern

edge of a large warehouse of the Alliance Works and was also during soft-stripping (3.11, 3.12). This corresponded with the edge of the building observed in Trench C during excavations in 1993 (see above). The area was covered by the same mixed black-brown rubble and humic topsoil (437) as previously described above.



3.8: Brick surface west of Manager’s House (439), south-west facing



3.9 Shallow trench for laying cable, east of manager’s house, south-east facing



3.10: Shallow trench for laying cable, east of manager’s house, north-west facing



3.11: Southern edge of building Alliance Works, north facing



3.12: Southern edge of building Alliance Works, east facing

Phased Interpretation

Phase 3: The remains of the brick surface appear to be in an area south of the main Alliance Works. The only structures recorded in this area were a series of open pans, depicted on a plan, presumably drawn by Thomas Ward and

subsequently reproduced in A K F Calvert. This plan dates to c. 1880. It suggests that these remains may be part of the northern most of a series of four open pans. The east-west adjacent wall ran in a line demarcating the southern edge of the Alliance Salt Works. It is probable that these remains all relate to the Alliance Salt Works as previous excavation (see above) suggests remains in this location are very shallow.

Phase 6-7: The cobbles have been suggested to have been associated with a cottage mentioned by Henry Lloyd Thompson, which had previously stood on the site of Stove House No.5 (see No.27 in Feature Gazetteer, Matrix 2011). The level of the cobbles relates to the ground surface beside the fishery pans, but is higher than the debris level of the dismantled Alliance Salt Works structures.

Occupation Road

A further element of the Phase 1 enabling works involved the shallow stripping of the area of land between the Red Lion Inn and Pan House 3 and 4 known as the Occupation Road. This was undertaken in September 2009. This was stripped further east until it joined the main area described above for the laying out of the white store. A short area was also stripped between Pan and Stove House 4 and the Pump House (see AS004). The area was again machine-stripped using a toothless ditching bucket to a depth of 0.2m below the previous ground level. Terram matting was laid beneath the surface and a layer of gravel was laid on top and compacted. A short area was also stripped to allow the burial of a telephone cable and water pipe east of the Manager's Office.

No archaeological remains were revealed along the line of the Occupation Road between Pan Houses 3 and 4 and the Red Lion Inn (3.13). The remains of four rail tracks (431, 432, 433, 434, described above) were once more revealed and covered with terram matting, gravel and metal plates. A further short section of path was revealed between the manager's office and pump house. This was of hand-made red brick, laid on-side and roughly bonded (441, 3.14). It correlated with the surface excavated in BH4 (138, see below). The remains of Trench 94/95-I of the 1992-

1995 excavations was observed in plan east of the Pump House (3.15).



3.13: Stripping of Occupation Road, east facing



3.14: Stripping of Occupation Road, note brick surface 441 to the south, west facing



3.15: Stripping of Occupation Road, note outline of 1993 Excavation Trench C, east facing

To the north and adjacent to Stove House 4, a short section of hand-made red brick floor surface was excavated (442; 3.16, 3.17). This was uncovered for a distance of less than c. 2m, about 1m from the edge of Stove House 4 external to its south-east corner. A second section of hand-made

red brick wall (443) surface was uncovered adjacent to the eastern edge of Stove House 4, again about 1m from the wall and c. 3m in length (3.18). The area was covered with the same mixed black-brown rubble and humic topsoil (437) as previously described above.



3.16: Stripping of hard-standing adjacent to Pan House 4, south-west facing



3.17: Remains of brick wall adjacent to Pan House 4, west facing



3.18: Remains of brick wall adjacent to Stove House 4, west facing

Phased Interpretation

Phase 5: The establishment of the rail track is known to have occurred around 1900. The short section of hand-made red brick floor surface (442, 443) adjacent to Stove House 4 appears to relate to the former butter pans that pre-dated the construction of Stove House 4. These were established in around 1910.

Phase 7: The surface revealed adjacent to the manager's office was probably laid out at this time and overlay the remains of the Accommodation Road.

Fence Line along the Eastern Edge of the Site

During October 2009 the site was made secure along its eastern boundary by the addition of a green mesh fence c. 2.20m high. This was secured by means of a series of 48 metal fence posts, with a double gate onto the field to the rear. The fence posts were c. 2m apart (see 3.19, 3.20).



3.19: Line of fence along eastern boundary, north facing



3.20: Line of fence along southern boundary, south facing

During the construction of this fence the metal posts were made fast by a series of concrete post bases. These were excavated in the ground, 300mm x 300mm and 600mm deep. The majority of these fence posts revealed no archaeological deposits. No significant archaeological deposits were revealed in the fence posts south of the Occupation Road. The majority of fence posts north of the Occupation Road revealed no significant archaeological deposits. The exception were a series of five fence post holes, c. 20m south of the canal. These revealed remains of ash-cinder deposits (444; 3.21) close to the surface. A single fence post revealed hand-made red brick remains (445; 3.22). It was excavated to shallow depth (<300mm) to preserve the archaeological remains.



3.21: Fence post-excavation, cinder remains (444)



3.22: Fence post-excavation, brick remains (445)

Phased Interpretation

Phase 3: The only brick buildings recorded in this area are remains of the Alliance Salt Works. The fence line ran east of a series of three common salt pans and two large buildings interpreted as warehouses (Gazetteer no. 29-31, Matrix 2011). It is possible that the brick remains relate to these buildings or more likely buildings depicted further east on the 1882 Ordnance Survey Map.

Butterfly Garden

During October and November 2009 the area at the south of the site was landscaped to create a butterfly garden. This involved general levelling of the site that saw the ground level reduced by around 100mm in isolated areas as well as increased elsewhere. A series of beds were introduced to the garden and topsoil (446) was imported to the site (3.23, 3.24). No significant archaeological remains were uncovered during the levelling of the site. The ground levels are now higher in the butterfly garden than previously recorded due to imported topsoil material.



3.23: Stripping of butterfly garden, south-west facing



3.24: Build-up of material in butterfly garden, south facing

4. 2011 EVALUATION TRENCHES

By Oxford Archaeology North

The full report of the evaluation trenches has been described previously in Oxford Archaeology North report on the evaluation.²¹ The narrative remains largely unchanged but detailed phased interpretation of each trench based on the understanding of the site accrued by 2015.

In total, ten evaluation trenches were excavated across the site (AS003). The trenches were targeted on features of interest identified in the desk-based assessment, although several trenches were relocated slightly for logistical reasons.

4.1 Trench 2

Trench 2 was an L-shaped trench placed across the southern central part of the site (AS003). The south-western end of the trench was placed over the footprint of a rectangular structure depicted on the Sale Plan of 1868 and the Ordnance Survey map of 1882, whilst the north-west/ south-east-aligned section of the trench lay across the site of the original Red Lion Hotel.²² By 1896, much of this part of the site had been redeveloped as the Lion Salt Works, with the position of Trench 2 lying largely within the footprint of the South-East Butter pan, with the northern end of the trench across the site of the North-West Fishery pan.

The principal element of the trench, aligned north-east/south-west, was excavated to a length of 30m, with an 8m long north-west/south-east-aligned section at the north-western end (AS011); the short section was placed either side of a concrete beam (22). The trench was excavated to a maximum depth of 1.1m, although natural geology (17) was exposed at a depth of 0.96m in the central part of the trench. Buried remains of archaeological significance, however, were exposed at a depth of 0.20m below the modern ground surface. The south-western end of the trench could not be excavated below a depth of 0.05m, as it was crossed by a live power cable.

The structural elements exposed in the southern part of the trench were dominated largely by the well-preserved remains of a brick-built path (12), the upper surface of which lay at a depth of 0.20m below the modern ground level (4.1). Surface 12 was exposed for a length of 11.5m, and was up to 0.8m wide (AS011, AS012). It was composed of machine-pressed bricks, each measuring 230 x 120 x 80mm, some of which incorporated a frog, and a few were stamped 'Birchenwood', denoting the manufacturer. There was no surviving evidence for the use of mortar in the surface. A small slot excavated by hand through a damaged part of the surface revealed that it was a single course in depth, and had been laid onto a bedding of ash and cinders.

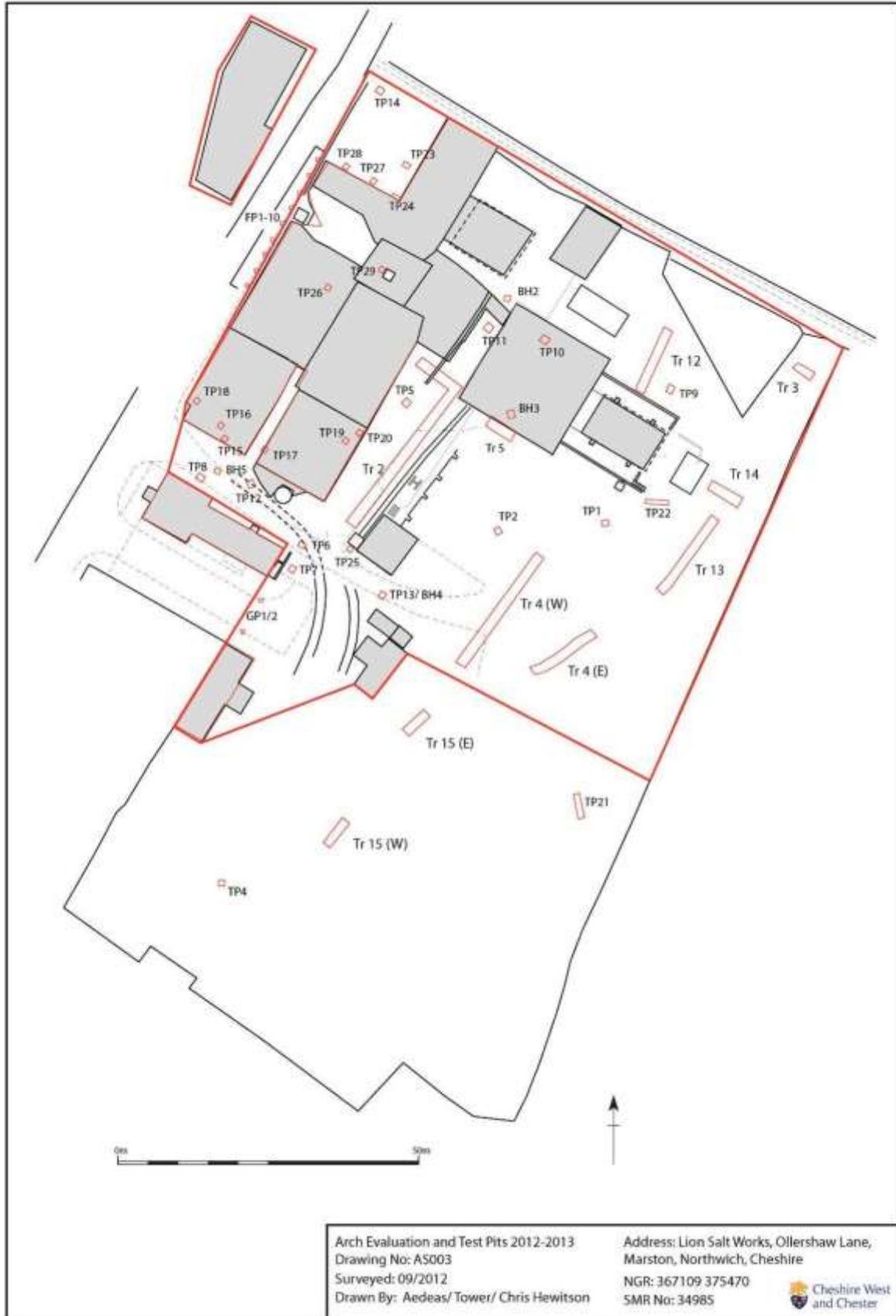


4.1: Looking north-east along surface 12, Trench 2

A cast-iron pipe was exposed parallel and adjacent to the western side of surface 12. The pipe was present along the whole length of the excavated trench, and was almost certainly associated with the above-ground pipes running from the pump house to the brine tank. The pipe was laid in a layer of mixed clay and cinders (102), which was also present along the eastern side of surface 12.

²¹ OAN 2011

²² See Volume II, 2.6, 2.7 and 2.10



The remains of a further brick-built surface (15) was exposed at a depth of 0.4m in the central part of the trench, situated 4.4m to the north-east of surface 12. Surface 15 comprised machine-pressed bricks, each measuring 230 x 120 x 80mm, bonded with a lime-based mortar. The surface was slightly concave, sloping down gently to the centre from both ends. The south-western end of the surface abutted a 0.4m wide brick-built wall (13), which was aligned north-west/south-east across the trench (4.2). Wall 13 was three brick courses wide, and survived to a height of 0.7m.



4.2: Surface 15, Trench 2

A second brick wall (14), aligned north-east/south-west, had been laid across the top of surface 15, although appeared to be of a contemporary build. Wall 14 was 0.34m wide, and similarly comprised machine-pressed bricks in its construction. The intended function of surface 15 and its associated walls remains uncertain, although its position corresponds with the northern side of the pan/stove house depicted on the Ordnance Survey map of 1910.²³

An east/west-aligned cast-iron pipe was exposed immediately below the modern ground surface between surface 12 and wall 13. The intended function of this pipe remains uncertain. Another group of brick walls (16, 18, 19, 20, 21 and 30) were exposed at the north-western end of the trench (4.3), at a distance of 5.9m to the northeast of surface 15 (AS011). The earliest of these appeared to be northeast/ south-west-aligned wall 30, which formed the western side of the group.

This wall was only exposed in the southern section of the trench and its north-easterly continuation

had been largely destroyed. Wall 30 was five brick courses wide, indicative of having been a load-bearing structure, and comprised machine-pressed bricks bonded with a lime-based mortar. The position and alignment of the wall corresponded with the footprint of the eastern wall of the Red Line Inn, as depicted on the Sale Plan of 1868.²⁴



4.3: Looking south-west across walls 16, 18, 19, 20 and 21, wall 30 visible in section

Immediately adjacent to wall 30 was north-east/south-west-aligned wall 21, which formed the western side of the group. Wall 21 was three-courses wide, and similarly comprised machine-pressed bricks bonded with a lime-based mortar, although appeared to be of a later date than wall 30. Wall 21 was abutted by north-west/south-east-aligned wall 19, which was only a single course of bricks wide, and continued beyond the eastern edge of the excavated trench (AS011). Wall 16 lay parallel to the south of wall 19, and survived to a height of 0.37m. The two walls were joined by north-east/south-west-aligned wall 18, which was one and a half bricks wide, and had a modern electricity cable with stamped tile capping (20) laid along its upper surface. Walls 16, 18, 19 and 21 all comprised machine-pressed bricks, each measuring 230 x 120 x 80mm, and bonded with a lime-based mortar. The walls appeared to be of a contemporary construction, whilst their position corresponds with the south-western corner of the north-east fishery salt pan depicted on historical mapping of 1898 and 1910.²⁵

The well-preserved remains of another brick-built structure were revealed in the short north-west/south-east-aligned section of the excavated

²³ See Volume II, 3.52

²⁴ See Volume II, 2.7

²⁵ See Volume II, 3.3, 3.52

trench. The structure comprised north-east/south-west-aligned wall 29 at the western end of the trench, and the truncated remains of wall 26, which was exposed on a north-west/south-east alignment for 1.3m and then returned south-west as a wall three brick courses wide (AS011). Both walls comprised machine-pressed bricks, each measuring 230 x 120 x 80mm, bonded with a lime-based mortar. The two walls bounded a surface of broken machine-pressed bricks (27), which did not appear to have any bonding material, although the slightly burnt and sooted condition of the component bricks suggested that they had been subject to high temperatures (4.4), consistent with their suggested association with a fishery salt pan.



4.4: Looking east across wall 26 and surface 23/25, concrete beam 22

The remains of another brick-built surface (23/25) were revealed to the southeast of wall 26 (AS011). This was associated with a single brick wide wall (24), which was aligned east/west and continued beyond the northern edge of the excavated trench. These structures seemed to form the north-eastern end of a c. 2m wide brick-built structure that had been demolished, filled in with a dumped deposit of ash, cinders, crushed brick and burnt clay (33) and then covered with crushed brick (32) to create a resilient ground surface (Fig 9). The latter deposit had a fairly uniform thickness of 0.25m, and had formed a level surface that probably represented twentieth-century demolition and remodelling of the site. This may have been associated with the construction of concrete beam 22, which was aligned north-east/south-west across the trench, was 1m wide and survived to a height of 1.4m (4.4).

The uppermost levels in the trench comprised a uniformly 0.05m thick layer of hardcore (10), which had been laid on a levelling deposit of ash, cinders and finely crushed brick (11). Deposit 11 was only c. 0.1m thick across the southern part of the trench, and sealed all the excavated brick structures, including surface 12 and structure 15. In the central part of the trench, however, deposit 11 directly overlay the natural geology (17) and had a maximum depth of 1.1m, whilst to the north it was 0.4-0.5m thick over walls 16, 18, 19, 20 and 21.

Phased Interpretation

Phase 2: Red brick wall 30 that ran north-east to south-west probably related to the Red Lion Hotel.

Phase 5-6: Red brick walls 13 and 14 and concave brick surface 15, probably related to the northern furnace end of the South-East Butter Pan (Building 26). The remains may relate to drains along the edge of the hurdles. Machine pressed red brick walls 16, 18, 19, 21, 26 and 29 and surface 27 at the northern end of the trench appear to correspond to the North-Wes Fishery Pan (Building 14).

Phase 7: The machine-pressed brick surface (12) at the southern end of the trench appears to relate to a surface associated with the rebuilding of Pan and Stove House 4 and the Pump House. The surface probably corresponds to one uncovered during the 2009 watching brief (442, 443).

4.2 Trench 3

Trench 3 was located in the north-eastern corner of the site, placed within the footprint of a large building shown on the Ordnance Survey map of 1882 (see AS003 above); this building is thought to have been a stove house and warehouse for the Alliance Salt Works (Building 1-4).²⁶ It was also placed across the footprint of a small rectangular structure depicted on the Ordnance Survey map of 1910.²⁷

The trench was aligned north-west/south-east, measured 5m long, and was excavated to a maximum depth of c. 2.5m. A deposit of fine black

²⁶ See Volume II, 2.10, 2.11

²⁷ See Volume II, 3.3

ash (09) was exposed at the base of the excavated trench. The nature of this material was consistent with ash discarded from a boiler house, or dumped from the furnaces in the pan houses.

Ash 09 was sealed by a c 2m thick deposit of loose brick rubble (08), which contained numerous fragments of asbestos, presumably dumped on the site following the demolition of the Alliance Salt Works. The presence of the asbestos precluded the manual cleaning and further detailed excavation. Brick rubble 08 was sealed beneath a 0.3m thick layer of turf and topsoil (07).

Phased Interpretation

Phase 3: Clinker ash layer (09) and loose brick rubble layer (08), that was c. 2m deep have been suggested to be imported brick dumped from the canal. There is no reason to assume that the material was not derived from collapsed and levelled structures on site and may relate to demolished Building 4 of the Alliance Works.

4.3 Trench 4 (West)

This trench was placed immediately to the west of the footprint of a large building shown on the Sale Plan of 1868, Building 13²⁸ but had been demolished by 1898. The trench was aligned north-east/south-west, and was excavated to a length of 22m and to a maximum depth of 1.4m. The natural geology (123) was exposed along the base of much of the trench (4.5).

Excavation of the southern central part of the trench revealed the fragmentary remains of a north/south-aligned brick-built structure (112) at a depth of 0.4m below the modern ground surface (AS014). This was 0.5m wide, and the fabric comprised hand-made bricks (4.6).

A large, roughly built brick structure (114) was exposed in the northern central part of the trench, situated 6.4m to the north-east of structure 112. The upper surface of structure 114 lay at a depth of 0.2m below the modern ground surface. Structure 114 comprised a 0.58m high and 0.75m wide wall, aligned south-east/north-west and returning to the north-east at its north-western end (see AS003 above, AS014). The fabric of the

wall comprised hand-made bricks of various sizes, although no bonding material was visible.



4.5: General view of Trench 4 (West), looking south-west



4.6: The exposed remains of structure 118

Situated 1.65m to the north-east was a north-west/south-east-aligned wall (115). This was 0.34m wide, and survived to a height of 0.32m. The fabric of the wall comprised hand-made bricks, with average dimensions of 240 x 110 x 75mm.

The area bounded by wall 115 and structure 114 contained a deposit of orange-brown clay (118), into which two postholes (116 and 117) had been

²⁸ See Volume II, 2.6, 2.7, 2.11

cut (4.7). Both contained the stumps of wooden posts. Posthole 116 was 0.23 x 0.18m, and survived to a depth of 0.07m deep, and was partially cut into wall 115. Posthole 117 was 0.32m in diameter and 0.3m deep, and lay closest to structure 114 (AS014). These probably formed elements of the timber framing for a structure associated with the pan/stove houses of the Alliance Salt Works. Wall 115 is likely to have formed part of the same structure, with 114 perhaps representing the remains of an internal feature.



4.7: Structure 114, wall 115 and postholes 116 and 117

A series of wall stubs were observed in the south-east-facing section of the trench. These probably had a construction date contemporary with 112 and 115, but this could not be confirmed; the overlying deposits were found to contain a significant amount of fragmented chrysotile asbestos sheeting, which precluded any manual excavation in this part of the trench. The asbestos had presumably been dumped on the site sometime after the demolition of the Alliance Salt Works in the late-19th century.

The exposed structural remains were sealed beneath a series of deposits (108, 109, 110 and 111), which probably represented the demolition of the Alliance Salt Works, and material that was dumped on the site subsequently. Layer 111 was 0.3-0.5m thick, and was characterised by numerous small fragments of brick compacted in a matrix of mottled, sticky clay. This was overlain by a 0.2-0.3m thick band of crushed and compacted bricks (110), similar to deposit 11 in Trench 2 (Section 4.1 above), although somewhat thicker. This was sealed beneath a 0.7m thick mixed

deposit of clay, ash and cinders (109), which was probably either waste material generated from the processes active in the Lion Salt Works, or imported to the site from the canal for dumping. The uppermost layer in the trench comprised a 0.05m thick deposit of hardcore (108), forming the modern surface.

Phased Interpretation

Phase 3: A series of machine-pressed brick walls 112, 114, and 115 and two post-holes with associated timbers probably relate to Building 13 of the Alliance Works. They would have lain on the western exterior but cannot be attributed to any particular structures at this time.

Phase 6-7: Cinder deposits 108, 109, 110 and 111 that filled the trench were deposited across the site throughout the early and mid-20th century according to the oral reminiscences of Henry Lloyd Thompson. They were used in the construction of Stove House 5.

4.4 Trench 4 (East)

This trench was placed to the east of Trench 4 (West), within the footprint of a large building shown on the Sale Plan of 1868 (Building 11 and 12).²⁹ Thought to have been one of the pan/stove houses associated with the Alliance Salt Works, this building had been demolished by 1898. The trench was aligned north-east/south-west, and was excavated to a length of 12.9m (see AS003 above, AS013). Buried structural remains of archaeological significance were exposed at a depth of 0.4-0.5m below the modern ground surface, although the overlying deposit contained abundant fragmented pieces of chrysotile asbestos sheeting, which precluded the manual cleaning of the excavated trench.

A series of brick-built walls (181, 183, 185, 187, 189, 191, 193, 195, 196 and 197) were exposed at the base of the excavated trench. The fabric of all of these walls comprised hand-made bricks bonded with a lime-based mortar. Wall 181 was aligned broadly north/south, and was exposed at the south-western end of the excavated trench (Fig. AS013). The wall was 0.4m wide, and was exposed for a distance of 0.6m. It lay beneath a

²⁹ See Volume II, 2.6, 2.7, 2.11

discrete deposit of brick rubble (182), which almost certainly represented the demolition of the Alliance Salt Works. Wall 181 was abutted by a wall 183, which was only a single brick wide. Wall 185 lay 0.8m to the north-east, and was two brick courses wide. This was aligned broadly north/south, but appeared to curve to the east at its north-western end (AS013). Wall 187 lay parallel to walls 183 and 185, at a distance of 0.65m to the north-east. This wall was a single brick wide. Mixed deposits of heat-affected clay (184 and 186) occupied the areas between walls 183, 185 and 187.

A series of seven parallel walls and the remains of an associated brick surface were exposed to the north-east of wall 187 (AS013). Walls 189, 191 and 193 were all one brick course wide, with a dark grey burnt clay and ash (190) surviving between 189 and 191, and a deposit of mixed rubble, ash and cinders (192) between 191 and 193. Structure 192, comprising a 1m wide brick surface, also lay between wall 193 and structure 194.

Situated further to the north-east were walls 195 and 196, which were both two brick courses wide, with a deposit of mixed rubble and cinders (192) situated between them. Wall 197 was a single brick course wide, and lay 0.8m to the north-east of wall 196. The last wall to be exposed was 199, which was two brick courses wide, and occupied the north-western corner of the excavated trench (AS013). These walls clearly formed part of the Alliance Salt Works, and probably derived from more than a single phase of construction, although this could not be corroborated in the absence of manual excavation.

The exposed walls were all sealed beneath a 0.4m thick deposit of mixed demolition rubble, ash and cinders (200). This probably represented the demolition of the Alliance Salt Works, and the subsequent dumping of waste material, which may have derived either from the Lion Salt Works, or have been imported to the site. Deposit 200 was sealed by a 0.05m thick layer of hardcore that formed the modern ground surface.

Phased Interpretation

Phase 3: Brick walls 181, 183, 185, 187, 189, 191, 195, 196, 197 were all aligned roughly north-west

to south-east. Between were heat affected clay deposits 184 and 186. These appear to be reminiscent of the base of flue runs. This suggests Building 11 and 12 was a Stove House possibly with attached Pan House. A brick floor surface 192, 1m wide may be a surviving element of the flue ditches.

4.5 Trench 5

It was intended that Trench 5 was placed across the footprint of Building 19 in the centre of the site. However, for logistical reasons, the trench was relocated some 6m to the north.³⁰ The trench was excavated to a length of 5m, with the upper surface of in-situ archaeological remains being exposed at a depth of only 50mm below the modern ground surface (see AS003 above, AS016).

The natural geology, comprising light grey sticky clay (40) was exposed at the base of the excavated trench (4.8). This was overlain by a 0.8m thick deposit of mixed dark grey clay, ash and crushed brick (35), which is likely to have derived from the demolition of the 19th-century structures.



4.8: Wall 37 in Trench 5

The exposed remains included a north-west/south-east-aligned wall (37), which lay immediately beneath the modern ground surface (4.8). Wall 37 was exposed along the centre of the trench, was two brick courses wide, and had been built on a concrete foundation, indicative of a 20th-century construction date. The fabric of the wall comprised machine-pressed bricks. The north-western end of the wall appeared to have been cut through an earlier wall (36), which similarly comprised machine-pressed bricks. The remains a vertical I-

³⁰ See Volume II, 2.10, 2.11

section steel girder, set in a concrete foundation (41), was revealed at the south-eastern end of the trench. This had probably formed a structural member for a 20th-century building; its position, together with wall 37, corresponded with the footprint of the south wall of Stove House 5, as shown on the 1:2500 map of 1970. The structural remains were sealed beneath hardcore (34), which formed the modern ground surface.

Phased Interpretation

Phase 7: Brick wall and concrete base 37, aligned east-west, corresponded to the southern wall of Stove House 5.

4.6 Trench 12

Trench 12 was aligned north-east/south-west across the northern part of the site, within the footprint of a large building shown on the Ordnance Survey map of 1882;³¹ this building is thought to have been a stove house and warehouse for the Alliance Salt Works (Building 1-4). The trench also crossed the footprint of two small structures associated with the Lion Salt Works, as depicted on the Ordnance Survey map of 1888.³²

The trench was excavated for a length of 12m, and to a maximum depth of 1.3m (see AS003 above, AS017). The natural clay geology (86) was exposed at the base of the excavated trench. This was overlain directly by the remains of a brick surface (85), which survived in the south-east-facing section of the trench. The surface comprised hand-made bricks, and is likely to have represented an internal surface of Building No 29.

Surface 85 was overlain by a deposit of crushed bricks in a sandy clay matrix (84), which may have derived from the demolition of the Building No 29. This deposit had been cut by structure 90, which comprised a 0.5m wide surface composed of hand-made bricks. This was aligned north-east/south-west, and had perhaps formed the base of a drain or a flue, although none of the component bricks retained any indication of having been subjected to high temperatures (4.9).



4.9: Structure 90 in Trench 12

Structural remains exposed in the northern central part of the trench included wall 83 and brick surface 89. Wall 83 was aligned north-west/south-east, and comprised machine-pressed bricks bonded with a lime-based mortar. All of the component bricks measured 230 x 120 x 80mm, and were laid in stretcher bond. A cast-iron pipe (88) with a diameter of 240mm was set into wall 83.

Surface 89 lay at a depth of 0.6m below the modern ground surface, comprised machine-pressed bricks, and was a single brick course thick. The surface sloped downwards slightly to the north-east, although it remains uncertain whether this was a design feature or a result of slumping (4.10). The surface was laid on a bedding of coarse dark purple cinders (87) and a thin lens of compact black sandy clay (77).



4.10: Surface 89 and cast-iron pipe 81 in Trench 12

A second cast-iron pipe (81) was exposed some 3m to the north-east of pipe 88, and was similarly aligned north-west/south-east (Fig. AS017). Pipe 81 had a diameter of 120mm, and incorporated a corroded high-pressure flange joint, suggesting that it may have been a steam pipe.

³¹ See Volume II, 2.10, 2.11

³² See Volume II, 3.3

Wall 83 and brick surface 89 were sealed by a 0.82m thick deposit of probable demolition material (82), which contained fragments of bricks, slate and cinders. A similar deposit (79), containing compact black ash in a clay matrix, was exposed at the north-eastern end of the trench. These layers were sealed by a 0.4m thick mixed deposit of dark pinkish-brown cinders (78). This deposit was overlain by the turf and topsoil (76), which formed the modern ground surface.

Phased Interpretation

Phase 3: Hand-made red brick surfaces 85, 89 and 90 and brick wall 83 are all on the western edge of Building 1 of the Alliance Works. They may relate to the building but cannot be seen as internal structures. It is therefore difficult to establish the function of Building 1.

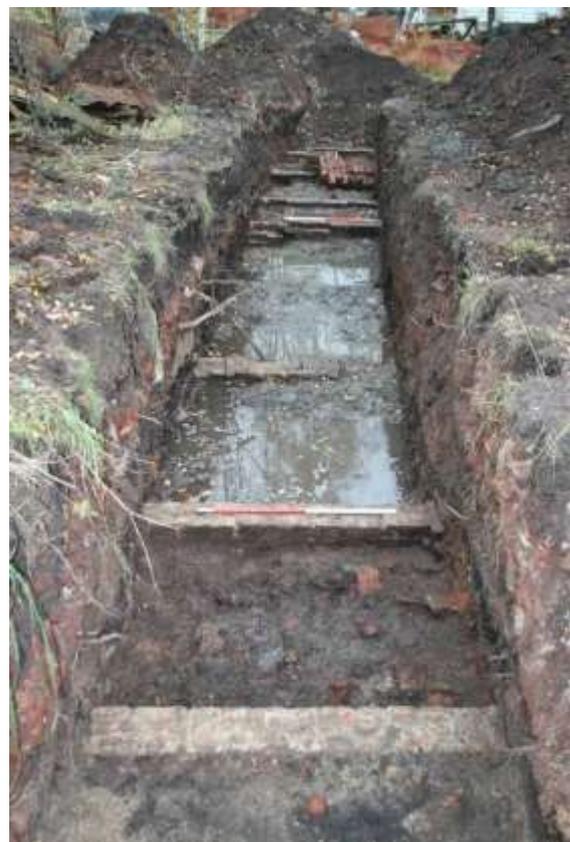
4.7 Trench 13

Trench 13 was aligned north-east/south-west in the eastern part of the site, and was placed across the footprint of two rectangular buildings associated with the Alliance Salt Works (Open Pans A2 and A3), as depicted on the Ordnance Survey map of 1882 (see AS003 above).³³ The trench was excavated for a length of 16m, and to a maximum depth of 1.55m (4.11), although the south-western end of the trench had to be abandoned due to the presence of chrysotile asbestos. It seems probable that this had been dumped on the site sometime after the demolition of the Alliance Salt Works, as asbestos was not widely used for construction purposes until the second quarter of the twentieth century.

The natural geology (59) was exposed at the base of the excavated trench. This had been cut by a series of parallel brick walls (56, 58, 60, 61, 62, 64 and 65), which were all aligned north-west/south-east across the base of the excavated trench (AS018). All except wall 60 appeared to comprise machine-made bricks, and were bonded with lime-based mortar.

Wall 56 lay at the north-eastern end of the trench, was 0.235m wide, and survived to a height of 0.44m. Wall 58 lay 1.4m to the south-west, and

survived to a height of 0.4m. It was two brick courses wide. Wall 60 lay 2.25m to the south-west, and was of a much rougher construction, using varying hand-made bricks with no visible bonding material. It survived to only a single course in height, and was one and a half brick courses wide. Wall 61 lay 3.7m further to the south-west, and survived to a height of 0.3m. Between walls 56, 58, 60 and 61, natural clay 59 was overlain by a loose deposit (54) of mid-grey ash, cinder and crushed brick. A similar deposit (54) lay between walls 56 and 58. This comprised a compact burnt black ash and cinder with fragments of burnt bricks.



4.11: Looking south-west along Trench 13

Wall 62 was exposed 1.2m to the south-west of wall 61. This survived to a height of 0.24m, and was a single course of bricks wide. Wall 64 lay towards the south-western end of the trench. This was one and a half brick courses wide, and survived to a height of 0.26m. It was partially overlain by structure 66, which comprised broken upright bricks along its south-western edge, suggesting that it represented part of a collapsed wall. Wall 65 was exposed at the south-western end of the trench.

³³ See Volume II, 2.10, 2.11

The structural remains exposed in the trench are all likely to have represented elements of the Alliance Salt Works, and specifically the structure housing the open salt pans (Building No 30). They were sealed beneath a sequence of tipped deposits, which formed a 1m thick band along the entire trench. The upper tip deposits lay at the south-western end of the trench, and comprised 0.05 to 0.3m of dark brown cinders with yellow clay lenses (43), overlying 0.08m of orange friable sand (44). Below this was a 0.44m thick band of loose grey brown cinders with occasional brick and burnt stone (45). This overlay compact red sand with abundant crushed brick (46), which was less than 0.4m thick, and overlay a mixed deposit of firm grey clayey sand (48) and mixed firm reddish-brown coarse sandy clay (47). Beneath clay 47 was a lens of coarse light grey gravel and cement (49). The lowest deposit of the sequence was a 0.1m thick band of firm mid-reddish-brown coarse sandy clay (52). These layers were sealed beneath a 0.2m thick layer of turf and topsoil (42).

Phased Interpretation

Phase 3: Machine-pressed red brick walls 56, 58, 60, 61, 62, 64 and 65 represent a series of parallel east-west walls. They are located in the footprint of a series of structures (Open Pan A1 and A2) that would appear to be common pans of the Alliance Works. This suggests that they are internal flue walls beneath the pan and the lines of walls supporting the hurdle ditches. Similar walls have been investigated in later structures in Pan House 4 and Stove House 5 (see below).

4.8 Trench 14

Trench 14 was placed a short distance to the north of Trench 13 in the eastern part of the site. It was placed within the footprint of a rectangular structure (Open Pan A1 or A2) associated with the Alliance Salt Works, as depicted on the Ordnance Survey map of 1882.³⁴ The trench was aligned north-west/south-east, and was excavated to a length of 6.1m and a maximum depth of 1.4m (see AS003 above, AS019).

The natural clay geology (75) was exposed at the base of the excavated trench, at a depth of 1.4m

below the modern ground surface. The south-west-facing section of the trench comprised a wall (72) comprising machine-made bricks in 4:1 English Garden Wall bond, with slightly splayed header footings sat on crushed brick and cinder bedding (73 and 74). The top of the wall was exposed at a depth of only 0.01m below the current ground surface (4.12). Wall 72 was aligned north-west/south-east, and its position corresponded closely to the northern wall of a rectangular building forming part of the Alliance Salt Works depicted on the Ordnance Survey map of 1882.³⁵



4.12: Wall 72, Trench 14

Excavation adjacent to wall 72 in the south-eastern part of the trench revealed a thick deposit (71) containing cinders, fragments of brick and asbestos. This was overlain by a 0.05m thick deposit of mixed dark loam and cinders (70). Excavation in the north-western part of the trench exposed a 0.58m thick deposit of black cinders (69), sealed below the modern topsoil (67).

Phased Interpretation

Phase 3: Machine-pressed brick wall 72, was substantial and appears to represent the northern wall of Open Pan A2 of the Alliance Works.

4.9 Trench 15 (West)

Trench 15 (West) was aligned north-east/south-west, and was placed to the south of the Scheduled Monument (see AS003 above). It was excavated to a length of 5.2m, and to a maximum depth of 1.2m (4.13). The natural clay geology (06) was exposed at the base of the excavated trench. The natural geology was overlain by a thin deposit

³⁴ See Volume II, 2.10, 2.11

³⁵ See Volume II, 2.10, 2.11

of mixed, sticky grey clay (05), which potentially represented a buried ground surface. This was sealed by a level and compacted lens of purple cinders and black ash (04), which appeared to have been laid deliberately to create the foundation for a solid surface. This was overlain by a compacted band of crushed brick fragments and burnt clay (03), which had a maximum thickness of 0.5m at the north-eastern end of the trench (4.13).



4.13: Trench 15 (West) fully excavated

Layer 03 was sealed by a deposit of cinders (02), which had a maximum thickness of 0.56m in the central part of the trench, but was only 0.01m thick at the north-eastern end. The uppermost excavated layer was topsoil 01, which had a fairly uniform depth of 0.28m.

Phased Interpretation

Phase 3-7: Ash cinder layers (02) and crushed brick layer (03) represent part of a general period of spreading of waste material from the stove houses across the site throughout the 19th and 20th century.

4.10 Trench 15 (East)

Trench 15 (East) was placed to the north-east of Trench 15 (West), and was similarly beyond the boundary of the Scheduled Monument. The trench was targeted on a structure that housed the open salt pans in the Alliance Works (Open Pans A9-A12).³⁶ The trench was aligned north-east/south-west, and was excavated to a length of 5m and maximum depth of 1.1m (see AS003 above, AS020). The natural geology, comprising light grey sticky waterlogged clay (179), was exposed at the base of the excavated trench (4.14).



4.14: Trench 15 (East) fully excavated

Natural geology 179 was overlain by a 0.08m thick layer of loose purple cinders (178), which may have derived from waste material from the boiler house for the Lion Salt Works. This was overlain by a 0.12m thick band of semi-compact black cinders (177) and a 0.1-0.2m thick deposit of compact fine black ash (176), which may have been deposited as a levelling for a brick surface (174). Brick surface 174 was two brick courses thick, and comprised machine-made bricks, each measuring 220 x 100 x 85mm. Some of the bricks incorporated a frog, and a few were stamped with 'Jabez Thompson Ornamental Brickworks Northwich', representing the manufacturer's mark. Surface 174 occupied the northern part of the trench, whilst to the south was a 0.1-0.2m thick layer of mixed loose black cinders, ash and brick fragments (175). Deposit 175 and surface 174 were overlain by a 0.1-0.2m thick layer of semi-compact dark grey brown clay loam and cinders (173). This was sealed by a 0.2m thick band of mixed loose dark grey cinders (172), and 0.08m of turf and topsoil (171), which formed the modern ground surface.

Phased Interpretation

Phase 3: Compact ash layer and brick surface 174 probably date to the laying out of the Alliance Works. This is indicated by the presence of a brick in the surface marked 'Jabez Thompson's Ornamental Brickworks, Northwich'. They were possibly associated with the northern of four open pans at the southern end of the site.³⁷ These were constructed in around 1880 and were very short lived surviving for around 10 years.

³⁶ See Volume II, 2.10, 2.11

³⁷ See Volume II, 2.10, 2.11

5. 2011-2013 TEST-PITTING

By Oxford Archaeology North and Chris Hewitson

Test-pitting was undertaken in advance of work in order to establish geotechnical bore-holes and structural information about the build-up layers on the site. Archaeological input was required into the test-pitting process in order to inform the mitigation strategy for the areas. Not all of these test pits were taken in advance of work, and some continued to be excavated during work. The test-pitting took three phases:

- November 2011 – during Oxford Archaeology North evaluation, prior to geotechnical test pits, BH3-5 and TP1-6
- February- May 2012 – by the Project Archaeologist in order to complete the above evaluation, BH2, TP7-14
- June 2012 – July 2013 – under watching brief conditions by the Project Archaeologist to inform structural foundations, TP15-29

Test Pit BH 2

Bore Hole 2 was located directly south of the Brine Tank between Stove House 4 and the estimated area of the Brine Shaft (see AS003 above). It was 1.0m x 1.0m in size and excavated to a depth of 1.0m (23.74m AOD at top). The earliest layer was mixed black clinker-ash silt (372), 0.20m deep, which was used to infill the lower levels of Stove House 5 (see Section 5.9 below). Above this was a layer of black-red silt clay material (371), 0.40m deep. The uppermost layer was loose black clinker ash material (370), 0.40m deep.

Phased Interpretation

Phase 7: The material in this area is very mixed, in part due to its close proximity to Stove House 5 but also due to excavation work undertaken during the 2009 enabling works. It seems likely that the earliest layers (372) are associated with the construction of Stove House 5. Henry Lloyd Thompson states that clinker ash material was stockpiled on site prior to the construction of SH5 and used in its construction.³⁸ The black-red silt-clay (325) was similar to material found in TP11 to

the south and suggests this was a levelling deposit around SH5.

Phase 9: The uppermost layer (370) appeared to be disturbed material from the demolition of Stove House 5.

Test Pit BH3

Test Pit BH3 (5.1) measured 1m square and was excavated to a maximum depth of 0.86m within the footprint of Stove House 5 (see AS003 above). This part of the site may also have been occupied previously by a cottage (Alliance Works, Building 19),³⁹ which is thought to have been demolished prior to the construction of Stove House 5.



5.1: Test Pit BH 3, fully excavated

The natural clay geology (159) was exposed at the base of the pit, and was overlain by a 0.12m thick deposit of dark grey brown plastic clay (158), which may similarly have been of natural origin. Deposit 158 was cut by an irregular-shaped feature (157), which contained mixed light brown mottled clay with brick fragments, mortar and late demolition rubble (156). This was sealed by a series of dumped horizons (155, 154, 153 and 152), which seemingly represented late 20th-century activity.

Deposit 155 comprised a 0.06 to 0.18m thick layer of mixed sticky dark grey clay, which was overlain by a 0.05m thick band of compacted black ash and cinders (154). Deposit 153 was 0.28m thick, and comprised black cinders and modern crisp packets. This was overlain by a 0.22m thick deposit of mixed clay, brick and cinders (152), with hardcore 151 forming the modern ground surface (Fig. AS022).

³⁸ Henry Lloyd Thompson site visit 22nd August 2009

³⁹ Volume II, 2.11

Phased Interpretation

Phase 9: The layers in Test Pit BH3 represent disturbed layers from the demolition of Stove House 5.

Test Pit BH4

Test Pit BH4 was placed a short distance to the north of the Manager's House in the southern part of the site (see AS003 above). It measured 1 x 1m, and was excavated to a maximum depth of 0.2m (5.2). It was re-excavated as Test Pit TP13, see below. A deposit of indurated black ash (139) was exposed at the base of the test pit, which formed a levelling horizon for a brick surface (138). Surface 138 comprised handmade bricks, and was a single brick course thick. This was overlain by a 0.05m thick layer of limestone hardcore (136), which formed the modern surface. Embedded within hardcore 136 was a live electricity cable (137), which was exposed along the south-western edge of the excavated test pit.



5.2: Test Pit BH 4, showing brick surface 138

Phased Interpretation

See Test Pit TP13 below for a phased interpretation.

Test Pit BH5

Test Pit BH 5 was placed to the north-east of the former Red Lion Inn (Building No 5), adjacent to the site's boundary with Ollershaw Lane (AS003). This area is shown on the sequence of historical mapping to have been an access route throughout the various stages in the development of the site. The test pit measured 1 x 1m, and was excavated to a maximum depth of 0.59m (5.3). No buried structural remains were encountered in the test pit. A rough concrete surface (103/105) of probable late 19th- or early 20th-century date was

exposed at a depth of 0.15m below the modern ground surface. The surface had been cut by a north-west/south-east-aligned linear trench, which was 0.34m wide. This contained a live electricity cable, and had been backfilled with a deposit of black silty sand (107). A 0.15m thick layer of limestone hardcore and crushed brick fragments (106) sealed the trench, and formed the modern ground surface.



5.3: Test Pit BH 5, fully excavated

Phased Interpretation

Phase 8-9: Concrete surface 103/ 105 and cable run 107 are associated with the laying out of an electricity cable carried out in 2006 and described above.

Test Pit TP1

Test Pit TP 1 was placed within the footprint of one of the rectangular buildings associated with the Alliance Salt Works, as depicted on the Ordnance Survey map of 1882 (Open Pan A2).⁴⁰ The test pit measured 1 x 1m, and was excavated to a maximum depth of 1m (5.4). A deposit (164) of compact reddish-brown clay and small inclusions of weathered soft sandstone was exposed at the base of the excavated test pit. This did not appear to contain any cinders, ash, or other waste materials derived from the industrial processes that operated on the site, and perhaps represented a layer disturbed or re-deposited natural geology. This was overlain by a 0.12m thick layer of (163) of compacted dark brown clay, and a 0.1-0.24m thick layer (162) of compacted purple clay (Fig. AS021). This layer was sealed by a 0.22m

⁴⁰ See Volume II, 2.10, 2.11

thick deposit of ash and cinders (161). The nature of this deposit was consistent with material discarded from a boiler house, smithy or the furnaces in the salt works, although the presence of modern materials, including a plastic bottle, indicated that it was of relatively recent origin. Layer 161 was sealed by a 0.14m thick layer of limestone hardcore (160), which formed the modern ground surface.

Phased Interpretation

Phase 3: The earliest deposits of red-brown clay and weathered sandstone (164) appear to be natural deposits. They are discussed in greater detail below (see TP20).

Phase 5-7: Ash cinder layer 161 is similar to other layers of material spread across the site in the 20th century.



5.4: Test pit TP 1, fully excavated

Test Pit TP2

Test Pit TP 2 was placed in a former yard area to the south of Stove House 5 (Building No 11), in the central part of the site. The test pit measured 1.1 x 1.1m, and was excavated to a maximum depth of 1.1m (5.5). The natural light grey clay geology (150) was exposed at the base of the test pit (Fig 18). This was overlain by a 0.22m thick deposit of sticky yellow clay (149), which contained occasional small fragments of brick, and probably represented a disturbed natural horizon. A thin deposit of sticky grey clay (148), identified in the south-eastern part of the test pit, was stratigraphically above clay 149, and was similarly likely to represent a disturbed natural horizon. This was overlain by a 0.10m lens of black cinders and ash (147), which appeared to represent a dumped

deposit, and was sealed by layer yellowish-brown mixed sticky clay (146). Layer 146 was cut by a square-shaped feature (144), the base of which lay at a depth of 0.76m below the modern ground surface (Fig. AS021). Feature 144 was filled with a deposit of compacted black cinders and ash (143), which also contained modern crisp packets and fragments of steel wire. This was overlain by a 0.05m thick band of compacted light pinkish-yellow clay (142) and a deposit of brown clay and cinders (141). The modern ground surface comprised mixed loam and cinders (140).



5.5: Test pit TP 2, fully excavated

Phased Interpretation

Phase 7-8: The deposits in the test pit appear to be disturbed deposits.

Test Pit TP4

Test Pit TP 4 was placed in the southern part of the site, beyond the boundary of the Scheduled Monument (see AS003 above). It measured 1 x 1m, and was excavated to a maximum depth of 1m (5.6).



5.6: Test pit TP4, fully excavated

The lowest deposit encountered (170) comprised a layer of compacted clay loam containing abundant black cinders, which may have derived from the

smithy. This was sealed by a 0.65m thick deposit of banded light grey to pinkish-grey cinders and nodules of iron slag (169), which were similarly likely to have derived from the smithy. The overlying layers (168 and 167) also contained abundant cinders and fuel ash, and were sealed by a 0.1m thick deposit of burnt limestone (166). The uppermost layer comprised a 0.1m thick deposit of loam topsoil (165).

Phased Interpretation

Phase 5-7: Clay-loam layer with ash cinders (170) and cinders and smithing slag (169) appear to be part of a general spread of waste on the southern part of the site. This was partially derived from the stoves of the Pan Houses but also from the smithy.

Test Pit TP5

Test Pit TP 5 was placed to the west of Trench 2 adjacent to Stove House 4. It measured 1.1 x 1m, and was excavated to a maximum depth of 1m. Test Pit TP 5 was placed to the west of Trench 2 (see AS003 above). It measured 1.1 x 1m, and was excavated to a maximum depth of 1m (5.7). A layer of dark grey cinders with occasional brick fragments (135) was exposed at the base of the excavated test pit. This was overlain by a series of thin layers and lenses (134, 133, 132, 131, 130, 129, 128, 127 and 126), which all contained cinders, ash and small fragments of fired clay or brick, presumably representing waste products from the industrial processes associated with the salt works. The uppermost of these deposits (126) was sealed by a 0.15-0.25m thick layer of mixed dark brown clay and crushed brick (125), which was overlain by the modern hardcore surfacing (124).



5.7: Test pit TP5, fully excavated

Phased Interpretation

Phase 5-6: Clay and cinder layers (126-135) appear to be shallow striated layers of build up as opposed to a single dump. This suggests they have built up over time. The test pit was located internally within the footprint of the 'Rhomboid-shaped' building in the location of the Central Butter pan. The deposits strongly suggest that this was the location of flues or a stove in which shallow deposits of ash and clinker accumulated over time.

Test Pit TP6

Test Pit TP 6 was placed close to the eastern corner of the former Red Lion Inn (see AS003 above), measured 1 x 1m, and was excavated to a maximum depth of 0.4m (5.8).



5.8: Test pit TP 6, fully excavated

The remains of four worked timbers of differing sizes were exposed at the base of the excavated trench. These were all 0.08m thick, and were embedded in a layer of clinker (208). The timbers were overlain by a steel rail (203), which was exposed in the north-eastern corner of the excavated test pit (Fig. AS021). These features were almost certainly associated with the railway lines that are depicted in this part of the site on the Ordnance Survey map of 1910.⁴¹ Clinker 208 and steel rail 203 were sealed beneath a 0.35m thick deposit of indurated black ash, similar to deposit 139 in Test Pit BH4. A 0.05m thick layer of hardcore (201) formed the modern ground surface.

⁴¹ Volume II, 3.51

Phased Interpretation

Phase 5-7: The remains of rail track and wooden sleepers (203) directly correspond to those discovered during the 2009 watching brief (see above, 431).

Test Pit TP7

Test Pit TP7 was located c. 2m east of the rear boundary wall of the Red Lion Inn (AS003, AS023). It was 1m by 1m and excavated to a depth of 0.7m. It was designed to replace TP6.



5.9: Test pit TP7, west facing

The earliest deposit in Test Pit TP7 consisted of a brown black layer of silt clinker material (306), 0.2m deep. It contained both pottery and glass, with printed transfer wares of 19th-century date (author inspection). This was overlain by a layer of loose coarse rubble in dark brown sand silt (305), 0.10m deep. A discontinuous layer of white-grey lime mortar (< 0.03m deep) appeared to be a formation layer for a boundary wall that survived as only two hand-made red bricks in situ, although further bricks may have represented loose material. The trench was subsequently filled with mid grey-brown silt-rubble (303) that contained pottery, glass and ferrous slag, 0.15m deep and a gritty layer of brown-black clinker-silt (302), 0.20m deep. The test pit was sealed by a layer of gravel bedding material (301) and a thin layer of humic topsoil (300) both of which date or post-date the 2009 enabling works. Test pit TP7 revealed the remains of a possible short section of wall. This may relate to the remains of a former boundary wall first visible on the 1910 Ordnance Survey Map.⁴² The pottery associated with the earliest

⁴² Volume II, 3.51

layer (306) was on initial assessment from the 19th century.

Phased Interpretation

Phase 5: The pottery associated with the earliest layer (306) was on initial assessment from the 19th century. This would date to the earliest period of occupation of the site by the Lion Salt Works and possibly associated with the conversion of the cottages along Ollershaw Lane into the Red Lion Inn. A short section of wall foundation (304) may relate to the remains of a former boundary wall first visible on the 1910 Ordnance Survey Map.⁴³

Test Pit TP8

Test Pit TP8 was located between the Red Lion Inn and Stove House 4 (AS003 above, AS023). It was 1m x 1m and excavated to a depth of 0.8m. It was designed to replace BH5. The earliest deposit in TP8 was light grey pea gravel (310) associated with a sewerage run. This was overlain by dark black-brown gravel silt-clinker containing large river pebbles and brick rubble (309). Above this was imported grey gravel road stone (308), 0.25m deep and a layer of imported rubble (307), 0.15m deep. The test pit revealed remains of a sewerage service run to the toilet block of the Red Lion Inn, probably put in place in the refurbishment of the 1980-1990s. The 0.40m depth of road stone and rubble related to work undertaken during the 2009 enabling works.



5.10: Test pit TP8, east facing

Phased Interpretation

Phase 8: The test pit revealed remains of a sewerage service run (309, 310) to the toilet block

⁴³ Volume II, 3.51

of the Red Lion Inn, probably put in place in the refurbishment of the 1980-1990s.

Phase 9: The 0.40m depth of road stone (307, 308) and rubble related to work undertaken during the 2009 enabling works (Phase 9).

Test Pit TP9

Test pit TP9 was located 2m north of the north-east corner of Pan House 5 (Fig. AS003 above, AS023; 5.11). It was 1m by 1m and excavated to a depth of 1.10m. It was designed to replace a test pit originally located at the very north-east corner of Pan House 5 that could not be excavated due to the presence of scaffold (supporting the preserved pan).



5.11: Test pit TP9, south facing

The earliest deposit in the test pit was a yellow-brown clay-silt that became sandier with depth (318). This may have represented the natural material but could equally be re-deposited. Over this was a mixed light grey ash and clinker layer (314) that was cut by a vertically sided feature that appeared to be a foundation trench 317. The foundation trench was filled by dark brown waterlogged clinker-silt material containing rubble and salt pan scale residues (316) that was at least 0.30m deep but was not fully excavated. Above this was a thin layer of salt pan scale residues (315) that probably constituted a dump of material associated with the demolition of the Alliance Works. The uppermost fill was a black clinker silt layer (313) that contained some salt pan scale, pottery, glass and ferrous metal. This included a single vertical iron pin that may have been in situ and part of the construction for the foundation. Above this were layers of dark brown sand-silt-

rubble (312), 0.35m deep and a brown humic-silt topsoil layer (311), 0.15m deep.

The remains within the test pit appear to relate to a large building located within the Alliance Works visible on the 1882 Ordnance Survey map.⁴⁴ Elements of this may have been excavated in Trench 12 of the evaluation (see above). The accuracy of the mapping, subsequent rectification and the very small size of the test pit mean it is difficult to correlate the excavated evidence with the cartographic evidence.

Phased Interpretation

Phase 3: The earliest deposit in the test pit was a yellow-brown clay-silt (318) that represented re-deposited natural material. The remains of a foundation trench (317) within the test pit appear to relate to a large building located within the Alliance Works visible on the 1882 Ordnance Survey map. Elements of this may have been excavated in Trench 12 of the evaluation (see above).

Test Pit TP10

Test pit TP10 was located c. 10m south of the Brine Tank and immediately north of Stove House 5 (AS003 above, AS023; 5.12). It was 1.4m (E-W; expanded during excavation) by 1m (N-S) and excavated to a depth of 0.8m before it was discontinued due to water inundation. It replaced a test pit that was due to be excavated adjacent to the Brine Tank that could not be excavated due to health and safety concerns over the presence of a deep brine shaft which has still not been located. The earliest deposit was a very mixed dirty clinker layer that was heavily waterlogged (323). This lay beneath a band of mixed yellow-brown sand-silt-clay and black-brown silt (322), 0.10m thick. Another thick layer of mixed black-brown sand-silt with brick and panscale rubble (321) 0.40m deep, contained a wooden sleeper. This was overlain by another narrow band of yellow sand-clay (320), and mixed brown sand-silt-rubble topsoil layer (319), 0.10m deep.

Phased Interpretation

Phase 9: The material within test pit TP10 was strongly indicative of a mixed industrial backfill

⁴⁴ Volume II, 2.10, 2.11

layers (319, 320, 321, 322, 323) and related to demolition of Stove House 5 and associated excavation.



5.12: Test pit TP10, north-west facing

Test Pit TP11

The test pit was excavated to replace a borehole location that could not be excavated due to the presence of the brine shaft. It was located directly west of Stove House 5, c. 12m south of the Brine Tank building (Fig. AS003 above, AS023; 5.13). It was 1m by 1m deep and excavated only to a shallow depth of 0.25m due to the presence of an electricity service run within the trench.



5.13: Test pit TP11, south facing

The earliest deposit was a mixed red-orange sand and clay deposit (325). Within this was the cut for an electricity service run (325) with the associated cover of ceramic tile marked 'ELECTRIC' suggesting that the service run was between 20-40 years old. Above this the trench was filled with a mixed compact brown sand-silt fill with some brick and panscale rubble (324), to a depth of 0.25m.

Phased Interpretation

Phase 5-6: The earliest deposit was a mixed red-orange sand and clay deposit (325). Similar material has been excavated in Test Pits 19 and 20 and has been associated with the formation layers of Pan House 4. It is possible this layer relates to the northern pair of four fishery or common pans.

Phase 7b-8: The test pit contained an electricity service run with the associated cover of ceramic tile marked 'ELECTRIC' (326). It was probably added during the final years of the Thompson's ownership of the works in the 1970s/ 1980s. It appears to continue to a timber pylon c. 10m to the south. To the north it is unclear where this service run goes but it possibly enters the main body of the buildings.

Test Pit TP12

Test Pit TP12 was located 1m to the south of Pan House 4 adjacent to the barricade (6200; Fig. AS003 above, AS024, 5.14, 5.15) (24.28m AOD at top). It was 1.4m (NE-SW) by 1.0m (NW-SE) in size and excavated to a depth of 1.0m.

The earliest deposit located within the test pit was a grey-brown silt-clay layer (361), +0.15m deep. Over this was a coarse brown-black clay-rubble clinker layer (360) of heavily waterlogged material. A compact brown clinker-silt (359), 0.25m thick overlay this in turn to form the construction base for a series of rail lines. The remains of a rail line were represented by a wooden cross sleeper (365) 0.25m wide by 0.12m thick. Laid over this and perpendicular to it was a degraded ferrous metal rail (363) 0.20m wide and 0.10m thick, orientated east-west. Adjacent and parallel to it either side were two wooden sleepers. Sleeper 364 to the south was 0.28m wide and 0.05m deep, whilst sleeper 362 to the north was 0.27m wide and 0.05m deep.



5.14: Test Pit 12, east facing



5.15: Test Pit 12, east facing

It was covered by mixed brown sand-silt clinker, 0.10m thick (358), black-grey silt-gravel, 0.15m thick (357) and sealed by a black-brown clinker silt layer (356), 0.10m thick.

Phased Interpretation

Phase 1-3: The earliest deposit of grey-brown clay material (361) is part of a general layer of material across the site that should be interpreted as part of Symme's Field or the Red Lion Hotel.

Phase 4: The brown-black clay rubble (360) is part of a levelling deposit, probably associated with the establishment of the Lion Salt Works (Phase 4).

Phase 5: The rail lines are first depicted on the 1910, 3rd edition Ordnance Survey Map and are part of the early 20th century expansion of the site.

Phase 6-7: They remained in use until the 1960s to 1970s when oil replaced coal as the main source of fuel for the stoves.

Test Pit TP13 (BH4)

Test Pit TP13 was located between the pump house and the boiler house adjacent to the manager's office (Fig. AS003 above, AS024, 5.16, 5.17) (23.66m AOD at top). It was originally excavated as Bore Hole 4 (BH4) during evaluation work in November/ December 2011 (see BH4 above). It was subsequently excavated to allow the area to be drilled for a bore-hole. The trench was 1.0m (E-W) x 1.4m (N-S) in size. It was excavated to a depth of 1.0m.

The earliest deposit was yellow-grey silt clay with some river pebbles (369). It was overlain by a layer of grey-brown silt-clay (368), 0.35-0.40m deep and orange black mixed clinker silt (367), 0.20m deep. This was overlain by a narrow band of black-grey silt containing brick rubble (366), 0.10m deep that appeared to from a compact surface. It contained considerable quantities of 19th-century pottery and clay tobacco pipe. This layer was sealed by a layer of indurated black ash (139), in which was a hand-made red brick surface (138). This was sealed by imported grey gravel (136). These last three contexts have previously been reported on during the evaluation (OAN 2011).



5.16: Test Pit 13, north-west facing



5.17: Test Pit 13, east facing

Phased Interpretation

Phase 1: The earliest of yellow-grey clay with river pebbles (397) probably related to Symme's field.

Phase 2: The layer of grey-brown clay (368) is similar to many layers across the site and appears to part of 19th-century activity on the site (Phase 2).

Phase 3: The orange mixed clinker silt (367) and compact brick rubble surface (366) may relate to the laying out of the Accommodation Road that gave access to the Alliance Works from Ollershaw Lane.

Phase 5: The subsequent brick surface (138) was almost certainly associated with the manager's office which has still stands south of the site and dates to c. 1900.

Phase 9: The grey gravel layer (136) was associated with the 2009 enabling works.

Test Pit TP14

Test Pit TP14 was located in the Pan House Garden c. 4m south-west of the bridge over the canal on Ollershaw Lane (AS003 above, AS024, 5.18, 5.19) (25.06m AOD at top). It was 1.4m (N-S) x 1.0m (E-W) in size by 1.0m deep.

The earliest deposit excavated was waterlogged black loose silt brick rubble (377), 0.15m deep. This was overlain by a hand-made red brick surface (376), laid on-edge in Stretcher bond. It extended for 0.75m before it discontinued. The bricks were 8 3/4" x 4" x 3" in size but vary slightly and would appear to have been seconds.

The brick surface was overlain by loose black silt rubble (375), 0.20m deep, loose black brown silt

rubble (374), 0.50m deep and black humic-silt topsoil with root infiltration (373), 0.12m deep.



5.18: Test Pit 14, north-west facing



5.19: Test Pit 14, north facing

Phased Interpretation

Phase 4: The Pan House Garden was the location of Pan House 1 that connected to Stove House 1 (the Link Block). The pan house was visible on early 20th-century photos and appears to be hipped roofed and facing north. If the plans of the other pan houses are followed this suggests that the pan was aligned north-south and the hurdle ditch would be running north-south either side. This would suggest that the brick surface was part of

the hurdle ditch on the western side of the stove and pan.

Phase 7: The overlying layers (373, 374, 375) are almost certainly part of the demolition of the Pan House in the 1980s (shortly before its acquisition by Vale Royal Borough).

Test Pit TP15

Test Pit TP15 was located within Pan House 3 adjacent to the southern elevation and the eastern jamb of doorway 6053 (AS003 above, AS025, 5.20, 5.21) (24.47m AOD at top). It was 0.5m (E-W) x 1.0m (N-S) and 1.2m deep.



5.20: Test Pit 15, west facing



5.21: Test Pit 15, north facing

The lowest layer encountered was a mixed black-grey clay-silt (383). It was overlain by mixed black-

brown compact silt that contained some rubble, pottery and clay tobacco pipe (382), 0.55m deep. Above this was loose mixed black-grey ash-clinker (381), 0.15m deep. This was the formation layer for a slate pad-stone (380) for the post of PH3 southern doorway (6053) and machine-cut red brick floor surface (379), laid on-side in Stretcher bond.

Phased Interpretation

Phase 1-3: The earliest deposit of black-grey clay-silt (383) was part of a general levelling layer across the site that corresponded to layer 361 in Trench 12. This probably related to either Symme's Field or the Red Lion Hotel (Phase 1-3).

Phase 5: The mixed black-brown silt layer (382) is associated with the establishment of Pan House 3. It is probable that black-grey ash clinker (381) and the brick floor surface (379) also relate Phase 5, but may be part of the 1970s rebuild of the front of the pan house (Phase 7).

Test Pit TP16

Test Pit TP16 was located immediately south of the southern stove wall (6060) of Pan 3 (AS003 above, AS025; 5.22, 5.23) (24.67m AOD at top). It was 0.65m (N-S) x 0.70m (E-W) in size and excavated to a depth of 0.70m.



5.22: Test Pit 16, initial excavation, east facing



5.23: Test Pit 16, after further excavation, east facing

The earliest deposit encountered was a hand-made red brick wall foundation (386), laid on-side and roughly bonded. The bricks were 8¾" x 4¼" x 3" in size. This covered the entirety of the base of the test pit. This was overlain by black-grey clinker-silt (385), 0.40m deep and black-grey mixed clinker-silt and rubble (384), 0.15m deep. Over the top the floor of PH3 was laid (379; see TP15 above).

Phased Interpretation

Phase 4: The brick wall foundation (386) appears to pre-date the establishment of Pan House 3 and almost certainly relates to the laying out of the Rhomboid-Shaped Building and the south-western of three Butter Pans.

Phase 5: Subsequent levelling layers and the main floor surface can be attributed to the establishment of Pan House 3.

Test Pit TP17

Test Pit TP17 was located in the south-western corner of Pan House 4 at the base of Post 6214 on its western side (Fig. AS003 above, AS025; 5.24, 5.25) (24.66m AOD at top). It was 0.50m (N-S) x 0.70m (E-W) in size and excavated to a depth of 1.2m.

The earliest deposit encountered was grey-black silt-clay containing fine ash and rubble (393), 0.15m in depth. This was overlain by black-brown sand-silt-ash (392), 0.28m deep, which formed the formation layer for wall foundation (391). This hand-made red brick wall foundation (391) in English bond, was corbelled at the base. The bricks were 8 ¼" x 4 ½" x 3" in size. It was aligned at an

angle to PH4, SSW-NNE, with a cross-wall perpendicular aligned WNW-ESE.



5.24: Test Pit 17, east facing



5.25: Test Pit 17, east facing

Overlying the wall foundation 391 was mixed black-brown sand-silt (390), 0.70m deep. Set into this layer was wall foundation 387 of hand-made red brick in English bond. The bricks were 8 ½" x 4 ¼" x 3" in size. The wall was corbelled at the base. It was the same as wall 6219 recorded above-

ground (see below). To the side was a machine-cut brick floor (388), laid on-side. The bricks were 9" x 4 ¼" x 3" in size. This was the same as brick drain 6261 in PH4 (see below). A solid grey concrete fill (389), 0.62m x 0.50m x 0.90m deep, encapsulated Post 6214 keeping it in place. This had been cut through floor 388.

Phased Interpretation

Phase 4: The earliest deposits of wall foundation 391 has an alignment contrary to the buildings above and relates closely to the walls of Brick Sump 6254 located c. 3m to the south-east suggesting they are part of a contemporary phase that pre-dates the building of Pan House 4. This appears to relate to a series of butter pans laid out in 1896-1900 and would have formed the western wall of one of these butter pans.

Phase 7: The remainder of the deposits above relate to the construction of Pan House 4 (Phase 7a). The only later element associated with the insertion of a wooden roof structure and Post 6214 (Phase 7b).

Test Pit TP18

Test Pit TP18 was located in the south-west corner of Pan House 3 within the western hurdles, adjacent to Post 6040 (at the southern side) and Post 6041 (at the western side) (AS003 above, AS025; 5.26, 5.27) (24.42m AOD at top). It was 0.50m (N-S) x 0.55m (E-W) and excavated to a depth of 0.60m.

The earliest deposit excavated in Test Pit 18 was waterlogged black-brown silt-clay with rubble inclusions (396). This was overlain by wooden sill beam (397), 0.08m in depth and at least 0.40m in length (width not excavated). It was bonded to, and formed the base of Post 6041 above. Two loose hand-made red bricks were set against the end of the sill beam. In contrast Post 6040 was set on a grey concrete pad (395). The area around the base of these posts was filled with loose red-grey brown, sand-silt rubble layer (394), 0.50m deep. Within this material were the broken remains of two yellow-brown ceramic drainage pipes, 0.22m in diameter and 20mm thick. The first ceramic drain (398) ran east-west from under Wall 6009 and Ollershaw Lane into the ditch of the western

hurdles 6057. It was broken adjacent to post 6041. The second ceramic drain (399) ran north-south from Ditch 6057 and is presumed to have continued south towards brick sump (6422).



5.26: Test Pit 18, west facing



5.27: Test Pit 18, west facing, detail of the base of the post

Phased Interpretation

Phase 5: The earliest deposits in TP18 were the formation layer 396 was used to establish the base for Sill-beam 397, connected to Post 6041. This suggests that these elements of the structure relate to the construction of Pan House 3. The ceramic drains (398, 399) may also relate to this earliest phase of construction as they would have been associated with drainage for the western hurdles.

Phase 7: The inserted Concrete Pad 395 and Post 6040 almost certainly relate to changes made to the structure of Pan House 3 in the 1960s or 1970s that saw the extension of the roof structure to the south. It is likely that a new post was dug through the drain of the western hurdles to support the extended roof.

Test Pit TP19

Test Pit 19 was located on the eastern side of Pan House 4 adjacent to the northernmost brick pier (6281) of Stove Wall 6279/ 6283 (AS003 above, AS026; 5.28, 5.29) (24.86m AOD at top). It was 0.45m (N-S) x 0.55m (E-W) and 0.75m deep. The earliest deposit excavated was mixed firm mid-grey silt-sand (403), +0.1m deep (not fully excavated). This was overlain by firm red sand-silt layer (402), 0.35m deep. This layer was typical of heat oxidised sand layers and the formation for the ditch of the eastern hurdles.



5.28: Test Pit 19, west facing

Two walls (400, 401) were built through this layer. Wall 400 was of hand-made red brick in the English bond and orientated north-south. The bricks were 9" x 4 1/2" x 3" in size. Wall 401 abutted Wall 400 as a perpendicular cross-wall running east-west. It was made of hand-made red brick in the English bond (brick size 9" x 4 1/2" x 3"). These walls supported the brick floor surface of the eastern

hurdle drain (6260, see below), the earliest phase of the Stove Wall (6279, see below) and the inserted brick pier above (6281).



5.29: Test Pit 19, north facing

Phased Interpretation

Phase 7: The earliest layers are almost certainly associated with construction layers for the furnace of Pan House 4. The use of sterile sand layers may suggest that a 'caulk' layer was put in place prior to constructing the stove. A caulk was a mixed loam layer designed to withstand the heat of furnaces/ stoves during firing and enable the contraction and expansion of the soil under cooling and heating. Typically clay would crack and cause collapse of foundations. The use of a loam layer allowed for expansion and contraction. The brick walls are part of the original Phase 7a construction of Pan House 4.

Test Pit TP20

Test Pit TP20 was located in the eastern part of Pan House 4 adjacent to Sill Wall 6245 (AS003 above, AS026; 5.30) (24.67m AOD at top). It was c. 2m north-east of Test Pit TP19. It was 0.6m (N-S) x 0.5m (E-W) and excavated to a depth of 0.90m.



5.30: Test Pit 20, north facing

The earliest excavated deposit was a dark-grey layer of mixed silt and mortar with small quantities of brick rubble (408, not fully excavated). Overlying this was a compact grey-brown silt-sand with very occasional brick rubble (407), 0.45m deep. Sill Wall 6245 had been rebuilt on hand-made red brick wall foundations (405) in English bond. This consisted of five courses of corbelled brickwork (0.35m deep, brick size 8 ½" x 4 ¼" x 3"). This in turn was overlain by compact red silt-sand (406), 0.35m deep. On this the floor surface (409, same as 6260) of the eastern ditch was built. This was built in machine-cut red brick, laid on-side in Stretcher bond (brick size 9" x 4 ½" x 3"). It sloped east to west to the centre of the drain.

Phased Interpretation

Phase 6: The earliest deposit (408) may correspond to the demolition of the Rhomboid building between the 1930s and 1950s prior to the construction of Pan House 4.

Phase 7: The layer above (407) this is very similar to those located in Test Pit TP19 (403) and is probably equivalent. It can be assumed to be part of an episode of construction of Pan House 4 in the 1950s (Phase 7a) that included the construction of wall foundation 405, red silt-sand layer 406 and the floor of the ditch (409/ 6260). The Sill Wall (6245) has clearly been re-built after collapse probably in Phase 7b or 8.

Test Pit TP21

Test Pit TP21 was excavated outside the area of the Scheduled Monument as part of an infiltration test, designed to establish the permeability of the ground in advance of the excavation of Soakaways 3 and 4. It was located at the south-eastern edge of the site, on the edge of what is now the car park (AS003 above, AS027; 5.31, 5.32). It was machine excavated with a toothless ditching bucket. It was orientated NW-SE and 2.2m (NW-SE) x 0.6m (SW-NE) and 2.05m deep (22.78m AOD at top).

The earliest deposit was natural yellow-brown clay, with grey clay inclusions (414), excavated to a depth of +0.50m. It was overlain by a further natural layer of yellow-brown silt clay that appeared to be the upper natural substrate (413), 0.90m deep. This resulted in an impermeable layer

over which was a discontinuous granular gravel layer that had iron-panning (412), 0.10m deep. This was located at the north-east end of the test pit. It was rapidly inundated with water. It was overlain by mixed black-brown silt rubble (411), 0.35m deep. The former car park surface was a grey gravel layer (410), 0.10m deep.



5.31: Test Pit 21, partially excavated and inundated with water, west facing



5.32: Test Pit 21, during excavation at base, north-west facing

Phased Interpretation

Phase 1: The earliest deposits in the test pit (413, 414) were associated with natural layers. The gravel layer 412 possibly represents a natural unrecorded spring. The topography of the site

gently sloped north-west to south-east and the majority of the site would appear to drain in this direction. The adjacent field to the east of the site is waterlogged along the ditch in the field boundary. The layers are associated with pre-salt works activity of Symme's Field.

Phase 3: The subsequent overlying layer (411) is associated with the demolition and levelling of the Alliance Works.

Phase 9: The gravel is the much later formation of the car park in 2009.

Test Pit 22

Test Pit TP22 was located to the south-east of Pan House 5 adjacent to the oil tank bases (now the temporary location of Pan 5). It was excavated as part of an infiltration test, designed to establish the permeability of the ground in advance of the excavation of Soakaway 2. It was located c. 2m south of the oil tank bases, orientated WSW-ENE and was machine excavated with a toothless ditching bucket (AS003 above, AS027; 5.33, 5.34, 5.35).



5.33: Test Pit 22, post-excitation, west facing

It was 3.5m (WSW-ENE) x 0.6m (NNW-SSE) and 2.05m deep (23.97m AOD at top). The earliest deposit located within the test pit was yellow-grey clay with streaky grey clay inclusions (420), at least 0.5m deep. Above this was a friable, organic, black-grey peaty clay layer (419), 0.50m deep. It was sealed by compact hard red clay and grey mudstone (418), 0.55m deep. Over this layer was yellow-red silt clay with grey clay inclusions (416), 0.45m deep. Excavated into this layer was a rectangular wall foundation cut, orientated NW-SE, filled with loose brown rubble (417), 0.28m wide and 0.45m long. The test pit was covered in

humic black-brown topsoil material mixed with rubble (415), 0.20m deep.



5.34: Test Pit 22, west facing

Phased Interpretation

Phase 1: The earliest deposit on the site appeared to be natural. The yellow-grey clay layer (420) correlated with the natural substrate.

Phase 3: It is unclear whether the layers above this of friable organic black-grey peaty clay (419) and red clay and grey mudstone (418) are re-deposited or part of the natural material. Layer 418 corresponds directly with layer 164 of Test Pit 1 (see above) interpreted as re-deposited natural. The location of the test pit corresponds with a series of three open pans of the Alliance Works. These were excavated in Trench 13 and 14 and contained a series of east-west walls of the stove houses at a depth of c. 1.4m. It therefore seems probable that these deposits correspond to the Alliance Works (Phase 3).

Phase 7: The wall foundation 417 does not correspond to any features shown on maps and may relate to part of Pan House 5.



5.35: Test Pit 22, south-west facing

Test Pit TP23

Test Pit TP23 was located in the Pan House Garden, adjacent and to the east of Stove House 2. It was designed to investigate the remains within Pan House 1 and to assess the impact of proposed Soakaway 1 and the survival of the tunnel beside Stove House 2 (AS003 above, AS026; 5.36, 5.37) (24.93m AOD at top). It was 0.9m (N-S) x 0.7m (E-W) and excavated to a depth of 1.0m.



5.36: Test Pit 23, south facing



5.37: Test Pit 23, south facing

The earliest deposit excavated was loose dark-brown sand-silt layer (426). Wall foundation 422, orientated north-south, and bonded perpendicular to this was wall foundation 423, orientated east-west were built over this layer. They were made in hand-made red brick in English bond and survived to a height of three courses. This was overlain by a layer of red silt-sand (425), 0.15m deep. This was overlain by firm grey-brown clay silt (424), 0.30m deep and loose and mixed sand-silt and hand-made brick rubble, demolition layer (421), 0.55m deep.

Phased Interpretation

Phase 4: The wall foundations (422, 423) are almost certainly associated with Pan House 1. Similar wall foundations have been found under the eastern hurdle ditches of Pan House 4 and it is suggested that this was part of the original eastern ditch structure. The layer above of red silt-sand (425) was similar to material associated with Pan House 4 ditches.

Phase 8: The final deposit (421) related to the demolition of the pan house in the 1980s.

Test Pit TP24

Test Pit TP24 was located in the Pan House Garden and excavated again to assess the extent of the tunnel adjacent to Stove House 2 (AS003 above, AS026; 5.38) (25.05m AOD at top). It was located in the corner between Stove House 2 and the Link Block. It was 0.9m (E-W) x 0.5m (N-S) and 0.5m deep.



5.38: Test Pit 24, south facing

The tunnel was visible south of the northern Link Block wall running north-south from the area adjacent to Chimney 2. It appeared to have originally continued to the north into the area of the Pan Garden. Within the test pit on the southern side and beneath the northern wall of the Link Block was a void. A large ferrous metal beam (429), 0.25m wide supported the link block wall above the void. The link block wall was made in two parts a hand-made red brick wall in rough bond (427) that appeared to be the jamb of a blocked doorway that had been subsequently infilled with hand-made red brick in a rough bond (428). The area north of the wall had been back-filled with loose black mixed sand-silt rubble (430) to a depth of at least 0.50m.

Phased Interpretation

Phase 4: The excavated remains suggest that the tunnel originally continued to the north from the Link Block. The ferrous metal beam suggests there was a below-ground opening here. The dating of the tunnel is currently unclear, it may relate to the Red Lion Hotel (Phase 2) but is most likely to be associated with the establishment of the Lion Salt Works (Phase 4), when the Link Block (otherwise known as Stove House 1), Pan House 1 (Pan House Garden), Stove House 2 and Pan House 2 (open Pan 2) were built.

Phase 8: The rubble layer (430) is likely to relate to the final demolition of Pan House 1 in the 1980s.

Test Pit TP25

Test Pit TP25 was excavated in investigate the foundations of Chimney 3 on its southern side. It was 0.8m x 0.8m, and excavated to a depth of 0.95m below current ground level (23.09m AOD;

AS003 above, AS028; 5.39). The stepped machine pressed brick footings in English Garden Wall bond (450), extended to the full depth of the trench. The remainder of the trench was filled with a mixed black silt layer, with some brick rubble (447), a least 1.2m deep. Two ferrous metal pipes (448, 449) were located running east-west within the trench, parallel to the base of the chimney.

Phased Interpretation

Phase 5-7: Chimney 3 dates to c. 1900 and was built contemporary with the fishery salt pans. The infill material of black clinker silt could easily be part of a contemporary infilling or date to any time from the 20th century. The ferrous metal pipes are of unknown function, but simply be water pipes.



5.39: Test Pit 25, adjacent to Chimney 3, north-east facing

Test Pit TP26

Test Pit TP26 was excavated within Stove House 3 at the northeast corner between flues 6134 and 6135. It was 0.9m x 0.8m and excavated to a depth of 0.8m (25.77m AOD; AS003 above, AS028; 5.40).

A mixed clinker slag ash material (452) was located at the base of the trench. This formed a concreted formation level for the base of runs between flues 6134, 6135. The flue 6134 was built on a series of rough hand-made brick footings with lime/ salt

mortar (453). The remainder of the test pit was infilled with a layer of white accumulated salt between the salt run (6150).



5.40: Test Pit 26, south-east facing

Phased Interpretation

Phase 5-7: The concreted material (452) appears to be a construction feature of the stove houses. The four walls of the stove house would be built to a height of c. 2m and would then be in-filled with a mass of mixed rubble, clinker ash and salt waste, crucially mixed with a quantity of cement to form a weak mass concrete block. Henry Thompson discusses stock-piling material on site for this purpose during the building of Stove House 5 (see Volume IV for details). A similar construction detail is seen in Stove House 4 (discussed below, section 7). The flues were built with a series of footings (e.g. 453) that were partially concreted into this mix and then built up from this level. As the flues were used for drying the salt blocks⁴⁵ waste salt accumulated between the flues and formed a working floor. The salt (6150) continued to accumulate until the very end of the works.

Test Pit TP27

Test Pit TP27 was excavated to investigate the foundations of the north wall of Stove House 1 (Link Block) on its northern side. It was 0.5m x 0.45m, and excavated to a depth of 0.4m below current ground level (AS003 above, AS028; 5.41, 5.42). The test pit was filled by compact red-brown sand at its base (453). This was overlain by loose brown sand-silt (454). The remains of the northern wall of SH1 (6505, see below) consisted of machine pressed red brick in the English Garden Wall bond. It was supported by a ferrous metal

beam (455) that ran east-west under the wall level with the ground.



5.41: Test Pit 27 and 28, North Wall of SH1, west facing



5.42: Test pit 27, south facing

Phased Interpretation

Phase 4: The northern wall of Stove House 1 originally dated to c. 1894. It appears to have been rebuilt several times contemporary with alteration to the flue layout internally within the Stove House (see below). The ferrous metal beam under the wall appears to be part of the c. 1894, Phase 5 wall. The plate allowed a series of flues to pass under the wall from the now demolished Pan House 1 (located in the Pan Garden).

Test Pit TP28

Test Pit TP28 was excavated to investigate the foundations of the north wall of Stove House 1 (Link Block) on its northern side. It was 0.5m x 0.35m, and excavated to a depth of 0.4m below current ground level (AS003 above, AS028; 5.41, 5.43). The remains of the northern wall of Stove House 1 (6505, see below) were supported on shallow footings (456). These consisted of three courses of machine pressed red brick in English Garden Wall bond sat on top of a thin layer of

⁴⁵ See Fielding 2000, 51-60 for Tom Lightfoot's descriptions

concrete. The wall ran east-west. Running north-south, perpendicular and abutting this wall were the remains of a further machine pressed red brick wall in English Garden Wall bond (457). It survived to a height of three courses but its foundations were not located. The remainder of the test pit was filled with loose brown sand-silt (458).



5.43: Test Pit 28, south facing

Phased Interpretation

Phase 5-7: The wall of Stove House 1 dates to c. 1894. This part of the wall appears to be original and unaltered. The perpendicular wall (457) forms part of a stove wall of the former remains of Pan House 1.

Test Pit TP29

Test Pit TP29 was excavated to investigate the foundations of Chimney 2 on its western side. It was 2.0m (E-W) x 0.5m (N-S) in size and excavated to a depth of c. 0.75m below current ground level (AS003 above, BS101; 5.44). The base of the chimney (6430, see below) was supported on a corbel of three steps (459). These consisted of three courses of machine pressed red brick. From here it was carried up a further 0.75m in height. The area was back-filled with compact black-brown clinker ash silt material (460). Overlying this was a deep pile of salt residue (461) to a depth of c. 0.6m piled against the western face of Chimney 2.



5.44: Test Pit 29, west side of Chimney 2, west facing

Phased Interpretation

Phase 5: Chimney 2 dates to 1900-1920. The excavation of the test pit was unable to provide further evidence for the chronology of the construction of the chimney but supports an early 20th-century date.

Phase 7: The salt residues accumulated against the western face of Chimney 2 appear to have been derived from cutting and crushing machines housed in the Packing Area above. Waste material would have been swept or deposited below the floorboards of the Packing Area.

6. 2012 WATCHING BRIEF – PHASE 1B, ENABLING WORKS

By Chris Hewitson

Introduction

During April 2012 a watching brief was undertaken on the establishment of a secure fence perimeter around the site. The majority of the fencing panels were erected and secured using scaffold and concrete blocks in order to prevent below-ground disturbance. In two locations there was a requirement to excavate 0.3m x 0.3m, 0.6m deep concrete bases in order to secure posts, as there was insufficient space to safely use blocks and scaffold. This was at the entrance to the compound where a set of gate posts were established (GP1 and GP2) and along the line of Ollershaw Lane immediately adjacent to Stove House 3 and the Pan Garden (FP1 to FP10). These are briefly described below. Full details are available in the archive.

Gate Post 1 and 2

The gate posts were located c. 4m south-east of the south-eastern corner of the Red Lion Inn. They were spaced c. 4m apart, GP1 to the north and GP2 to the south (see AS003 above; 6.1), either side of the entrance road, adjacent to the kerb. Each post had an excavated footing of 0.3m x 0.3m x 0.6m in depth (23.59m AOD and 23.72m AOD respectively at the top). The earliest deposit in both trenches was a mixed red-brown silt material (GP1, 329; GP2, 332. This was overlain by 0.45m of grey gravel (GP1 328; GP2 331), topped by 0.15m of tarmac (GP1 327; GP2 330).

Phased Interpretation

Phase 5: The earliest deposit is similar to red-brown silt layer (306), which was excavated in Test Pit 7 to the north and adjacent to the Red Lion Inn. This was suggested to be associated with the extension of the rear wing to the Red Lion Inn (see above).

Phase 8: The remainder of the layers are associated with the laying out of the new road in the 1990s.



6.1: Gate Post 2, south facing

Fence Posts FP1 to FP10

The fence posts were located in a line along Ollershaw Lane, 0.75-1.0m to the west of the Link Block and Stove House 3 wall, 2.0-2.2m apart. FP1 was the most northerly and FP10 the southernmost (see AS003 above; 6.2, 6.3). The ground sloped markedly from the bridge over the canal in the north to the entrance to the Salt Works at the south by as much as 1.0m (26.81m AOD to 25.99m AOD). Each fence post was approximately 0.3m x 0.3m x 0.6m deep.



6.2: Fence Posts 1-10, north facing

The results are tabulated below;

Context	Test Pit	Brief Description
333	FP1	Brown sand silt rubble
334	FP2	Tarmac
335	FP2	Brown sand silt rubble
336	FP3	Tarmac

Context	Test Pit	Brief Description
337	FP3	Grey roadstone gravel
338	FP3	Red brown sand silt gravel
339	FP4	Tarmac
340	FP4	Grey roadstone gravel
341	FP4	Red brown sand silt gravel
342	FP5	Brown humic silt
343	FP5	Red brown sand silt
344	FP6	Brown humic silt
345	FP6	Red brown sand silt gravel
346	FP7	Brown black humic topsoil
347	FP7	Grey roadstone gravel
348	FP7	Brown black silt clinker
349	FP8	Black brown humic silt
350	FP8	Black brown clinker silt
351	FP9	Black brown humic silt
352	FP9	Black brown silt clinker
353	FP10	Black brown humic silt
354	FP10	Black brown silt clinker
355	FP10	Yellow brown silt sand

Table 6.1: Fence Posts excavated along Ollershaw Lane, context descriptions

Overall a series of distinct layers could be identified sloping north to south throughout the fence post pits. At the base of the slope was yellow brown silt (355). This was overlain by black-brown clinker silt, 0.55m deep (354, 352, 350, 348). Further up the slope this gave way to red-brown sand-silt gravel, 0.35m deep (345, 343, 341, 338). This was overlain by black-brown humic silt (353, 351, 349, 346, 344, 342) and brown sand-silt rubble (335, 333) at the top of the slope. Grey gravel (340, 337) and tarmac (339, 336, 334), were visible at the very top of the slope as the road became narrow and extended into the kerbside.

Phased Interpretation

Phase 4-5: The layers suggest that distinct dumps of material have built up over time adjacent to the roadway. The earliest deposit is similar to other layers of yellow-brown silt (355) that may be associated with re-deposited natural. During the construction of the Link Block (Stove House 2) and Stove House 3 material was imported. This is probably visible as the black-brown clinker silt (354, 352, 350, 348) and the red-brown sand-silt gravel (345, 343, 341, 338) that are visible elsewhere as imported layers during the construction of the Lion Salt Works.

Phase 6-7: The upper layers are almost certainly associated with the repeated raising of the height of the canal bridge (e.g. black-brown humic silt, 353, 351, 349, 346, 344, 342; brown sand-silt rubble, 335, 333) throughout the 20th century.



6.3: Fence Post 9, east facing

7. 2012-2014 WATCHING BRIEF ON THE HISTORIC CORE

By Chris Hewitson

During the main Phase 2 works a series of watching briefs were conducted in the Historic Core of the buildings in advance of the excavation of structural foundations. The excavations were conducted between October 2012 and June 2014.

7.1 Trench HC1: Wall Foundation Pan House 4/ Stove House 4

The restoration of Pan and Stove House 4 involved the rebuilding of east-west internal wall 6268. In order to do this a new concrete foundation and mass concrete retaining wall was to be constructed in order to stabilise the foundations in this location. This required the existing partially collapsed wall 6268 to be dismantled to foundation level and excavation of the trench to accommodate the construction of the new concrete foundation. The trench consisted of two larger areas either side of the pan 1.9m (north-south) by 3.5m (east-west) on the west side and 1.9m (north-south) by 2.5m (east-west) on the east side, both excavated to a depth of 23.65m AOD. Between these two was a narrower strip 1.0m wide excavated to a depth of 25.0m AOD (see AS047, AS048).

The earliest deposit encountered was a mixed rubble and grey cement hard-core material (3002, see 7.1). This was overlain by clean sterile grey sand-silt, 0.40m deep (3001) and a layer of crushed red brick waste (3007), 0.15m deep that created a formation layer for the construction of Pan and Stove House 4. Stove House 4 was constructed of a thick conglomerate material of brick, ash, waste salt, and clinker concreted together with lime/ cement (3005, 7.1). The layer was c. 2m deep and formed the bulk of the interior of Stove House 4 and the formation level for the Stove House 4 flues (6390-6396). This layer continued to the south, to form the main bulk of the stove of Pan House 4.

Wall 6268 was built of machine pressed red brick in English Garden Wall bond. At its base it was actually constructed in two, a western and an

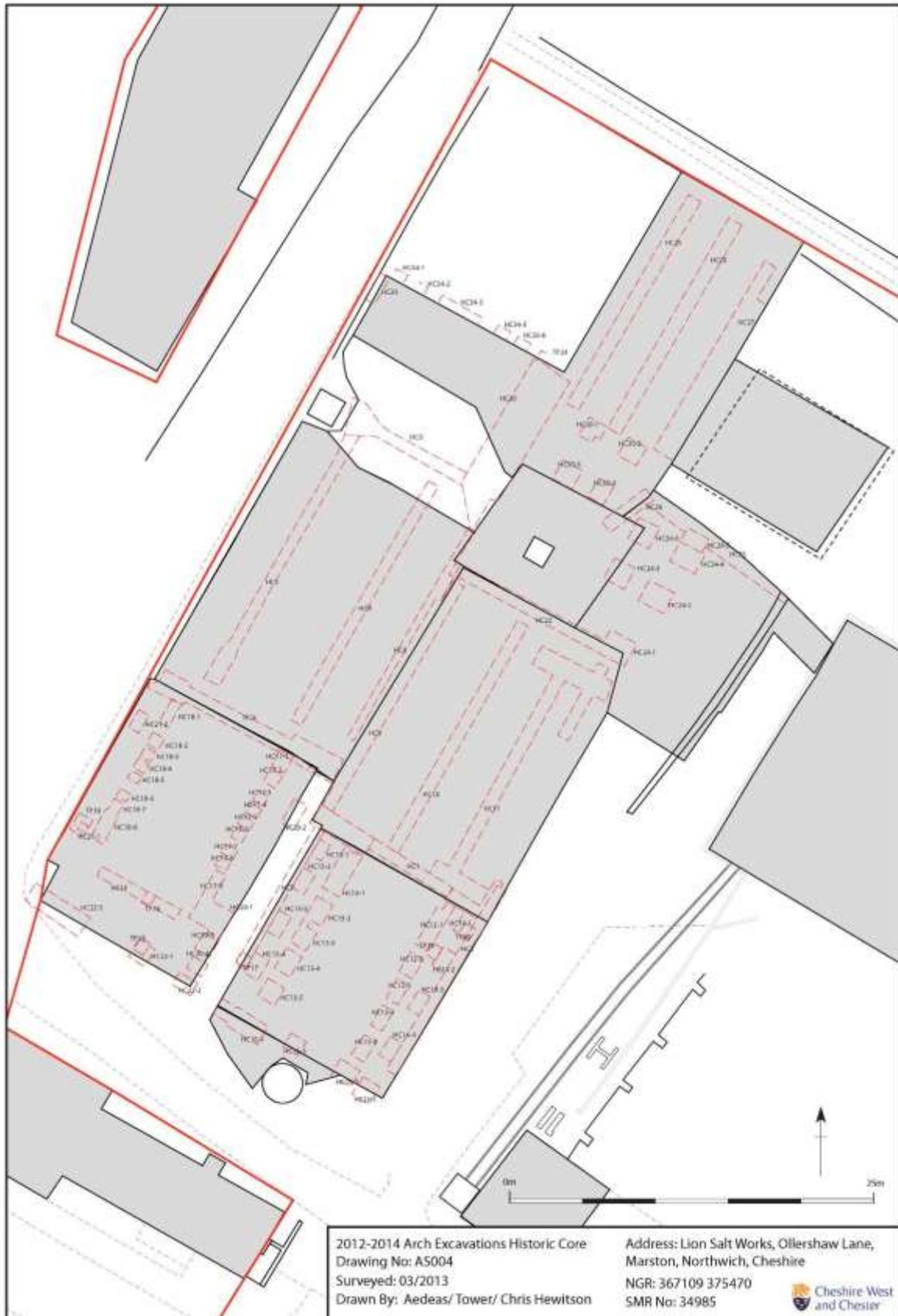
eastern part. On the western side its foundations were three courses wide, extended to a depth of 23.80m AOD and were stepped at the base (7.2). On the eastern side it was of similar construction but set slightly to the north (7.3). The ditch floor surfaces on either side (6221, 6260), abutted the wall. The sill beams of hurdle frames 6276 and 6278 overlay the ditch floor and were both keyed in to wall 6268 at its base (see 7.4). The wall continued up from the foundation, but the weight of conglomerate material 3005 had caused the wall to bulge dramatically on either side. At the very western end the northern exterior of the wall had been filled with loose brown silt material (3008).



7.1: Conglomerate build 3005 of Stove House 4, north-west facing



7.2: Foundation of wall 6268, on western side, south facing





7.3: Foundation of wall 6268 on eastern side, west facing



7.4: Sill beam of hurdle 6278, with mortice, inserted in wall foundation 6268

The central area of wall 6268 was a void to allow hot air from the stove to pass through a series of four flues to the flues within Stove House 4 (7.5). These flues were constructed directly on top of conglomerate layer 3005. They consisted of the side walls of the stove (western 6282, eastern 6283), two further walls on the exterior (3011, 3012) that formed a dead draft at the sides of the stove and three central rib walls one course wide (6284, 6285, 6286). From here they passed under the main body of wall 6268 via four openings. The openings had a lintel above formed by a series of four I-beams (3008) on top of which were two ferrous metal plate (3009, see Plate 7.6, 7.7). Wall

6268 continued up from the lower foundations and was built on top of lintel 3009 originally. By 2012 the wall had entirely collapsed. The rib walls and I-beams had decayed and caused wall 6268 to buckle and collapse.



7.5: Four flues at rear of Pan 4, south-east facing



7.6: Ferrous metal plate and I-beam lintels, east facing

The four flues (formed by walls 3011, 3012, 6284, 6285, 6286) passed to an end flue (6398) that ran along the southern end of Stove House 4, located below the floor level. The northern side of this end flue was formed of machine pressed yellow bricks in English bond (3006; 7.8), which had partially collapsed at the western end. There was some indication of intermediate walls and a more complex structure to this end flue. No trace of this

could be seen during excavation and it is likely that these walls were temporary or deigned to support the flue walls above. The end flue was covered by a series of ferrous metal plates (6407, see Volume IV).



7.7: Ferrous I-beam lintels and plates from PH4/SH4 wall



7.8: Interior flue wall 3006, north-east facing

Phased Interpretation

Phase 7a: The entirety of the work undertaken during this element of the watching brief relates to Phase 7a construction of Pan and Stove House 4. It reveals that a fundamental flaw in the design of the stove houses resulted in their collapse. Firstly the use of poorly coagulated material designed to mimic mass concrete but in fact constructed of ash, clinker, rubble and salt waste created

pressure on the external walls of the stove house causing them to bulge. Secondly, ferrous metal used as lintels for flues in the design of the partition wall 6268 of Pan/ Stove House 4 corroded due to the effect of salt impregnation. These two causes resulted in the walls buckling and eventually collapsing. The use of ferrous metal I-beams (6374, 6375) in the south-east corner of Stove House 4 was a rudimentary attempt at preventing collapse. The collapse witnessed in Pan and Stove House 4, has also occurred in Pan and Stove Houses 3 and 5.

7.2 Trench HC2: Strip Foundation Pan House 4 (east)

A strip foundation was excavated along the eastern side of Pan House 4 beneath the dismantled remains of wall 6245. It extended to the north along the footing of wall 6301. It was 15.2m long (north-south) and 0.8m wide (east-west), and excavated to an approximate depth of 0.95m below ground level (23.74m AOD; AS047, AS050).

The earliest deposit encountered in the trench was a mixed rubble and grey cement hard-core material (3002) that ran the entire length of the trench at its base. Set in to hard-core layer 3002 were the remains of a foundation wall of machine pressed red brick (3003; 7.9) that ran east-west. It was located at the very southern end of the trench, and was only visible for 0.8m. Perpendicular to this wall and keyed in to it, was a foundation wall of machine pressed red brick that ran north-south (3004; 7.9, 7.10). It was 5.5m long, 3 courses wide and survived to a height of 7 courses high. It was built in Stretcher bond with lime mortar. It was partially removed during excavation of the foundation trench.

Overlying the walls were a clean sterile grey sand-silt, 0.40m deep (3001). At the northern end of the trench was a layer of crushed red brick waste (3007), 0.15m deep, that extended for 8m, north-south, along the trench. At the southern end of the trench a dirty mixed black brown silt rubble layer (3000) overlay the trench. Within Stove House 4 at the northern end of the trench, layer 3007 was overlain by a thick conglomerate material of brick, ash, waste salt, and clinker concreted together

with lime/ cement (3005, see 7.9). The layer was c. 2m deep and formed the bulk of the interior of Stove House 4 and the formation level for the Stove House 4 flues (6390-6396).



7.9: Wall 3003 and 3004, south facing

Phased Interpretation

Phase 4: Foundation walls 3003 and 3004 form part of the southern pair of Butter Pans, upstanding remains of which are located to the east, adjacent to the Nodding Donkey. Remains of the northern pair of fishery pans were revealed in the northern end of Trench 2 of the evaluation (see Section 4 above). Layer 3002 appears to have acted as an overall hardcore level for the site at this time. It was also encountered in Test Pit TP20 (408).

Phase 7a: The demolition of the Fishery pans was followed by the construction of Pan and Stove House 4 complex. Layers 3001 and 3007 were laid down as part of the construction process. These layers were encountered in Test Pits TP19 (403, 402) and 20 (407, 406). The overlying concreted hardcore layer 3005 was typical of the construction of Stove Houses, (discussed in detail above, Test Pit TP26).



7.10: Wall 3003, north facing

7.3 Trench HC3: Footings on Eastern Side Stove House 3

Two shallow excavations were conducted in Stove House 3 along the eastern wall in order to provide concrete footings for brick piers where these had decayed (see AS004 above, AS032, AS043). The pits were adjacent to the first and second pier from the southern end of wall 6120. They were each 1.1-1.2m (north-south) and 0.8m (east-west), excavated to a depth of 0.60m (25.79m AOD). The pits were joined and extended to form a shallow trench along the western side of wall 6120, 0.8m wide (east-west), excavated to a depth of 0.60m (25.79m AOD, see 7.11, 7.12, 7.13).

They were excavated through a loose brown brick rubble silt material (3013) filling Flue 6133. These revealed the lower footings of wall 6120 had partially decayed, in the location of where brickwork of Flue 6133 would have butted up against the wall.



7.11: Trench HC3, through Flue 6133, south-east facing



7.12: HC03, Footings on the eastern side of Stove House 3, north facing



7.13: HC03, Footings on the eastern side of Stove House 3, south facing

Phased Interpretation

Phase 5-7: Wall 6120 dated to the beginning of Phase 5 and c. 1900 as part of the original construction of Stove House 3. The decay on the walls can be attributed to the presence of a flue along the side of the wall. Salt infiltration into the brickwork had caused it to decay and shatter.

Phase 8: The brick rubble infill (3007) of Flue 6133 had begun to occur by the late 1980s and most of this material can be attributed to this period of the works.

7.4 Trench HC4: Wall Foundation Pan House 3/ Stove House 3

The restoration of Pan and Stove House 3 involved the rebuilding of east-west internal wall 6026. In order to do this a new concrete foundation and mass concrete retaining wall was to be constructed in order to stabilise the foundations in this location. The existing wall 6026 was dismantled to foundation level and a trench excavated to accommodate the construction of the foundation. The trench was 14.5m long (east-west). It consisted of two larger areas either side of the pan 2.0m (north-south) by 2.5m (east-west) on the west side and 1.9m (north-south) by 4.2m (east-west) on the east side, both excavated to a depth of 23.75m AOD. Between these two areas was a narrower strip 1.0m wide excavated to a depth of 25.0m AOD (see AS004 above, AS043, AS046; 7.14, 7.15, 7.16, 7.17, 7.18, 7.19).



7.14: HC04, Wall Foundation Pan House 3/ Stove House 3, central strip, south-east facing



7.15: HC04, Wall Foundation Pan House 3/ Stove House 3, central strip, north-east facing



7.16: HC04, Wall Foundation Pan House 3/ Stove House 3, east strip, north-east facing



7.17: HC04, Wall Foundation Pan House 3/ Stove House 3, central strip, east facing



7.18: HC04, Wall Foundation Pan House 3/ Stove House 3, west strip, west facing



7.19: HC04, Wall Foundation Pan House 3/ Stove House 3, central strip, south-west facing



7.20: HC04, Wall Foundation Pan House 3/ Stove House 3, flue runs, west facing



7.21: HC04, Wall Foundation Pan House 3/ Stove House 3, flue runs, south-east facing

The earliest deposits in the excavation were very soft grey brown silt layer (3042) at the base of western side and an equivalent deposit of loose red sand silt (3043) at the base of eastern side. These were overlain by a thick layer of red sandstone conglomerate (3044) that ran under the base of the flues running under Pan 3. This was c. 25.10m AOD at the top and formed the base for the flue runs that passed from Pan House 3 into Stove House 3.

A series of six flues ran north-south under Pan 3, and passed to the north under the wall of Stove House 3 6026 (see 7.20, 7.21). These were formed from a series of seven flue walls (6075-6081) that survived to full height under the pan. These survived to the north of the pan as poorly formed foundations of machine pressed red brick, two skins thick. The flues continued north under Stove House 3 wall 6026 but stop-ended shortly to the north. Between the outer flue walls (6075, 6081) and the outer stove wall (6056, 6059) were the dead drafts. These were filled by black clinker ash material (3040, 3041). The flues themselves were

filled by grey ash and silt material with loose red sandstone rubble (3032-3037). North of Pan 3 the upper part of the flues had collapsed and were covered by here the flues had collapsed the crushed red sandstone and brick with silt layer (3038) and a yellow white clay layer (3039). Originally the flues between Pan 3 and Stove House 3 wall 6026 were covered by a series of ferrous metal plates (3015, see 7.22, 7.23, 7.24), 6.5m (east-west) by 2.2m (north-south). These had corroded badly and survived in a very fragmentary state. The clay (3039) appeared to be a puddling material designed to seal the plates to prevent the loss of flue gases. Adjacent to Pan 3, a low, single-skin, narrow strip wall (3016) was built-up to the base of the pan to seal any gaps where flue gases could potentially escape. The collapsed plates were covered with loose layer of mixed-brown, silt-sand rubble and degraded ferrous metal (3014).



7.22: HC04, Wall Foundation Pan House 3/ Stove House 3, collapsed metal sheets over flue runs, east facing



7.23: HC04, Wall Foundation Pan House 3/ Stove House 3, collapsed metal sheets over flue runs, south-east facing



7.24: HC04, Wall Foundation Pan House 3/ Stove House 3, coter patch within metal sheets

North of Stove House 3 wall 6026, the conglomerate red sandstone material (3044) was covered by the flues of Stove House 3. At the southern end, a single below-ground flue ran east-west (6140; c. 1m in width, see CWAC 2012-006; 7.25, 7.26, 7.27), capped by a series of eighteen corroded rectangular ferrous metal plates, with smaller ridged rectangular ferrous metal spacers (6148). These have collapsed and form an uneven floor level. Like the flue plates to the south, heat-affected yellow clay (3045) appears to have acted as a seal to prevent flue gases escaping.



7.25: HC04, Wall Foundation Pan House 3/ Stove House 3, flue at south end of SH3, west facing

Extending north from this east-west flue (6140) were a series of seven north-south flues (6133-6139, see CWAC 2012-006 for details, e.g. 7.28) of Stove House 3 constructed of machine-pressed red brick. Excavation has shown that at the southern end, these flues were stop ended above the ground, but were open, with a metal bar across the flues below-ground as they passed into cross flue 6140. Flue 6140, continued around to the west to join flue 6139. It was filled with black

clinker ash and salt waste material. At the eastern end flue 6140, turned to the north as 6133. This was filled by black clinker ash material. Between each flue was a ditch containing layers of accumulated and hardened salt (6149-6154), which survive to over 1m in depth below the current floor level.



7.26: HC04, Wall Foundation Pan House 3/ Stove House 3, flue at south end of SH3, west facing



7.27: HC04, Wall Foundation Pan House 3/ Stove House 3, flue at south end of SH3, east facing

Stove House 3 southern wall 6026 was built on a substantial foundation wall three courses wide. This was visible on the western and eastern sides to a depth of c. 23.75m AOD. It extended for c. 2.3m on the western side and c. 4.8m on the

eastern side. In the centre the flue walls (6133-6139) carried on through under the wall. A series of three pairs of ferrous metal joists with ferrous metal plates on top (3017, 3018, 3019) were built on top of the flues (7.29). This formed the base for Stove House 3 wall 6026. The metal plates had been affected by salt corrosion and collapsed.



7.28: HC04, Wall Foundation Pan House 3/ Stove House 3, flue at south end of SH3, north facing



7.29: HC04, Wall Foundation Pan House 3/ Stove House 3, plates under wall, west facing

Phased Interpretation

Phase 5-7: The excavations have shown that the flues passed under Stove House 3 wall in a manner similar to those in Stove House 4. The effect of salt corrosion on the ferrous metal plates within the wall had caused the centre of the wall to subside and this may have occurred before in the past. It is therefore unclear if this arrangement dates back to the late-1890s or has been rebuilt since.

7.5 Trench HC5: Excavations steelwork footings, Stove House 3, Section S1 (West)

Two strip foundations were excavated north-south along the length of Stove House 3. The western of these was excavated between the 2nd and 3rd flues (6138 and 6137, Section S1; see AS004 above, AS043, AS044; 7.30, 7.31). The excavation was 19.5m in length, c. 1.0m wide and c. 1.2m deep.



7.30: HC05, Stove House 3 steelwork footings (west), Section S1, north facing

Section S1: The earliest deposits revealed in the excavations were conglomerate material of red sandstone and salt (3054). At the northern end, c. 18m from the southern end it gave way to loose mixed rubble slate and brick (3055). This provided the base for the footings of the flues (6137, 6138).

Within the flues was a mixed salt and clinker material (3056) at the southern end. Above this was a layer of pure white salt (6153).

Three columns (6159, 6165, 6171) were set directly into this material. Where the salt had reacted with the base of the column they had become severely corroded and in places completely decayed. This had caused many of the structural problems with the support of the roof of the floor above.



7.31: HC05, Stove House 3 steelwork footings (west), Section S1, south facing

Phased Interpretation

Phase 4-7: The red conglomerate sandstone and salt material appears to have been integral to the build of Stove House 3 and acted as the foundations for the flues above. It is apparent from the excavations that the flue arrangement within the stove house appears to be original to Phase 4 when the flues when the Stove House was built in the 1890s. It may, however, have been rebuilt repeatedly.

7.6 Trench HC6: Wall foundation Stove House 1/ Stove House 3

The southern wall of Stove House 1/ northern wall of Stove House 3 and the floor above had almost entirely collapsed. It was dismantled during work prior to rebuilding. The foundations of the wall were excavated in order to rebuild above them. The earliest remains consisted of an east-west wall foundation (3020; see AS004 above, AS043, AS063, AS064; 7.32, 7.33) that turned to the north-west and connected with wall 6500 the western curved gable wall of Stove House 1. It consisted of hand-made red brick in English Garden Wall bond, two skins wide and surviving to a height of ten courses.

The upper courses were partially decayed. Along the northern side were a series of three piers. It was excavated to a depth of c. 0.80m.



7.32: HC06, Stove House 1/ Stove House 3, wall foundation 3020, west facing



7.33: HC06, Stove House 1/ Stove House 3, wall foundation 3020, south-east facing

Abutting the wall and extending to the south-west was a second wall (3021; 7.34) that connected to wall 6098 the north-western wall of Stove House 3. It was built of machine-pressed red brick in English Garden Wall bond, three skins thick and survived to eight courses in places. These walls had been entirely reduced in height and replaced by a later phase of north-south aligned flues (7.35, 7.36, 7.37). These equated to the flues of Stove House 1 (6512-6517) and Stove House 3 (6133-6137, 6139) described previously (see Volume IV).

The removal of rubble layers revealed that these single skin brick flues in fact continued over the remains of the earlier wall in a north-south direction. Therefore flue 6139 was equivalent to 6512 etc. (see table 7.1 below).

Table 7.1: Relationship of flues in Stove House 1 to Stove House 3

	Flue No					
Stove House 1	6133	6134	6135	6136	6137	6139
Stove House 3	6517	6516	6515	6514	6513	6512



7.34: HC06, Stove House 1/ Stove House 3, wall foundation 3020/ 3021 west facing



7.35: HC06, Stove House 1/ Stove House 3, north-south flues, west facing



7.36: HC06, Stove House 1/ Stove House 3, north-south flues, overhead



7.37: HC06, Stove House 1/ Stove House 3, north-south flues, south facing

At the eastern end of the arrangement, ferrous metal plates (6528, 6529) had been inserted to allow the flues to extend over the entrance to the tunnel (described in greater detail below, Section HC29; 7.38, 7.39). Two ferrous metal plates aligned north-south overlapped each other. The brickwork of flue 6133/ 6517 was built directly on top of the metal plate.

At the western end flue 6139 carried on around the side of the north-west wall of Stove House 3, narrowed markedly and went under wall 6098. The flue had been cut through the wall and concrete render applied. This had caused the wall above to weaken and collapse. From here the flue

directly entered the eastern side of Chimney 1 as two loosely constructed flue walls (3028) with a ferrous metal plate on top (3031). To the east and in front of the flue was a remnant of loosely laid brick floor (3030). The remainder of the flues (6134-6137; 6513-6516) continued straight through north-south.



7.38: HC06, Stove House 1/ Stove House 3, metal plates 6528, 6529 over tunnel, west facing



7.39: HC06, Stove House 1/ Stove House 3, metal plates 6528, 6529 over tunnel, north facing

In the final phase of work at the site, the north-south flues described above were blocked by short lengths of loosely built stub walls of red brick and blue-black engineering bricks (e.g. 3022, 3023, 3024, 3025, 3026) to create an east-west northern end wall to Stove House 3 (6141; see Volume IV). This survived to a height of three to four courses in places. It continued through to the eastern side of Chimney 1 where it had been loosely keyed in to flue 3028 described above (see 7.40, 7.41).

The southern wall of Stove House 1/ northern wall of Stove House 3 were replaced by a single skin loosely constructed wall 6194 and a series of columns (6520, 6521, 6546) described in Volume IV.



7.40: HC06, Stove House 1/ Stove House 3, flue 6139 under wall 6098, south facing



7.41: HC06, Stove House 1/ Stove House 3, flues entering Chimney 1, west facing

Phased Interpretation

Phase 2: Wall 3020 appears to represent some of the earliest remains on site. The southern wall of the coal yard of the Red Lion Hotel was incorporated into the build of the Phase 4 Lion Salt Works.

Phase 4: The majority of the build of wall 3020 was part of the earliest Stove House on site (SH1). No remains of the earliest flue alignment were visible.

Phase 6: The construction of Stove House 3 does not appear to have necessitated an immediate realignment of the flues. However, at some point

during its construction, the wall between Stove House 1 and 3 was dismantled to allow the construction of continuous flues between the two stoves. This meant hot air could be drawn from either Pan House 3 to the south of Pan House 1 to the north depending on which had its stove active. This meant heat was never lost in the stove houses and they were continually warm.

Phase 7: This arrangement was eventually abandoned and replaced by a simpler design that had an end flue (6141) at the northern end of Stove House 3. This is likely to correspond with the disuse of Pan House 1 and its collapse. It was probably a very late development in the 1970s.

7.7 Trench HC7: Strip Foundation Pan House 4 (west)

A strip foundation was excavated along the western side of Pan House 4 beneath the dismantled remains of sill wall 6219. It was c. 11.00m long (north-south) and 0.8m wide (east-west), and excavated to an approximate depth of 0.95m below ground level (see AS004 above, AS047, AS051).



7.42: HC07, Pan House 4, Strip Footing (west), sill wall 6219, south facing

At the southern end at the base of the excavations were a series of two walls (7.42, 7.43). Running SSW-NNE was a hand-made red brick wall foundation, three courses wide (3050). It corresponded with a wall excavated in Test Pit TP17 (391). This hand-made red brick wall foundation (391) in English bond, was corbelled at the base. It was aligned at an angle to PH4, SSW-NNE, with a cross-wall perpendicular aligned WNW-ESE. Overlying this wall was a second, shallow cross-wall, made of a single skin of bricks laid on-side (3051). The function of this wall is unclear.

These walls were overlain by a mixed layer of brown-black sand-silt, rubble and clinker-ash (3051). At the southern end a ferrous metal plate (3052) was seen in section. A red brown sand layer (3053) appeared to be a bedding layer for the brick floor surface of ditch 6221 (see CWAC 2012-006).



7.43: HC07, Pan House 4, Strip Footing (west), sill wall 6219, overhead

Phased Interpretation

Phase 4: The SSW-NNE wall and its return as previously excavated in Test Pit TP17 appears to be one of the western or mid wall of the Butter Pans located in the Rhomboid-Shaped building at the south of the Lion Salt Works complex and seen on the 1898, 2nd Edition Ordnance Survey Map.

It was parallel to a wall (3003) located beneath the eastern sill wall. This also had a WNW-ESE perpendicular wall (3004) in line with the perpendicular wall (391) excavated in Test Pit TP17. These appear to have formed the walls of the kilns beneath the butter pans housed in the 'rhomboid-shaped' building. The eastern wall of the south-east butter pan was formed by a still

standing wall adjacent to the Nodding Donkey Complex (see Volume IV). The cross-wall 3051 has no clear function.

Phase 7: The remainder of the layers were formed by build-up in advance of the re-built Pan House 4.

7.8 Trench HC8: Excavations steelwork footings, Stove House 3, Section S2 (East)

Two strip foundations were excavated north-south along the length of Stove House 3. The eastern of these was excavated between the 5th and 6th flues (6135 and 6134; Section S2). The excavation was 19.5m in length, c. 1.0m wide and c. 1.2m deep (see AS004 above, AS043; 7.44, 7.45).



7.44: HC08, Stove House 3 steelwork footings (east), Section S2 north facing



7.45: HC08, Stove House 3 steelwork footings (east), Section S2, north facing

Section S2: The earliest deposit was again conglomerate red sandstone and salt material (3057). Built on this layer were the footings of flues 6134 and 6135. Between the flues was a layer of mixed salt and clinker material (3058), c. 0.3m deep. This was overlain by a layer of pure white salt (6150). Seven columns (6155, 6158, 6161, 6164, 6167, 6170, 6173) were set directly

into this material. Where the salt had reacted with the base of the column they had become severely corroded and in places completely decayed. This had caused many of the structural problems with the support of the roof of the floor above.

Phased Interpretation

Phase 5-7: The red conglomerate sandstone and salt material appears to have been integral to the build of Stove House 3 and acted as the foundations for the flues above. It is apparent from the excavations that the flue arrangement within the stove house appears to be original to Phase 4 when the flues when the Stove House was built in the 1890s. It may, however, have been rebuilt repeatedly.

7.9 Trench HC9: Excavations steelwork footings, Stove House 4, Section S3 (West)

Three strip foundations were excavated north-south along the length of Stove House 4. The western of these was excavated adjacent to the shared wall with Stove House 3 (6088) and along the line of flue 6396. (Section S3). The excavation was 19.0m in length, c. 1.0m wide and c. 1.1m deep (see AS004 above, AS057, AS058; 7.46, 7.47, 7.48, 7.49).



7.46: HC09, Stove House 4 steelwork footings (west), Section S3, north facing



7.47: HC09, Stove House 4 steelwork footings (west), Section S3, north facing



7.48: HC09, Stove House 4 steelwork footings (west), Section S3, north facing

The excavation revealed the construction of wall 6088 had a series of brick piers, 0.3m wide that supported the vertical rails (6125-6130) up the side of the wall. The interior build of the stove house consisted of a conglomerated black clinker silt (3186). This was located below brick floor 6413 between flues 6395 and 6396. The flue walls of 6396 were supported on a series of three discontinuous walls of hand-made red brick (3187). The interior of the flue was filled with loose black clinker silt and ash (3188).

Phased Interpretation

Phase 5-6: Wall 6088 was originally built contemporary with Stove House 3. It appears to

have been reinforced using the ferrous metal rails. This work may have been contemporary with the construction of Stove House 4 and suggest that the piers are later addition to the wall.

Phase 7: The whole of Stove House 4 was rebuilt in 1956 and the flues and build date to this period.



7.49: HC09, Stove House 4 steelwork footings (west), Section S3, north facing

7.10 Trench HC10: Excavations steelwork footings, Stove House 4, Section S4 (Centre)

Three strip foundations were excavated north-south along the length of Stove House 4. The central of these was excavated between the 3rd (6394) and 4th (6393) flues (Section S4). The excavation was 19.0m in length, c. 1.0m wide and c. 1.1m deep (see AS004 above, AS057, AS059; 7.50, 7.51, 7.52).

The earliest deposit was a brick lined sump (3189; 7.53, 7.54, 7.55). It was located 8m north of the southern wall (6268). It was built of hand-made brick in English Garden Wall bond. It was 1.0m x 1.0m and c. 2.9m in depth. Its top was at 26.24m AOD at the top and its base was at 23.34m AOD. It contained liquid organic residues at the base.



7.50: HC10, Stove House 4 steelwork footings (central), Section S4, north facing



7.51: HC10, Stove House 4 steelwork footings (central), Section S4, south facing

The lowest excavated layer within the stove house was a solid dark clinker material mixed with ash (3190). This was overlain by a narrow layer of mixed concreted clinker and salt (3191). Set within this conglomerate were the remains of the ferrous

metal columns supporting the roof above (5109, 6374, 6376, 6379, 6382, 6385, 6388). The columns had largely decayed below ground level due to the corrosive effect of the salt. Finally on top of this was a layer of pure white salt (3192).



7.52: HC10, Stove House 4 steelwork footings (central), Section S4, brick sump 3189, south facing



7.53: HC10, Stove House 4 steelwork footings (central), Section S4, brick sump 3189, south facing

Phased Interpretation

Phase 5: The sump does not appear to be structural feature of Stove House 4. This is the only stove house that appears to have these sumps. Instead it is probably a remnant of a pre-existing sump layout possibly associated with the earlier layout of the fishery salt pans in this location. This has been subsequently adopted to allow drainage of the ditches between the flues. The depth of the

sumps would place them just below the external ground level outside of the stove house.

Phase 7: The remainder of the layers are typical of the build-up of the stove houses. A thick conglomerate would be built inside the four walls of the stove house up to the level of the adjacent pan at first floor level. This allows salt to be transported directly from the pan to the stove house for drying. The use of the conglomerate provided a solid base for the construction of the flues. These were built directly on top. Subsequently where the salt was dried some residues of salt would build up between the flues overlying the ditches and dry hard as a pure salt layer.



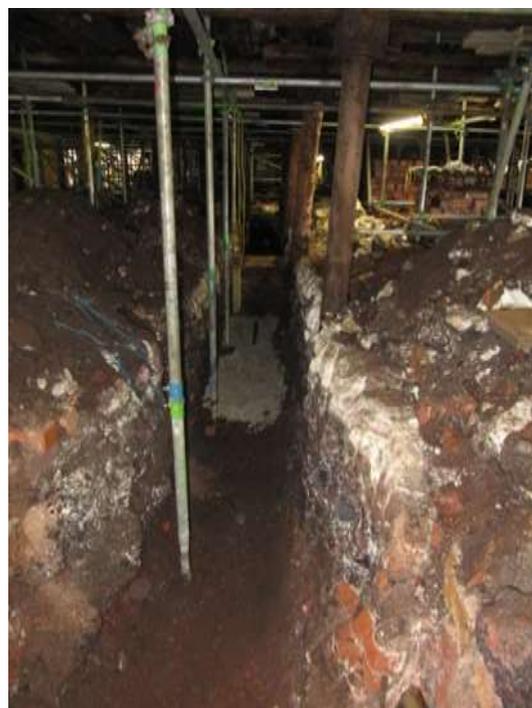
7.54: HC10, Stove House 4 steelwork footings (central), Section S4, brick sump 3189, south facing



7.55: HC10, Stove House 4 steelwork footings (central), Section S4, northern section, north facing

7.11 Trench HC11: Excavations steelwork footings, Stove House 4, Section S5 (East)

Three strip foundations were excavated north-south along the length of Stove House 4. The eastern of these was excavated between the 5th (6392) and 6th (6390) flues (Section S5). The excavation was 19.0m in length, c. 1.0m wide and c. 1.1m deep (see AS004 above, AS057, AS060; 7.56, 7.59). Two extensions were added to this main footing. At the south was an east west footing (7.57, 7.58), 1.6m (north-south) by 5.3m (east-west) immediately to the north of wall (6268).



7.56: HC11, Stove House 4 steelwork footings (east), Section S5, central section, north facing



7.57: HC11, Stove House 4 steelwork footings (east), Section S5, south section, west facing



7.58: HC11, Stove House 4 steelwork footings (east), Section S5, south section, east facing



7.60: HC11, Stove House 4 steelwork footings (east), Section S5, north section, west facing



7.59: HC11, Stove House 4 steelwork footings (east), Section S5, central section, south facing



7.61: HC11, Stove House 4 steelwork footings (east), Section S5, north section, east facing

At the northern end the extension formed an H-shaped plan (7.60, 7.61, 7.62, 7.63, 7.64). Initially it was orientated east-west, 1.4m (north-south) by 5.7m (east-west). There was a second parallel strip footing between the 6th (6391) and 7th (6390) flues, 5.7m (north-south) by 0.8m (east-west).

The earliest deposit was another square, brick lined sump (3193; 7.64, 7.65) located 13m north of the southern wall (6268). It was built of hand-made red brick in English Garden Wall bond. It was 1.0m x 0.9m and c. 2.7m deep (26.405m AOD at the top, 23.705m AOD at the base).



7.62: HC11, Stove House 4 steelwork footings (east), Section S5, north section, dismantled flue, south facing



7.63: HC11, Stove House 4 steelwork footings (east), Section S5, north section (east), north facing



7.64: HC11, Stove House 4 steelwork footings (east), Section S5, sump 3193, north facing



7.65: HC11, Stove House 4 steelwork footings (east), Section S5, sump 3193, north facing

The excavation revealed a very compact black clinker layer (3194) over which was a conglomerate clinker and salt layer (3195). Set into this conglomerate mix were the six ferrous metal columns (6373, 6375, 6378, 6381, 6384, 6387). The effect of salt corrosion had seen the partial or full decay of the columns below ground level. In the northern extension flues 6391 and 6392 had been entirely removed to accommodate the strip footing. Both flues had been filled by a layer of clinker ash (3197, 3198). Between the flues and overlying layer 3195 was a pure white salt layer (3196).

Phased Interpretation

Phase 5: The sump, like the previous one, does not appear to be structural feature of Stove House 4. As before, it is probably a remnant of a pre-existing sump layout possibly associated with the earlier layout of the fishery salt pans. It appears to be located at a slight angle to link the two sumps together. It is likely to continue to the north in the direction of a deep sump located in the loading bay.

Phase 7: The remainder of the layers are similar to those encountered previously in Stove House 4 (see above).

7.12 Trench HC12: Excavations concrete footings supporting Kiln 4, Pan House 4 (East)

A series of five footings (HC12-1, HC12-2, HC12-3, HC12-4, HC12-5) were excavated to provide concrete support for the eastern side of Kiln 4. These were approximately 1.2m x 1.0m and excavated to a depth of 1.0m (see AS004 above, AS047, AS053, AS055). At the base of the excavation were the remains of an earlier wall (3059) for Kiln 4. These were machine pressed red brick in English Garden Wall bond, two skins thick. The wall dog-legged at the northern end (HC12-1, see 7.66, 7.67), and extended up to the southern wall of Stove House 4. The wall continued to the south in line with the later stove wall. It was visible collapsing to the east in excavations HC12-2, HC12-3 and HC12-4 (7.68, 7.69, 7.70, 7.71). At the end of the pan it turned to the west and formed the southern (front) end of the stove. The wall was originally recorded in the section of Kiln 4 as 6279.

Two brick piers, c. 0.60-0.80 x 0.50m in size supported the wall to the east (3060, 3061, 7.72, 7.73).



7.66: HC12-1, Post-excavation after removal of wall 3059, south facing



7.67: HC12-1, Post-excavation after removal of wall 3059, north facing



7.68: HC12-4, Remains of earlier wall 3059, west facing



7.69: HC12-4, Post-excavation after removal of wall 3059, west facing



7.70: HC12-1, Post-excavation after removal of wall 3059, south facing



7.71: HC12-2, Post-excavation after removal of wall 3059, south facing



7.72: HC12-4, Post-excavation wall 3059 and pier 3060, north facing

To the east and parallel to this wall were the remains a further machine-pressed red brick wall foundation in English Garden Wall bond (3062). This acted to support the sill-beam of the hurdle supports. These walls were filled with loose grey silt-sand (3066), brown silt mixed with clinker

(3065), red silt clay (3064) and finally a further layer of black clinker silt material (3063).

The earlier piers and walls acted as a direct foundation for the rebuilt Kiln 4. The stove was rebuilt in loosely bonded machine-cut yellow brick (3067/ 6283), with a series of four machine-cut yellow brick piers (6281) supporting the wall. The floor of the drain of the eastern hurdles of machine-cut red brick was also built over these layers (6260).



7.73: HC12-4, Post-excavation after removal of wall 3059 and pier 3060, south facing

Phased Interpretation

Phase 7a: Two phases of the kiln are clearly visible. The earlier phase dates to the period when Pan House 4 was originally built from the 1950s and is represented by brickwork (3059, 6279, 3060, 3061). The footprint appears to be very similar to the later furnace, now visible.

Phase 7b: the later phase represented by yellow brickwork (3067, 6281, 6283) and ditch floor (6260) dates to the 1960s or 1970s. The brick type is contemporary with that used in Pan and Stove House 5 built in 1965. It probably relates to the rebuilding of the furnace to accommodate the use of oil.

7.13 Trench HC13: Excavations concrete footings supporting Kiln 4, Pan House 4 (West)

A series of five footings (HC13-1, HC13-2, HC13-3, HC13-4, HC13-5) were excavated to provide concrete support for the western side of Kiln 4. These were approximately 1.2m x 1.0m and excavated to a depth of 1.0m (see AS004 above, AS047, AS054, AS056).



7.74: HC13-1, Post-excitation after removal of wall 3068, south facing



7.75: HC13-2, Post-excitation after removal of wall 3068, south facing

Like the eastern side of Kiln 4, a brick footing (3068) for an earlier stove was visible. This was built of machine-pressed red brick in course English Garden Wall bond, three skins thick. In all excavations (HC13-1 to HC13-5, 7.74, 7.75, 7.76, 7.77) it had begun to collapse east to west. This was originally visible in the section of Kiln 4 as 6277. At the southern end two, machine-pressed red brick piers (3070, 3071, 7.78, 7.79) had been built to support the wall. At the northern end it dog-legged and tied into the southern wall of Stove House 4 (7.80).



7.76: HC13-3, Post-excitation after removal of wall 3068, east facing



7.77: HC13-3, Post-excitation after removal of wall 3068, collapse of pier, east facing



7.78: HC13-4, Post-excavation after removal of wall 3068, pier 3070, north-east facing



7.79: HC13-5, Post-excavation after removal of wall 3068, pier 3071, north facing

To the west of the earlier wall and running parallel to it was a sill wall (3072, 7.81) built in machine pressed red brick in English Garden Wall bond. The area between these walls was filled with black clinker ash material (3069, east of kiln wall; 3073, west of kiln wall).

Above these earlier brick walls were the remains of the rebuilt kiln, made of machine-pressed yellow brick in English Garden Wall (6282). This was supported by a series of four brick piers of the same material (6280). The ditch of machine-pressed red brick (6261) was built over the underlying remains.



7.80: HC13-1, Post-excavation after removal of wall 3068, west facing



7.81: HC13-1, Post-excavation, wall 3072, west facing

Phased Interpretation

Phase 7a: Two phases of the furnace are clearly visible. The earlier phase dates to the period when Pan House 4 was originally built from the 1950s and is represented by brickwork (3068, 6277, 3070, 3071). The footprint appears to be very similar to the later furnace, now visible.

Phase 7b: The later phase represented by yellow brickwork (6280, 6282) and ditch floor (6261) dates to the 1960s or 1970s. The brick type is contemporary with that used in Pan and Stove House 5 built in 1965. It probably relates to the rebuilding of the furnace to accommodate the use of oil.

7.14 Trench HC14: Excavations concrete supports for truss posts, Pan House 4 (East)

A series of four excavations (HC14-1, HC14-2, HC14-3, HC14-4), 1.5m (north-south) by 1.0m (east-west), excavated to a depth of c. 1.1m, designed to provide concrete pads for posts supporting the main trusses of Pan House 4 (see AS004 above, AS047, AS049).

At the very southern end c. 1.25m below ground level was an east-west machine pressed red brick wall foundation, two skins wide (3074), abutting and perpendicular to this was a north-south wall foundation of machine-pressed red brick, also two skins wide (3075, 7.82). Behind the walls was a fill of black clinker silt (3076) that contained intact clay tobacco pipe dating to the earlier years of the 20th century. These walls and the remainder of the excavations were filled with layers of mixed rubble and grey cement hard-core material (3002), clean sterile grey sand-silt, 0.40m deep (3001) and a layer of crushed red brick waste (3007), 0.15m deep (e.g. HC14-2, 7.83). The brick ditches (6260) were built on top of this material. These were identical to layers encountered in excavations HC2.



7.82: HC14-4, Post-excavation, wall 3074, 3075, north-west facing



7.83: HC14-2, Post-excavation, north-west facing

The large posts of Pan House 4 on the eastern side (6241, 6242, 6243, 6244) were earth-fast and set within the layers described above in hardened concrete surrounds. These were excavated and removed during work and replaced with steel footings set on the concrete pads.

Phased Interpretation

Phase 4: The walls (3074, 3075) appear to relate to foundations of the southern Butter Pans, also located as walls 3003 and 3004 in adjacent excavations HC2. Upstanding remains of these are located to the east, adjacent to the Nodding Donkey (1017, 1051). The fishery pans were demolished or adapted in the 1930s to 1940s to make way for Pan House 4. The south-eastern Butter Pan had been demolished in around 1937 to 1938 to allow for a new brine bore-hole and the building of the Pump House (see section 6 below). The south-western fishery pan survived until at least the late 1940s when it was visible on aerial photographs of the site.

Phase 7: The remains were probably replaced by the mid-1950s contemporary with the build of Stove House 4. These relate to the earliest remains of Pan House 4. Subsequently in the late-1960s or 1970s the large posts were inserted (6241, 6242, 6243, 6244) to support an entirely new truss roof.

7.15 Trench HC15: Excavations concrete supports for truss posts, Pan House 4 (West)

Description

A series of four excavations (HC15-1, HC15-2, HC15-3, HC15-4), 1.5m (north-south) by 1.0m (east-west), excavated to a depth of c. 1.1m,

designed to provide concrete pads for posts supporting the main trusses of Pan House 4 (see AS004 above, AS047, AS051). The trenches were filled initially by a layer of black clinker silt (3051). At the northern end (Trench HC15-1, 7.84) the black clinker silt (3058) formed the base for a rough remnant of brick floor surface (3113).



7.84: HC15-1, Post-excavation, north facing



7.85: HC15-2, Post-excavation, sill beam 3077, south facing

Located in trenches HC15-2 and HC15-3 was the remnant of a timber sill beam (3077; 7.85, 7.86). It was originally supported by a NNE-SSW beam, over which were a series of three wooden pads acting as packers (in HC15-3 but not located further north in HC15-2). Above this was the sill beam which had a series of three tenons for studs above. The structure appeared to be a timber continuation of wall 3050 located in excavations HC07.

The area was subsequently filled with crushed red brick and brown silt and clinker (3053) and black clinker silt (3078). Over this was the brickwork for the ditches (6221). The posts (6214, 6215, 6216, 6217) were earth-fast and surrounded by concrete.



7.86: HC15-3, Post-excavation, sill beam 3077, north facing

Phased Interpretation

Phase 4: The wooden beam (3077) and floor surface (3113) appear to relate to the south-western butter pan. It appears to be a sill-beam for the western side of the hurdles of the south-western butter pan.

Phase 7: The large posts (6214, 6215, 6216, 6217) were inserted in the late-1960s or 1970s to support an entirely new truss roof.

7.16 Trench HC16: Excavations concrete supports for truss posts, Pan House 4 (South)

Description

A series of four excavations (HC16-1, HC16-2, HC16-3, HC16-4), 1.5m (east-west) by 1.0m (north-south), excavated to a depth of c. 1.1m, designed to provide concrete pads for posts supporting the main trusses of Pan House 4. HC16-4 was longer east-west c. 3.5m (see AS004 above, AS047, AS052).

A machine-pressed red brick wall foundation (3079, 7.87), three courses wide, ran east-west across the site. It was visible in trenches HC16-1, HC16-2 and HC16-3. Parallel and to the south of this was a cast-iron brine pipe (3081, 7.88, 7.89, 7.90), 200mm in diameter. It ran east-west before emerging from the ground vertically in excavation HC16-3 (6261, 7.90) and emptying into Pan 4. It was surrounded by a large wooden trough of elm (3080), 400mm x 400mm cross-section, with a lid 150mm thick.



7.88: HC16-1, Post-excitation, brine pipe 3081, elm trough 3080, west facing



7.87: HC16-1, Post-excitation, wall 3079, west facing



7.89: HC16-2, Post-excitation, elm trough 3080, east facing



7.90: HC16-3, Post-excitation, brine pipe 3081, east facing



7.91: HC16-4, Post-excitation, mortar spreads 3121, 3122, 3125

In trench HC16-4 there were a series of three mortar spreads (3121, 3122 and 3125; 7.91) that may have related to wall foundations and earlier brick floor surfaces. Spread 3121 was aligned in a similar direction to wall foundation 3079, whilst spread 3122 was perpendicular to it, running north-south. A two inch wide timber (3123) and small brick pier (3124) sat on top of this spread. Spread 3125 was isolated and did not seem to be aligned with any walls.

A lead water pipe (3117) was located in the western end aligned north-south.

The excavations at the eastern end (HC16-1, HC16-2, HC16-3) were filled with black clinker silt (3083). Trench HC16-4 was filled with black clinker silt (3118), red brick rubble (3119) and more black clinker silt (3120). The posts (6212, 6222, 6247, 6262, 6263) were earth-fast and surrounded by concrete.

Phased Interpretation

Phase 2: The mortar spreads (3121, 3122 and 3125) in HC16-4 are stratigraphically earlier than the other remains in these trenches. They are located beneath the remains of the fishery pans and appear to be located south of them in an area adjacent to what would formally have been the Accommodation Road. The 1868 and later 1880 Sale Plan of the site reveal that a small series of cottages were located in this area of the site. The age of the cottages is unknown but they are probably contemporary with the Red Lion Hotel.

Phase 4: Alternatively the mortar spreads (3121, 3122 and 3125) may relate to the earlier Rhomboid building that pre-dated or was adopted into the south-western fishery pan. However, they appear to be a short distance (c. 1.0m) south of the location of these remains. Given the absence of dating evidence and poor stratigraphic evidence, no firm conclusions can be made.

The east-west wall and parallel cast-iron pipe (3079, 3081), located in the eastern excavations equate to the front of the south-western butter pan. The pipe appears to have drained directly into the pan and was adopted to drain into the later pan associated with Pan House 4.

Phase 7: The smaller posts (6247, 6262, 6263) relate to the earlier fabric of Pan House 4 erected in the 1950s. The large posts (6212, 6222) at either end were inserted in the late-1960s or 1970s to support an entirely new truss roof.

7.17 Trench HC17: Excavations concrete footings supporting Kiln 3, (East), PH3

Description

A series of nine footings (HC17-1, HC17-2, HC17-3, HC17-4, HC17-5, HC17-6, HC17-7, HC17-8, HC17-9) were excavated to provide concrete support for the eastern side of Kiln 3. These varied in size and

were excavated to a depth of 0.70 to 1.0m (see AS004 above, AS029, AS033).

The excavations contained yellow-brown silt at the northern end (3086, Trench HC17-1, 7.92) and southern end (3099, Trench HC17-9) that was overlain by brown clinker silt (3088). This was covered by the remains of the brick floor (3085) throughout. The brick floor was covered throughout by brown silt rubble material (3084).



7.92: HC17-1, Post-excitation, south-west facing



7.93: HC17-7, Post-excitation, west facing

At the southern end the remnant of an earlier pan, was visible as lower brickwork of machine-pressed red brick in English bond (3089, e.g. HC17-7, 7.93) and an associated brick pier. Located in Trench HC17-1 at the north was a similar brick pier of machine-pressed red brick (3087). Built on top of these earlier remains were the eastern wall of Stove 3 (6059) and brick piers (6058). These had partially collapsed at the southern end (Trenches

HC17-8, HC17-9) revealing conglomerate fill of hardened salt and ash (3090), behind the wall.

At the southern end a large brick pier (6058) was dismantled where it had partially collapsed. It was built on top of a series of three timbers (3092) that rested on an east-west beam (3093). In turn these timbers rested on two east-west wall foundations of machine pressed red brick with (3091 in HC17-8, 3094 in HC17-9).

The brick pier above (6058), also overlay a rectangular brick sump (3095), in the south-eastern corner (Trench HC17-9, 7.94, 7.95, 7.96, 7.97, AS039). It was made of machine-pressed red brick, 0.80m x 0.80m in size. On top of the sump was a square wooden frame (3096), with a lid made of five, 3" thick timbers (3097). Entering the sump from the north from brick ditch (3085) was a wooden drain, with a square cross-section made from four planks (3098). The sump drained to the south via a large ceramic drain (3101) that passed to the south-east. The sump had become back-filled with brown humic material (3100).



7.94: HC17-9, Post-excitation, sump 3095, 3096, north facing



7.95: HC17-9, Post-excitation, sump 3095, 3096, north facing



7.96: HC17-9, Post-excavation, sump 3095, 3096, south facing



7.97: HC17-9, Post-excavation, sump 3095, 3096, south facing

Phased Interpretation

Phase 5: It is very difficult to date the earliest remains of the furnace walls (e.g. 3089). It is possible that these relate to the earliest building of the stove and pan house in c. 1899. It does appear that the stove was rebuilt at least once at a later date as revealed by later brickwork (6058, 6059). The sump in the south-eastern corner appears to be an original feature associated with the earliest alignment of Pan House 3 and its construction in c. 1899. It appears to correspond to a similar sump that has been removed on the south-western corner (see interpretation HC21 below). These sumps drained the ditches beneath the hurdle and

appear to have been plumbed into a larger drainage system running along the front of Pan House 3 and 4, east to west.

Phase 7: The pans appear to have been almost completely rebuilt in the later 20th century. The piers on the eastern side (6058) are an attempt to retain the unstable walls of the side of the stove.

7.18 Trench HC18: Excavations concrete footings supporting Stove 3, (West), PH3

Description

A series of eight footings (HC18-1, HC18-2, HC18-3, HC18-4, HC18-5, HC18-6, HC18-7, HC18-8) were excavated to provide concrete support for the eastern side of Stove 3. These varied in size and were excavated to a depth of 0.70 to 1.0m (see AS004 above, AS029, AS034).

The sides of the stove and panels appear to have an earlier phase of brickwork. This is visible at the southern end in trench HC18-8 as an area of stepped, hand-made red, brickwork, two courses wide, with very rough coursing (3103, 7.98, 7.99). It is much less pronounced in the more northern excavations.

Above this were the excavated remains of the stove wall (6056) and piers (6055). In the majority of trenches (HC18-1 to HC18-7, 7.100, 7.101) the wall foundations continued to the base of the excavations. The excavations themselves were filled with loose brown clinker silt (3102). This was covered by the sloping sides of the brick ditches (6057). The final pier (6055) at the southern end was dismantled and rebuilt.

Phased Interpretation

Phase 5: On the western side of the stove there is less evidence that the walls and piers have been rebuilt. It does, however, appear that there was an earlier phase of brickwork at the very base of the excavations.

Phase 7: Like the eastern side it is very likely that the entire sides of the stove were rebuilt in the 1960s or 1970s as part of a refurbishment of the pan house.



7.98: HC18-8, Post-excavation, wall foundation 3103, east facing



7.101: HC18-2, Post-excavation, wall foundation 3103/ 6056, east facing



7.99: HC18-8, Pre-excavation, dismantled stove wall and piers 6055, 6056, north-east facing



7.100: HC18-7, Post-excavation, wall foundation 3103, east facing

7.19 Trench HC19: Excavations concrete underpinning supporting Stove 3, (South), PH3

Description

The front (southern) elevation of Stove 3 had partially collapsed prior to restoration work beginning. It was necessary to underpin the front of the stove with a series of concrete foundations. These excavations were 0.80m wide (north-south) and stretched along the front of the stove, c. 7.5m in length (east-west). It was excavated to a depth of c. 0.80m below current ground level.

The excavations were conducted in three separate parts (HC19-1, HC19-2, HC19-3; see AS004 above, AS029, AS035). At the base of the central excavation (HC19-2) was the remains of NNE-SSW wall foundation of hand-made red brick, three skins wide (3108, 7.102). This was overlain by firm grey sand silt (3105) and brown sand silt clinker (3104). The brick rib walls running along the stove forming the internal flues, were visible as deeper foundations within the build-up inside the stove (7.103). These brick rib foundations (3106, 3107, 3109, 3110) were two bricks wide. They supported the very shallow footings, less than two courses deep, of the stove wall (6060).



7.102: HC19-2, Post-excitation, wall foundation 3108, north facing



7.103: HC19-2, Post-excitation, overall, west facing

Phased Interpretation

Phase 4: The NNE-SSW wall foundation 3108 appears to relate to the remains of the Rhomboid building visible on the 1898 Ordnance Survey map of the site. It would appear to be the western wall of this building. The function of this building is unknown but it is probable that it related to a large, open, salt store that was used from c. 1895 until it was replaced by the south-western and south-eastern fishery pans. This salt store would have been superseded by the Coronation Salt Store by around 1910-1920.

Phase 5: The western half of the rhomboid building was demolished in order to make way for Pan House 3 in c. 1899. This involved the demolition of the Rhomboid building. The walls of Stove 3 would have been built at this time but it is doubtful that the surviving wall relates to this phase. It is more probable that wall foundations (3106, 3107, 3109, 3110) for the internal ribs of the stove are original to its construction and have been repeatedly rebuilt internally as part of the natural life cycle of repairs.

Phase 7: The stove wall (6060) is almost certainly no later than the 1970s in date. The foundations were shallow and it had been clearly re-built to allow for oil firing in common with a number of the stoves. The 'coal hatches' are a feature of a 'museum-ification' of the works in the early 1980s.

7.20 Trench HC20: Excavations footing for posts, Pan House 3, (East)

Description

Four excavations were conducted to provide footings for the posts of Pan House 3 on the east side. They were c. 1.2m x 1.0m and excavated to a depth of 1.0m + due to the waterlogged nature of the underlying ground (see AS004 above, AS029, AS037).

The earliest deposits at the southern end (Trench HC20-1, 7.104), was highly waterlogged grey sand silt (3112), found at a depth of 0.7m + below the current ground level. This deposit was also found at a depth of 0.8m+ below current ground level at the northern end (Trench HC20-2).

The corbelled, machine-pressed brick, footing of the eastern wall (6014, 7.105) was located at 0.75m below the surface of trenches HC20-1 and HC20-2. It was removed during excavation. The foundation was filled around by black clinker silt (3111, 3116). The layer of black clinker silt was also visible in the very southern excavations (3126, HC20-3; HC20-4). At the northern end a layer of crushed brick and rubble (3115) was located 0.3m below the surface.



7.104: HC20-1, Post-excavation, overall, north facing



7.105: HC20-2, Post-excavation, overall, north facing

In Trench HC20-3 the remains of a large ceramic pipe (3127, 7.106), 200mm in diameter, related to the continuation of pipe (3101) from sump (3095, see above HC17-9). It ran north-west to south-east, but descended rapidly to a depth of 1.0m+ towards the south-east (not fully excavated).

The ceramic drain accommodated an east-west running cast-iron brine pipe (3157, 7.107), 160mm in diameter. Like other encountered sections of the pipe, it was housed in a partially decayed wood box (3158), cross-section 600mm. It was located at a depth of 0.65m below the ground and appeared to be a continuation of a brine pipe (3081) located to the east in trenches HC16-1, HC16-2 and HC16-3. It emerged from the ground towards the north-west as vertical brine pipe (6423), which fed the pan via a cast-iron brine pipe (5035) that has been removed and stored.



7.106: HC20-3, Post-excavation, ceramic drain 3127, south facing



7.107: HC20-4, Post-excavation, brine pipe, 3157, west facing

The upper part of these trenches was again overlain by a layer of loose black clinker-silt (3114

in HC20-2; 3130 in HC20-1, HC20-3; 3160 in HC20-4). A series of cables (3159) and timber framed floor area (3130) were located set within these layers at the southern end (trenches HC20-3, HC20-4). The posts (6019, 6020, 6049, 6050) were all earth-fast and had extensively decayed beneath ground level.

Phased Interpretation

Phase 1/2: The earliest grey sand silt deposits (3112) pre-date construction on the site. It is not clear why they are so heavily water-logged. It may be a feature of their location adjacent to the sump, or more typical of a relatively high water-table in this location.

Phase 5: The remains of the brick footings of the eastern wall (6014) correspond with the earliest period of Pan House 3 in c. 1899. It is likely that the brine pipe (3081) was also inserted contemporary with the construction of the pan house. The angle it enters the pan house, suggests it ran east-west along the southern end of the butter pans (described above HC16), before turning to the north-west as vertical brine pipe (6423), which fed the pan via a cast-iron brine pipe (5035). Ceramic pipe (3127) was part of a contemporary drainage system associated with sump (3095, see above HC17-9), although it is not clear if this was a contemporary feature or inserted at a later date to improve drainage of the pan house. The latter appears more likely as there is considerable new drainage apparent to the south of the pan house.

Phase 7: The area had been levelled up repeatedly with clinker silt. At the southern end the insertion of cables (3159) and timber-framed floor appeared to be associated with the extension of the pan house south in the 1970s.

7.21 Trench HC21: Excavations footing for posts, Pan House 3, (West)

Description

Two excavations were conducted to provide footings for the posts of Pan House 3 on the west side. They were c. 1.2m x 1.0m and excavated to a depth of 1.0m + due to the waterlogged nature of the underlying ground (see AS004 above, AS029, AS036).

At the southern end of the pan house (Trench HC20-1) the excavations were conducted through the previous test pit (TP18, see Section 5) (24.42m AOD at top).

The earliest deposits were grey clay-silt (3131) at the base of trench HC21-1 (7.108). A similar layer was encountered at the northern end of the hurdles (3135, HC21-2). This was overlain by black-clinker silt rubble (396, 3132) on which a degraded brickwork floor (3133) was built in the south-west corner. A wooden sill beam (397), 0.08m in depth and at least 0.40m in length was built on top of this floor. It was bonded to, and formed the base of post 6041. In the south-east corner a layer of brick and concrete (395, 3133) formed the base for post 6040. The remainder of the southern trench was filled with brown silt-sand rubble (394, 3134).



7.108: HC21-1, Post-excavation, south facing



7.109: HC21-2, Post-excavation, north facing

In the southern trench (HC21-1) were the broken remains of two yellow-brown ceramic drainage pipes, 0.22m in diameter and 20mm thick. The first ceramic drain (398) ran east-west from under Wall 6009 and Ollershaw Lane into the ditch of the western hurdles 6057. It was broken adjacent to post 6041. The second ceramic drain (399) ran

north-south from Ditch 6057 and is presumed to have continued south towards brick sump (6422).

At the northern end of the hurdles (Trench HC21-2, 7.109), the trench was filled with loose black-brown silt-rubble over which was built the bricks of the ditch (6057).

Phased Interpretation

Phase 1/2: The earliest deposit grey clay-silt (3131) pre-dated the works and related to the site as open fields or part of the Red Lion Hotel.

Phase 5: Formation layer 396, 3132 and brick floor 3133 was used to establish the base for sill-beam 397, connected to post 6041. This suggests that these elements of the structure relate to the construction of Pan House 3 in c. 1899. The ground was subsequently levelled and the sloping brick ditch (6057) built on top. The ceramic drains (398, 399) may also relate to this earliest phase of construction as they would have been associated with brick drain and drainage for the western hurdles. The absence of a sump in this corner similar to that on the eastern side (3095, see above HC17-9), suggests that later disturbance removed the sump here. This would explain why the ceramic drains did not appear to connect.

Phase 7: The inserted Concrete Pad 395 and Post 6040 almost certainly relate to changes made to the structure of Pan House 3 in the 1970s that saw the extension of the roof structure to the south. It is likely that a new post (6040) to support the extended roof was dug through the sump that drained the western hurdles in this location.

7.22 Trench HC22: Excavations footing for posts, Pan House 3, (South)

Description

A series of three excavations (HC22-1, HC22-2, HC22-3), 1.0m (east-west) by 1.0m (north-south), excavated to a depth of c. 1.1m, designed to provide concrete pads for posts supporting the main trusses of Pan House 3. HC22-3 was 1.4m (north-south) by 4.3m east-west (see AS004 above, AS029, AS038).

The earliest deposit was mixed grey-brown clay silt (3137, HC22-1; 3140, HC22-2). A WNW to ESE

running wall foundation was located in trenches HC22-1 and HC22-3 (7.110, 7.111, 7.112). It was represented by a machine pressed red brick wall foundation (3138) on the southern side of HC22-1, which had three corbels at its base. It was more clearly visible as upstanding wall 6005 in the south-west corner of Pan House 3. This had an awkward junction with the western side of the pan house and was clearly part of a pre-existing layout. This wall had a foundation of seven courses, with three corbels at its base in trench HC22-3. The north-south return of this wall (6009) appeared to continue to the south as a foundation wall (3149) visible in the western section of HC22-3. It was constructed of machine-pressed red brick and survived for three courses only.



7.110: HC22-1, Post-excavation, wall foundation 3138, east facing



7.111: HC22-1, Post-excavation, wall foundation 3138, south-east facing



7.112: HC22-3, Post-excitation, wall foundation 6009, east facing



7.113: HC22-2, Post-excitation, floor surface 3143, north facing

The ground above this wall was filled with brown brick-rubble and silt (3139, HC22-1), yellow-brown clay rubble (3141, HC22-2) or loose brown silt and clinker (3145, HC22-3). In the south-east trench (HC22-2) there was evidence for a shallow layer of clinker silt (3142) on which was built a discontinuous machine-pressed red brick floor surface (3143, 7.113) at a depth of 0.45m below the ground surface. This was covered by a general layer of black clinker silt (3144).

In the larger excavation HC22-3, the remains of the mineral rail tracks were uncovered just below the surface. They consisted of a single rail track (3146, 7.114) aligned WNW-ESE to the south of Pan House 3. It was supported by a total of four cast iron chairs (elements that connect to the sleepers) were originally located equidistant along the rail at distances of three feet (0.92m). Two were present *in situ* whilst two had collapsed. The wooden sleepers underneath had almost entirely decayed, with only small remnants visible. At the western end of the trench was ferrous metal cleat or buffer (3147, 7.115) that acted as the end point of the

mineral railway. The trench was overlain by brown silt rubble (3148). The posts (6032, 6033, 6085, 6086) were all earth-fast and largely decayed below ground level.



7.114: HC22-3, Post-excitation, rail 3146, west facing



7.115: HC22-4, Post-excitation, buffer 3147, north-west facing

Phased Interpretation

Phase 2: The earliest deposit grey clay-silt (3137, 3140) pre-dated the works and related to the site as part of the Red Lion Hotel. The WNW to ESE running wall foundation is contemporary with the very earliest period of the works, possibly dating to the period when this was land associated with the Red Lion Hotel. The 1868 map shows a clear boundary wall at the southern end of the site running along the northern side of the Accommodation Road

Phase 4: The small patch of floor surface (3143) excavated in trench HC22-2 may relate to a floor associated with the Rhomboid building prior to the construction of Pan House 3. It was poorly constructed and only survived in fragments but this would correspond with an area that was entirely rebuilt in order to construct a new pan and stove house.

Phase 5: The rail tracks were introduced to the works in c. 1900, as part of new sidings that served the Lion Salt Works. They ran around the southern boundary of the site and finished in front of Pan House 3 and 4. See the Salt Van below (section 6.23).

Phase 7: The posts (6032, 6033, 6085, 6086) were all inserted as part of the extension to the south of Pan House 3.

7.23 Trench HC23: Wall Foundation, SH4 (North)

Description

This was a large excavation undertaken after the dismantling of the northern wall of SH4. The excavation was c. 1.0m to 1.5m wide (north-south), and was excavated in two parts c. 6.5m long initially on the eastern end, and then a further 7.0m on the western part, totalling 13.5m (east-west; see AS004 above, AS057, AS061). The first the eastern half was undertaken in July 2013, whilst the western half was completed in January/February 2014.

Within the western side of the excavations were the earliest deposit, a deep layer of black-brown, brick rubble and silt (3237) forming the lowest levels of Stove House 4 (7.116, 7.117, 7.118,

7.119). This was overlain by a shallow layer of crushed salt scale from pans (3211), waste material used to build-up layers in Stove House 4, c. 0.30m deep.



7.116: HC23, Stove House 4, north wall excavations, remains of SH4/ SH3 wall, west facing



7.117: HC23, Stove House 4, north wall, western deposits, south-east facing



7.118: HC23, Stove House 4, north wall, western deposits, west facing



7.119: HC23, Stove House 4, north wall, western deposits, east facing

On the eastern side of the excavations (7.120, 7.121) the earliest deposits were a concreted, red clinker-ash material (3152) with black clinker-ash layer (3153) above, to a depth of c. 0.8m below ground level. This formed the base for a series of ferrous metal plates (3151, 7.122). They extended for 3.0m from north-eastern corner, under the northern wall (6331, see 7.123) of Stove House 4. This was machine-pressed red brick, two courses wide, with three courses at the base.



7.121: HC23, Stove House 4, north wall, eastern deposits, south-east facing



7.122: HC23, Stove House 4, north wall, ferrous metal plates 3151, west facing



7.120: HC23, Stove House 4, north wall, eastern deposits, east facing



7.123: HC23, Stove House 4, north wall, western deposits, with wall 6331 partially dismantled, east facing

On the southern side of the wall these layers were covered by a narrow band of crushed red brick (3154) and brick ash (3155) within flues at northern end of SH4 (6397). At the very western side of the excavations, flues 6395 and 6396 were seen in section. On the northern side of the wall were loose brick and clinker ash layer (3156), c. 1.1-1.4m depth that covered and made up the loading bay.

Phased Interpretation

Phase 7: The deposits uncovered within the excavations relate to the rebuild of Stove House 4. The initial build-up of material (e.g. layer 3237) appears to have been designed to create a foundation for the building. Once the brick walls were built, this was infilled with more mixed material (e.g. 3211, 3152 and 3153).

It was clear that the Thompson's continued to use a policy of spreading the weight of structural walls on ferrous metal plates. The inevitable decay caused by exposure to salt products led to the collapse and 'rolling' of the wall to the north in common with other walls (e.g. Stove House 3, south, Stove House 4, south). The deposits south of the wall related to the working lifespan of Stove House 4.

North of the wall was a layer of loose brick and clinker ash that appears to have been deposited beneath the packing area to create a dry work surface. This is discussed in greater detail below in Trenches HC24.

7.24 Trench HC24: Post Pads, Loading Bay/ Packing Area

Description

This involved the excavation of a series of six post-pads. These were located beneath each of the wooden posts that supported the Loading Bay/ Packing Area. The excavations were each 1.5m x 1.5m and excavated to a depth of 0.80m (see AS004 above, AS067, AS073). They were initially started in July 2013 and completed in January/ February 2014.

Trench HC24-01 was located under the south-east corner posts (6439, 6440) adjacent to the northern wall of SH4, and was 1.6m x 1.6m (7.124). Within it

the earliest deposits were a north-south wall foundation (3161), of machine-pressed red brick, 3 skins (0.35m) wide, which survived to three courses high. A second north-south wall foundation (3162), also of machine-pressed red brick, lay to the east and was visible in the section. It also survived to a height of three courses. There was a distance of 0.75m between the two. These appeared to have been the dismantled remains of an earlier structure, which directly underlay the foundations of SH4, East and North Wall (6301, 6331). Subsequently a cast-iron brine pipe (3163), 4½" diameter, ran south-east to north-west across the trench. It was damaged and removed during excavation. These features were covered with a layer of mixed brown silt rubble layer (3164). Above this was loose brick and clinker ash layer (3156) that covered the Loading Bay under-croft.



7.124: HC24-1, Post-excavation, wall foundations 3161, 3162, east facing

The base of Trench HC24-02 (7.125), the eastern central posts (6441, 6442, 6443), contained a discontinuous and fragmentary brick paviour of re-used bricks and half-bricks (3293). These were machine pressed red brick with a rectangular frog. They extended for c. 1.7m across the trench. This was again covered with a black clinker silt layer (3292) equivalent to 3156 above.



7.125: HC24-2, Post-excavation, south facing



7.126: HC24-3, Post-excavation, sill beams 3298, 3294, brick pier 3299, west facing



7.127: HC24-3, Post-excavation, sill beams 3298, 3294, brick pier 3299, south-east facing

Trench HC24-03 (7.126, 7.127), the west central posts (6444, 6445, 6446), contained a large brick pier (3299) in the south-western corner. It was constructed from machine pressed red brick laid in rough courses. Overlying this and supporting the post above were a series of sill-beams. The lowest of these (3296) ran east-west, c. 0.7m below the ground level, and was 240 x 60mm cross-section. It abutted a series of two rotten posts in the north-east corner (3297). The main structural posts (6444, 6445, 6446) itself, was supported by two sill beams. The first (3298) ran east-west and rested

on brick pier (3299). Perpendicular to this and orientated north-south was a further larger sill-beam (3294). The posts (6444, 6445, 6446) rested directly on this sill-beam (3294). The trench was filled by a layer of black clinker silt (3295).

There was no evidence for a brick floor surface in north-east Trench HC24-04 (7.128). Instead it was again a layer of black clinker silt (3199), equivalent to 3156 and 3292 described above. This material sloped south-north towards the edge of the Loading Bay (north side) as if it had been eroded away. Subsequently a layer of mixed clinker, slit and rubble (3200) had been used to level out the ground. A further layer of black clinker silt (3201) overlay this.



7.128: HC24-4, Post-excavation, south-west facing



7.129: HC24-5, Post-excavation, south-east facing

This trench was extended to the north as HC24-05 (7.129) to allow a footing for the bridge. It was of a single homogenous fill of black clinker silt (3202) as above. Within this was a single east-west orientated wooden plank (3203) that acted as a retaining wall for the material in a similar manner to timbers 5159 (see Loading Bay area, see Volume IV).



7.130: HC24-6, Post-excavation, sill beams 3204, 3205, south-east facing



7.131: HC24-6, Post-excavation, sill beams 3204, 3205, salt pan deposit 3208, south-east facing

Trench HC24-06 (7.130, 7.131), the north-west post (6449, 6450), contained two sill beams. The first was orientated east-west and was 60mm x 240mm in cross-section, (3204), the second was orientated north-south and was 40mm x 200mm in cross-section (3205). Where the two sill-beams intersected was a wooden pad (3206), and the posts (6449, 6450) were supported above. The area was covered by black clinker silt (3207). On the northern side, this was overlain by a large

dump of salt pan-scale (3208), 0.45m deep. This was overlain by a mixed rubble and clinker-silt deposit (3209). The whole trench was covered by a narrow layer of black clinker silt (3210).

Phased Interpretation

Phase 6: The wall foundations (3161) and (3162) located in Trench HC24-01 and brick paviour (3293) relate to earlier structures prior to the construction of Stove House 4. The likelihood is that they are the fragmentary remains of the kiln walls of the North-West Fishery Pans. Other remains of the fishery pans have been located at greater depth and have generally been much better preserved. However, the orientation and location appear to be correct.

Phase 7: All the rest of the remains relate to the construction of the Loading Bay. The posts in places have been set with sill beams for support. The deposition of rubble and clinker layers above appears to have initially been part of the construction process. It appears likely that the clinker has been deposited from the stoves and used as a working layer.

7.25 Trench HC25: Strip Foundation, SH2 (West)

Description

This involved the excavation of three strip footing for steel supports in Stove House 2, of which this was the western footing. The footing was 1.0m wide (east-west) and 17.0m long (north-south), in two parts, the northern 12.3m long and the southern 4.7m long (see AS004 above, AS067, AS068; 7.132, 7.133). It was excavated to a depth of 1.1m. The excavations were undertaken from July to September 2013.

The earliest deposit within the trench was a red sand layer (3244) located at the very southern end of the trench (see 7.134). To the north were the remains of the original, east-west orientated, northern wall of Stove House 1/ Stove House 2 were represented by hand-made red brick walls (3243), and (3245). Both were nine courses high and two skins thick seen in either section. South of the wall was a layer of salt, clinker and brick rubble (3239).



7.132: HC25, Post-excitation, northern end, south facing



7.133: HC25, Post-excitation, southern end, south facing



7.134: HC25, Post-excitation, east facing section at southern end, south-west facing

North of wall 3243/ 3245 was a concreted salt rubble layer, containing salt blocks, red sandstone and visible tip lines (3167). Within this layer in patches was loose clinker ash (3168), suggestive of tip lines (e.g. 7.135). A shallow flue wall of machine-pressed red brick (3169), 2 courses deep, orientated north-south ran on the eastern side of the trench.



7.135: HC25, Post-excitation, east facing section at northern end, south-west facing

A north-south flue appeared to have been fixed through the wall. This was represented by walls on the western side (3166, 3247 and 3246) and on the eastern side by walls (3167, 3240 and 3242) with a pier (3241) supporting this. The walls were of hand-made red brick and nine courses high, but lower in places. Residues of laminated salt (3238) adhered to the interior of the walls. This wall continued to the south into Chimney 2 and to the north continued around the exterior wall of SH2 and joined the large central flue (6601). Overlying the trench was a thin layer of laminated salt and ash, 0.1m deep (3170) and the skimmed concrete floor, 0.1m deep (3171).

Phased Interpretation

Phase 4: The earliest deposits related to the construction of Stove House 1. It was clear that an east-west wall (3243/ 3245) ran along its northern

side. Subsequently the interior was filled with loose compacted clinker rubble (3239).

Phase 5: By Phase 2, Stove House 2 had been built into the north of Stove House 1. The interior was deposits of compact clinker and salt residues. On top of this was a north-south orientated flue (3169) originally fed by the stove beneath Pan 2. This appeared to be one of several in this location.

Phase 7: By the 1970s the entire flue system had been replaced by an automated drying system (see below). This was visible as north-south flue represented by a series of walls (3166, 3247 and 3246, west; 3167, 3240 and 3242, east). The flue was part of a system that ran from the main central north-south flue (6601), and continued to the west and south around the exterior of Stove House 2, until it was exhausted via Chimney 2. It is not entirely clear if the walls were foundations or represented remains of the actual flue.

7.26 Trench HC26: Strip Foundation, SH2 (Central)

Description

This involved the excavation of three strip footing for steel supports in Stove House 2, of which this was the central footing. The footing was 1.0m wide and 17.0m long. It was excavated to a depth of 1.1m (see AS004 above, AS067, AS069; 7.136, 7.137). The excavations were undertaken from July to September 2013.

At the southern end of the trench was hand-made red brick wall (3250, 7.138). It was orientated east-west, three skins wide and ten courses high. It was equivalent to (3243) and (3245) and represented the northern wall of Stove House 1/ Stove House 2. South of wall 3250, was a layer of salt, clinker and brick rubble (3249).

Two hand-made red brick piers (3233, 3234, 7.139) to support the original columns, were located to the northern end of the trench. These were two skins in width. The trench was filled with a combination of a loose black clinker deposit (3232, 3248) at the northern end. At the northern end two intermittent flues (3231, 3251) ran north-south either side of the trench. They were a single skin thick and survived to a maximum height of

two courses. The whole trench was sealed by a skimmed concrete floor (3230).



7.136: HC26, Post-excitation, northern end, north facing



7.137: HC26, Post-excitation, southern end, north-west facing



7.138: HC26, Post-excitation, southern end, wall 3250, centrally, south-east facing



7.139: HC26, Post-excavation, northern end, brick pier 3233, north facing

Phased Interpretation

Phase 4: The earliest deposits related to the construction of Stove House 1 at the end of the 19th century. The remains of east-west wall (3243/3245) corresponded with brick wall (3250). Subsequently, the interior was filled with loose compacted clinker rubble (3249) equivalent to (3239).

Phase 5: Stove House 2 was constructed shortly afterwards in 1899/ 1900. Red brick piers (3233, 3234) and posts supported the warehouse floor above. A system of flues (e.g. 3231, 3251) ran north-south up and down the stove house fed by exhaust gases from Pan 2.

Phase 7: The flues above were eventually abandoned, and an automated drying system on a new concrete floor installed.

7.27 Trench HC27: Strip Foundation, SH2 (East)

Description

This involved the excavation of three strip footing for steel supports in Stove House 2, of which this was the eastern footing (see AS004 above, AS067, AS070; 7.140, 7.141, 7.142, 7.143, 7.144, 7.145). The footing was 1.0 to 1.5m wide (east-west) and 15.4m long. It was excavated to a depth of 1.1m.

The excavations were undertaken from September to October 2013.



7.140: HC27, Post-excavation, northern end, north facing



7.141: HC27, Post-excavation, northern end, north facing

It was clear that during excavation at the northern end of the trench a north-south flue had been disturbed. Like the flues encountered in Stove House 3 and 4 the composition of the material within and without the flues was different. A single flue appeared to run along the exterior of the building. The material here consisted of conglomerated rubble and silt under flue (3252), overlain by black ash and silt layer (3253). The eastern side of this flue was represented by the foundation for Stove House 2, eastern wall (6568, see 7.141, 7.142). It consisted of pier and panel,

hand-made, red-brick, wall foundation (3255, 3256), with a flue (see below, 6679) to Pan 2 inserted through it. On the western side was a remnant machine-pressed red brick flue wall (3264) that ran for 3.5m before dog-legging 0.7m to the west. Outside of these flues in the ditch was a deposit of loose brick and salt (3260), this was overlain by a black clinker-silt and rubble layer (3259). Above this was a white hard salt layer (3258).

Cut across these layers was an east-west flue from Pan 2 to the main large flue (6679, see 7.143, 7.144). This was filled with conglomerated salt fill of flue (3262) and loose brick rubble and red sand fill (3257). No evidence for the northern wall of Stove House 1/ Stove House 2 was visible in this trench and it is presumed that it had been removed by later activity. However, the material south of flue (6679) was a mixed salt, clinker and brick rubble layer (3263), similar to (3239) and (3249). The trench was covered by a skimmed concrete floor (3254), with noticeable voiding where salt layer (3258) had dissolved.



7.144: HC27, Post-excavation, central section, north facing



7.142: HC27, Post-excavation, central section, south facing



7.145: HC27, Post-excavation, southern end, north facing



7.143: HC27, Post-excavation, southern end, south-east facing

Phased Interpretation

Phase 4: No evidence for the northern wall of Stove House 1 was visible unlike trenches HC25 and HC26.

Phase 5: The flue layout previously visible in trenches HC25 and HC26 was also revealed in this trench. It consisted of flue wall (3264) that dog-legged to the west, suggesting the north-south flues seen previously had a more complex arrangement.

Phase 7: Again, the flues above were abandoned, and a new concrete floor installed.

7.28 Trench HC28: Strip Foundation, SH2 (South)

Description

This involved the excavation of a strip footing for the south-eastern wall in Stove House 2. The footing was 0.8m wide (NW-SE) and 3.2m long (SW-NE). It was excavated to a depth of 1.1m (see AS004 above, AS067, AS072; 7.146). The excavations were undertaken from July to September 2013.

A hand-made, red-brick wall (3174, 7.147), 8 courses high and 3.2m long, was located in the south-east section. This abutted a hand-made red brick pier (3176), 1.0m high, 0.4m long and 0.6m wide, in the southern end of the trench. The remainder of the trench was filled with dark brown mixed clinker, brick rubble and crushed sandstone layer (3175). Within this were several voids where the salt had dissolved under action of water. The trench was covered by skimmed concrete floor of SH2 (3177).

Phased Interpretation

Phase 4: the buried remains of hand-made red brick walls and piers (3174/ 3176) probably related to the original wall layout of Stove House 1. This had clearly been rebuilt, as earlier wall segments were visible in the southern wall of SH1/ SH2 (e.g. wall 6433 pre-dated wall 6436/6437). It is likely that these buried remains were contemporary with this wall.

Phase 7: The concrete floor continued to the very south of the stove house.



7.146: HC28, Post-excitation, north-east facing



7.147: HC28, Post-excitation, wall 3174, east facing

7.29 Trench HC29: Tunnel, SH1

Description

This involved the clearance and dismantling of the ferrous metal roof of a tunnel located on the eastern side of Stove House 1 (see AS004 above, AS062, AS063, AS064). The tunnel is described in relation to Stove House 1 in Section 6.8 below. The excavation was c. 2.5m wide (east-west) and c. 10.0m long (north-south). It involved the removal of all the ferrous metal plates forming the roof of the tunnel. It was subsequently filled with aerated concrete. The work was undertaken in August and September 2013.

Both western and eastern walls were of hand-made red brick in English Garden Wall bond (6526, 6527; recorded during excavation as 3179, 3180 respectively, 7.148, 7.149, 7.150). They were covered by series of six ferrous metal I-beams (3178), orientated east-west. The beams were 2.5m long, 100mm (4") x 110mm (4½"). Bridging between the I-beams were a series of seven ferrous metal plates over tunnel, c. 2.50m wide (east-west), c. 1.10m long (north-south, 3172, 7.151, 7.152, 7.153). At the southern end was an upturned ferrous metal 'kicker' plate (3182, 6529, 7.154), made of an angle iron, 2.50m x 0.3m x 0.1m, which formed a trough. Besides this was a brick wall of hand-made red brick (3181), 2 courses wide, 2 courses deep, orientated east-west. A separate brick paviour of hand-made red brick (3173, 7.153), stretcher bonded, on-side, was laid over the tunnel further north. The most northern sheet had collapsed and rubble had piled up within the tunnel.



7.149: HC29, The tunnel walls, north facing



7.148: HC29, The tunnel walls, north facing



7.150: HC29, The tunnel walls, south facing



7.151: HC29, The tunnel with metal plates in situ, south facing



7.152: HC29, The tunnel metal plate, in situ, east facing

To the south was the tunnel entrance which had a lintel made of two ferrous metal I-beams overlaid by a single sheet of ferrous metal (6525, see 7.155). In the entrance this cover was a sheet of ferrous metal (6528), with a single small hole presumed to be for drainage.



7.155: HC29, The tunnel entrance, plates 6525, 6528, west facing



7.153: HC29, The tunnel metal plates, in situ, south facing

Located at the entrance to the tunnel at its base was a machine-pressed, red-brick sump (3301; see 7.156, 7.157). The sump was orientated south-east to north-west and was 0.95m x 0.65m in size and 0.8m deep. It was built two skins wide. At the base was a ceramic drain (3302) that continued to the north-west and south-east respectively.



7.154: HC29, The tunnel, metal plates and wall 3181, east facing



7.156: HC29, The tunnel, sump 3301, south-east facing



7.157: HC29, The tunnel, sump 3301, south-east facing

Phased Interpretation

Phase 4: The tunnel (e.g. walls 6526, 6527; I-beams 3178; plates 3182, 6529, 6525) was built contemporary with Stove House 1. The structure does not appear to pre-date it and appears to have been part of a fundamental design that allowed coal to be transported through the works from the canal directly to the fire-boxes of the stoves of the Fishery Pans. The design of the stove house if not unique, was certainly unusual. It indicates the lack of space within the Lion Salt Works. This would have been an expensive solution to allow coal to pass easily to the areas away from the canal. Examining the layout of the works it may have been the only solution, as other routes were blocked by the Engine House/ Brine Tank and a series of cottages (in Phase 4) where Stove House 2 and Pan House 2 now stand. It would have been impossible to take the coal round the outside, as the Alliance Works was owned by the Thompson's bitter rivals – the Salt Union.

The sump and drain appear to connect to a similar sump in the Loading Bay/ Packing Area (6929) and sumps in Stove House 4, located during Watching Brief, (3189, HC10; 3193, HC11, see above).

Phase 5: The fragmentary remains of walls, and flues over the surface of the tunnel indicate the continued realignment of the interior layout of Stove House 1 throughout its lifespan. Its initial layout was changed to accommodate Stove House 2.

Phase 7: It was probably changed again to accommodate the automatic drying system in Stove House 2. At this time changes to the layout

of the north wall of Stove House 3 may have resulted in a continuous flue system running between the two stove houses. This would have run over the tunnel (visible as flue 6517).

7.30 Trench HC30: Pad Foundations, SH2 (South)

Description

This involved a series of five excavations for concrete pads and steel posts to support the wooden beams above. The excavations were 1.5m x 1.5m and 1.10m deep (see AS004 above, AS067, AS071). The excavations were undertaken in September and October 2013.

The north-west post-pad in Stove House 2, Trench 30-1 (7.158), was 1.7m x 1.4m and excavated to a depth of 1.1m. The earliest deposit was black clinker ash layer (3216). Into this, there was the cut (3217) for hand-made red brick pier (3215), in the southern section, designed to support one of the original posts of Stove House 1/ Stove House 2. This was overlain by mid-orange grey clayey sand (3214). The levelling of flues beneath Stove House 2 was represented by a layer of clinker salt, ash and brick rubble (3213). This was similar to layers (3239), (3249) and (3263). It was overlain by a skimmed concrete floor (3212).

The north-east pad in Stove House 2, Trench 30-2 (7.159) was 1.45m x 1.45m and 1.25m deep. The earliest deposit was black clinker silt (3223). Through this was the cut (3224), for hand-made red brick post pier (3222). This was 3 courses wide and 10 courses high. It was overlain by clayey sand (3221), and black clinker silt and ash (3220). The remains of collapsed flues were represented by black clinker silt and crushed brick deposit (3219). This was covered by a skimmed concrete floor, 0.09m thick (3218).

The south-west pad in Stove House 2, Trench 30-3 (7.160) was 1.5m x 1.45m and 1.05m deep. The earliest deposit was hand-made red brick pier (3228), for an original post. It was six courses deep, and five skins wide. It was overlain by black ash, clinker and crushed brick deposit, 0.76m thick (3227) and black ash and clinker deposit, 0.2m thick (3226). Above this was the skimmed concrete floor, 0.08m thick (3225).



7.158: HC30-1, Post-excitation, brick pier 3215, south-west facing



7.159: HC30-2, Post-excitation, brick pier 3222, south facing



7.160: HC30-3, Post-excitation, brick pier 3228, south facing

The south-east pad in Stove House 2, Trench 30-4 (7.161) was 1.3m x 1.5m and excavated to a depth of 1.1m. The earliest deposit was hand-made red brick pier (3290), seven courses high, for an original post. This was overlain by a hard salt layer, 0.72m deep (3291) and loose clinker, ash and brick rubble fill, 1.14m deep (3289). The area was covered by skimmed concrete floor (3225).

A further pad was excavated in Stove House 2, this was unrecorded.



7.161: HC30-4, Post-excitation, pier 3290, south facing

Phased Interpretation

Phase 4: The presence of the brick piers (3215, 3222, 3228, 3290) suggests that a series of earlier (and now removed) ferrous metal columns supported the floor timbers in the southern half of Stove House 1/ Stove House 2. These would have been aligned in a very similar manner to those previously recorded in Stove House 1 (e.g. pairs 6518, 6519; 6623, 6498) beneath the north-south wooden beams.

Phase 7: When the automated drying mechanism was inserted the earlier layout of ferrous metal columns were removed. The floor was concrete skimmed and new ferrous metal I-beams used to support the wooden beams above.

7.31 Trench HC31: Lift Pit and Floor Area, PH3 (South)

Description

This involved the excavation for a concrete base, to support a new disabled lift in Pan House 3. The excavation was 2.20m (north-south) x 2.10m (east-west) and 1.20m deep. In addition the brick floor within Pan House 3 to the south of Stove 3 was excavated and re-laid (AS040, AS041). The work was undertaken in September 2013.

A layer of black clinker (3184) acted as the bed for machine-pressed red brick floor (3183), in Pan House 3. The bricks were laid on-side, and had a shallow rectangular frog. Set in the south-west corner was machine-pressed, red-brick sump

(3185), 1.30m x 1.30m in size, 2 skins thick (7.162). The brick sump drained to the south-west with an inlet from the east and north. Within brick floor 3183 were the remains of two wooden posts (3277, 3282, 7.163), 0.18m x 0.18m in size. These represented the remains of wooden structures to the south of Pan 3.



7.162: HC31, Post-excavation, lift pit, west facing



7.163: HC31, Post-excavation, posts 3277, 3282, north facing

Phased Interpretation

Phase 5: The clinker surface, brick floor and wooden posts relate to the original layout of Pan House 3, dating to 1899/ 1900. A brick working surface would have been located to the south in front of the pan. Historic photos show this to be open until the 1960s, with a wooden caboose in front of the pan. The wooden posts would have supported the central section of this caboose.

Phase 6/7: The brick sump in the south-west corner was part of a change in drainage in the works. It is not clear when this occurred but could have been as late as the 1970s. Originally the sumps for the ditches were located in the south-west and south-east corners of Pan 3. From here they drained south of the Pan House. The addition of this later sump (3185) may have been undertaken as late as the 1970s as part of a reorganisation of the drainage.

7.32 Trench HC32: Lift Pit, SH3 (South)

Description

This involved the excavation for a concrete base, to support a new disabled lift in SH3. The excavation was 1.5m (north-south) x 2.0m (east-west) and 1.0m deep (AS029; 7.164). The work was undertaken in October 2013.



7.164: HC32, Post-excavation, west facing

The excavations were undertaken through areas that had previously been excavated as part of the work for the wall between Pan House 3 and Stove House 3 (HC04, see above). No new deposits were encountered during the work and the deposits were excavated through backfill of the previous excavations.

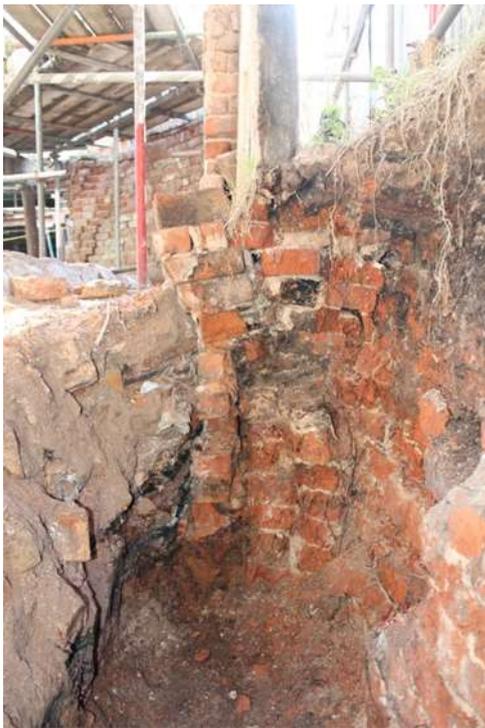
Phased Interpretation

Phase 9: The deposits were backfill of previous excavations in 2012-2013.

7.33 Trench HC33: Wall Foundation, SH1 (West)

Description

The western wall of Stove House 1 was partially dismantled and a new strip footing excavated underneath. The excavation was 2.3m (north-south) 1.1m (east-west) and 1.4m deep, (see AS004 above, AS062, AS065; 7.165, 7.166, 7.167). This was originally undertaken in March 2013 and was extended in September 2013.



7.165: HC33, Post-excavation, boundary wall 3268, Stove House 1 west wall 3267, south facing

The earliest deposit was mixed black silt (3236) alongside Ollershaw Lane designed to level/ build-up the area. This was overlain by a shallow layer of mixed-humic, topsoil and clinker, 0.20m deep (3235). Cut (3267) into this material was the wall foundation of the former boundary wall of Red Lion Hotel (3268). This was made of poor quality hand-made red brick in English Garden Wall Bond. It represented the former boundary wall of Coal Yard of Red Lion Hotel. Built directly on top of this was machine pressed red brick wall foundation of the west wall of Stove House 1 (3267).

The interior (eastern side of wall) was filled by black clinker ash material forming make-up layer

(3266) and mixed black ash material of interior flue run of Stove House 1 (3265).



7.166: HC33, Post-excavation, boundary wall 3268 and interface with SH1 north wall 6505, north facing



7.167: HC33, Post-excavation, boundary wall 3268, west facing

Phased Interpretation

Phase 2: The former boundary wall (3268) of the coal yard adjacent to the Red Lion Hotel underlay the later foundations of Stove House 1. It was one of the few remnants of the pre-Lion Salt Works archaeology of the western part of the site. The coal yard lay west of the Red Lion Hotel and appeared to have been associated with the Marston Wharf (located north of the canal on the opposite bank) that can first be dated to the late-18th century. Small rural wharfs would often have

associated coal yards. Along with the Red Lion Hotel this would have been a small economic hub around Marston before the full impact of salt-working occurred in the 19th century. The sale of coal to the local community that sprung up around the salt works in Marston would still have been important throughout the 19th century.

Phase 4: The coal yard was replaced by Stove House 1 between 1894 and 1899. This is visible as wall 3267. The interior of Stove House 1 was filled with black clinker ash material – but does not appear to have been filled to a great height. Instead the flues appear to have been built onto a level ground surface, only slightly higher than the adjacent pan (e.g. Pan House 1).

7.34 Trench HC34: Wall Foundation, SH1 (North)

Description

This involved the underpinning of the northern wall of SH1. This was done by ‘hit-and-miss’ excavation under sections of the wall. The excavation was 13.5m long (east-west) in total but consisted of six trenches, each trench being between 1.0 and 3.0m in size and 1.0-1.5m (north-south; see AS004 above, AS062, AS066; 7.168, 7.169, 7.170, 7.171, 7.172, 7.173). The excavations were undertaken in October 2013.



7.168: HC34, Stove House 1, north wall underpinning, Post-excavation, west end, 1 of 6, south facing

The excavations revealed the degraded hand-made red brick wall foundations (3283), below main build of Stove House 1 North Wall, 6505. These were corbelled on western side. Extending to the north from the wall was short wall

foundation (3300) running north-south. It was made of machine pressed red brick and two skins wide, it was only excavated to two courses. It was probably associated with the remains of Pan House 1 in the pan garden prior to its demolition.



7.169: HC34, Stove House 1, north wall underpinning, Post-excavation, west end, 2 of 6, south facing



7.170: HC34, Stove House 1, north wall underpinning, Post-excavation, central, 3 of 6, south facing



7.171: HC34, Stove House 1, north wall underpinning, Post-excavation, central, 4 of 6, south-west facing



7.172: HC34, Stove House 1, north wall underpinning, Post-excitation, east end, 5 of 6, south facing



7.173: HC34, Stove House 1, north wall underpinning, Post-excitation, east end, 6 of 6, south facing

Phased Interpretation

Phase 4: It is likely that wall foundations (3283), relate to the earliest build of Stove House 1. These foundations were contemporary with a large ferrous metal beam (429), seen in Test Pit 24 beneath Stove House 1, northern wall. This indicated the location of the tunnel entrance from the north (see HC29 above). Close examination of the wall, has revealed a minimum of two phases visible in the existing wall (see Volume IV). It would appear that it has been rebuilt a number of times during its lifespan, often in patchwork form.

Short wall foundation (3300) appears to relate to a north-south wall, one of the few remains of the stove of Pan House 1. Photographs from the 1972⁴⁶ suggest that the stove was entirely dismantled and pan dismantled for scrap/ reused elsewhere in the works. Fragmentary remains of the pan house

⁴⁶ Photos dated to 1972, labelled 'Marston Saltworks' appear to show Pan House 1, with the interior during dismantling

structures have been recorded in Test Pit 23 as the wall foundations (422, 423) and brick surface (376) in Test Pit 14, which was part of the hurdle ditch on the western side of the stove and pan.

7.35 Trench HC35: Loading Bay Retaining Wall Foundation

Description

In order to retain the northern side of the Loading Bay it was necessary to build a large retaining wall of mass concrete. This was 11.5m long (east-west) and 1.3m wide (north-south), with a dog-leg within its plan. It was 1.8m deep (see AS004 above, AS067, AS074; 7.174, 7.175). The work was undertaken in February 2014.



7.174: HC35, Loading Bay, Post-excitation, south-west facing



7.175: HC35, Loading Bay, Post-excitation, north-west facing

The earliest deposit was a hand-made, red-brick, wall foundation (3274, see Plate 5.13.164), extending from SH2 western foundation wall 3255 to the east. It extended for c. 1.0m, and was 3 courses deep. It was overlain by a layer of loose cinder and clinker material, located at the base of the Loading Bay, c. 1.0m deep (3269). Over this was a deposit of brick-rubble, ash and clinker

(3270), c. 0.8m deep. It was equivalent to 3200, (see HC24-06).

A north-south orientated, machine-pressed, red-brick wall, 2 skins wide and 6 courses deep (3276) was built into this layer at the western end of the trench. Abutting this was a sloping remnant wall of machine-pressed, red brick (3275), orientated east-west, two courses deep. They appeared to be part of earlier structures located in the area of the Loading Bay. The walls were overlain by a narrow mortar deposit, c. 0.15m deep (3271) and black clinker silt deposit (3272, 3273) that covered the whole of the Loading Bay.

The ditch of Pan 2 was uncovered during the work north of the retaining wall (7.176). This was overlain by layers of debris associated with the collapse of Pan House 2 (7.177).



7.176: HC35, Post-excitation, Pan 2, southern ditch, west facing



7.177: HC35, Post-excitation, Pan 2 ditch, east facing

Phased Interpretation

Phase 4/5: Wall foundation (3274) is almost certainly part of the original laying out of Stove House 1 or Stove House 2 in the late 19th century.

It appears to abut the eastern foundation wall of Stove House 1.

Phase 6-7: A series of layers and wall foundations (3275 and 3276) are stratigraphically later. They suggest the area was built up significantly. It is not clear whether this was associated with the Fishery Pans or the laying out of the Loading Bay. The Stock Control Plan dating to c. 1900⁴⁷ show that a small yard was built north of the North-West and North-East Fishery pans. The archaeological evidence, however, is not clear.

7.36 Trench HC36: Strip Footing PH3 to PH4

Description

This involved the excavation of a short strip footing between Pan House 3 and Pan House 4. The strip footing was designed to accommodate a low wall to seal the under-croft of the walkway between the two buildings. The strip footing was 0.4m wide (north-south) and 2.7m long (east-west). It was excavated to a depth of 0.5m (AS042; 7.128). The work was undertaken in October 2013.



7.178: HC36, Post-excitation, east facing

The earliest feature within the trench was a machine-pressed, red-brick, drain with a slate

⁴⁷ See Volume II, 3.55

cover, 0.30m wide and orientated north-south (3281). At the western end was a machine-pressed, red-brick, sill-wall foundation, 0.96m long and orientated east-west (3278). Parallel and to the south of this was a wood sill beam (3280), orientated east-west, located under southern section. The entire trench was covered by a black ash and clinker deposit (3279).

Phased Interpretation

Phase 4-7: The drain (3281) and wall foundations (3278) are difficult to phase accurately and may relate to the period when the large warehouse known as the Rhomboid Building was built, or be later structures associated with Pan House 3 or Pan House 4.

7.37 Trench HC37: Walkways SH3, Flue Level

Description

A series of walkways were inserted at flue level throughout Stove House 3. It was necessary to excavate a series of footings to support the metal frames and the footprint of these walkways, in order to allow a +2.0m clearance below the historic beams. The first walkway in Stove House 3 was located between the 1st and 2nd flues from the west (7.179), entering from the south-western doorway. It was c. 1.20m wide (east-west) and for a distance of c. 15.4m (north-south).



7.179: HC37, Post-excavation, western walkway excavation, Stove House 3, north facing

A second walkway entered from the south-eastern doorway and ran parallel to the wall along the eastern side of the room. It was again c. 1.20m wide and extended the entire length of the room exiting via a doorway to the north (AS029; 7.180, 7.181). The walkways were excavated to a depth of c. 0.30m deep below the level of the ditches. In addition a total of 5 footings on the western side and seven footings on the eastern side were excavated below this level (see 7.182). These were 1.20m x 0.50m in size and excavated to a depth of 0.50m deep (beyond the depth of the walkway). The walkway footings were excavated in November and December 2013.



7.180: HC37, Post-excavation, detail of footing, west excavation, Stove House 3, south facing



7.181: HC37, Post-excavation, eastern walkway excavation (central), Stove House 3, south facing

The western walkway was excavated through the hard salt layer (6154) located in the ditches between the 1st flue (6139) and 2nd flue (6138). The walkway was excavated to a depth of 25.70m AOD.

The eastern walkway removed the remains of the very eastern flue (6133) to a depth of 25.65m AOD. The remains excavated had already been heavily disturbed during the excavation to repair the wall between Stove House 3 and 4 (recorded and discussed above as HC03 above). Further deposits were removed but these consisted of loose brown brick rubble silt material (3013) that filled Flue 6133, the brick remains of flue 6133 (these were highly degraded machine-pressed red brick), and salt deposits (6149).



7.182: HC37, Post-excavation, eastern walkway excavation (north), Stove House 3, south facing

Phased Interpretation

Phase 5-7: The deposits excavated included the original or rebuilt flues from Stove House 3. However, the majority of the deposits were salt residues that had accumulated in the ditches during the drying of salt on top and within the flues throughout the 20th century.

7.38 Trench HC38: Walkways SH4, Flue Level

Description

A walkway was inserted at flue level through Stove House 4. It was necessary to excavate a series of footings to support the metal frames and the footprint of this walkway, in order to allow a +2.0m clearance below the historic beams. The walkway in Stove House 4 was located between the 1st flue (6396) and partially removed the buried remains of the 2nd flue (6395) from the west. It entered from the south-western doorway, and exited via the doorway to SH3 within the western wall. It extended for a distance of c. 16 m (north-south), and was c. 1.20m wide (east-west) and widened to c. 2.80m the southern end (see AS044; 7.183).



7.183: HC38, Walkway excavations in Stove House 4, north facing

Again the walkway was excavated to a depth of c. 0.30m below the level of the ditches. In addition a large excavation was undertaken (HC39-1) at the northern end to accommodate two footings of the walkway. This was over-excavated due to the loose nature of the fills. A further four footings were excavated to the south (see 7.184). These were 1.20m x 0.50m in size and excavated to a depth of

0.50m deep (beyond the depth of the walkway). The walkway footing was excavated in November and December 2013. The earliest deposit uncovered was loose layer of clinker silt material and brick rubble (3284), excavated at the far northern end of the trench to a depth of c. 0.8m (see 7.185). This was overlain by a salt layer (3287) between the flues 6395 and 6396. Over this were the remains of brick floor surface 3285/ 6413 (see 7.185).



7.184: HC38, Walkway excavations in Stove House 4, footing detail, north facing



7.185: HC38, Walkway excavations in Stove House 4, northern end, north-west facing

This was visible at the northern end of the excavation predominantly and within the remains of excavation (HC39-1). The remains of brick flue 6395 were removed on the eastern side to a depth of 25.70m AOD. Internally this contained a loose fill of clinker and silt (3286).

Phased Interpretation

Phase 7: The flue deposits were all contemporary with the construction of Stove house 4 in the 1950s. Brick floor surface 6413 was unique within the stove houses on site, as it was the only ditch between flues with a deliberately built walkway.

This may have been because it was a traffic route from Pan House 4, through Stove House 4 and into Stove House 3 or the exterior walkway. This warranted a more durable floor surface.

7.39 Trench HC39: Wall Foundation PH3, South-west

Description

This wall foundation was located in the south-western corner of Pan House 3. The wall was dismantled and excavated to the level of the footing. It was subsequently rebuilt (AS015; 7.186, 7.187). The work was initially undertaken in October 2012 and was completed in January 2014.



7.186: HC39, Post-excitation, wall footing 6005/ 6009, north-east facing



7.187: HC39, Post-excitation, wall footing 6005/ 6009, east facing

The earliest deposit was mixed grey-brown clay silt (3140, also seen in HC22-2). Through this was cut the machine-pressed, red-brick, wall foundation for upstanding wall 6005/ 6009 in the south-west corner of Pan House 3. It initially ran north-south before turning WNW to ESE and continuing to Trench HC22-1 (equivalent to 3138).

To the north of the wall a layer of black clinker (3184) acted as the bed for machine-pressed red brick floor (3183), in Pan House 3 (see HC31). To the south the trench was overlain by brown silt rubble (3148, see HC22-3).

Phased Interpretation

Phase 1/2: The earliest deposit grey clay-silt (3140) pre-dated the works and related to the site as part of the Red Lion Hotel.

The WNW to ESE running wall foundation is contemporary with the very earliest period of the works, possibly dating to the period when this was land associated with the Red Lion Hotel. The 1868 map shows a clear boundary wall at the southern end of the site running along the northern side of the Accommodation Road.

Phase 5: The clinker surface relates to the original layout of Pan House 3, dating to 1899/ 1900.

Phase 7: The WNW to ESE running wall foundation 6005/ 6009 had clearly been rebuilt above foundation level.

7.40 Trench HC40: SH4 East Buttress Foundation

Description

In order to support a substantial bulge in the eastern wall of SH4 it was necessary to excavate a large footing for a series of three buttresses. Located on the north-east corner of SH4, externally, the footing was 2.0m (north-south) x 1.8m (east-west) in size and a depth of 0.6m. It was excavated in two sections. The work was undertaken in February 2014 (AS075; 7.188, 7.189).

The earliest deposits were red sand and crushed brick rubble layer (3288), at least 0.4m deep that covered the base of the trench. This was overlain by a deposit of brown mixed silt, clinker and rubble

(1059), 0.20m deep, that covered the remainder of the Loading Bay.



7.188: HC40, Post-excavation, SH4 East Buttress excavations, section 1, west facing



7.189: HC40, Post-excavation, SH4 East Buttress excavations, section 2, south facing

Phased Interpretation

Phase 6: The crushed red brick layer is likely to be brick rubble deposits formed from the destruction of the North-West Fishery Pan prior to the building of Stove House 4 in the late 1950s. It was clear that no identifiable features were present in the trench, but the spread may relate to internal flue deposits levelled during the rebuild.

Phase 7: Layer 1059 was laid down in the 1960s and 1970s in order to build a loading ramp for salt deliveries from the Loading Bay.

8. 2012-2014: WATCHING BRIEFS ON PERIPHERAL AREAS

By Chris Hewitson

During the main Phase 2 works a series of watching briefs were conducted. These were conducted in the peripheral areas of the site around the main buildings in advance of geotechnical work and during the excavation of structural foundations. The excavations were conducted between October 2012 and December 2013.

8.1 Trench WB01: Brine Shaft Investigations

As part of the restoration work, there was a requirement to locate and treat the original brine shaft excavated in 1894. Due to the nature of the shaft and the health and safety implications of potential unstable ground work was to be conducted remotely. The methodology was set out in the mitigation strategy, the overall project design () and the detailed project design for September-December 2012.⁴⁸ It involved the use of a 360° tracked excavator to remotely excavate the area. Reflector-less total station and digital photography were only used to record the remains remotely.

The excavation area was 9m (N-S) in length by 5.5m in width (E-W). It was excavated to a maximum depth of c. 2.0m below ground level (22.15m AOD, see AS005 below, AS077).

The area was excavated at its northern end until the natural grey-brown clay (1058) of the substrate was encountered at a depth of c. 2.1 m (22.15m AOD). This was overlain by a mixed clinker ash material interleaved with layers of red-orange clay (1014). This was c. 1.0m in depth.

In the north- western corner of the trench were the remains of the brine shaft (1012; 8.1, 8.2, 8.3). This consisted of a wood lined rectangular structure, c. 2.5m in diameter. The wood lining consisted of two skins of wooden planks, stacked on edge and half-lap jointed at the corners. The

planks were 2.5-3" thick. The shaft was in-filled with loose red-brown silt and brick rubble (1015).



8.1: Brine Shaft 1012, north facing

Two large ferrous metal pipes (1004, 1005, see 8.2, 8.4) with bore-holes down the centre and substantial collars round the top, were inserted vertically into the brine shaft presumably to accommodate the pumping mechanism. These were 0.35m in diameter externally and 0.18m internally down the bore-hole. They extended all the way to the surface and were visible in plan prior to excavation.



8.2: Brine Shaft 1012, north-west facing

⁴⁸ Matrix 2011; CWAC 2012-05; CWAC 2012-05-03





8.3: Brine Shaft 1012, south-east corner detail, north-west facing



8.4: Ferrous bore-hole 1005, after excavation

The brine shaft appears to have been originally surrounded by a floor surface formed of machine-pressed bricks in the Stretcher bond, laid on-side (1008; 8.5). This layer extended for 2.5m south of brine shaft 1012. It was located 0.9m below the current ground level (23.20m AOD).



8.5: Floor surface, 1008, east facing

On the eastern side of the excavation area were the remains of a flue (8.6, 8.7) that ran initially north-south from the eastern side of the Engine House, before turning north-east to south-west within the area of excavation and heading in the direction of Chimney 2. The flue consisted of two walls (1009, 1010), 0.85m apart, of machine pressed red brick in Stretcher bond, two skins thick. A series of ferrous metal plates (1011) were situated between the flue walls. They were supported by a series of re-used ferrous metal spikes (1054). The plates were generally 0.95 x 0.45m in size and 1/2" to 5/8" (12-15mm) thick. A void was located at the below these metal plates that was filled by a loose sludge of water mixed with clinker ash (1016). This clinker ash was also located above the ferrous metal plates but was much drier in this location.

The flue continued to the south and was situated adjacent to a square brick foundation, two skins thick of machine-pressed red brick in English bond (1053; 8.8, 8.9). A single piece of wood covered the upper surface on the southern side. The centre of the brick foundation was filled with black ash-silt material (1056). The flue was blocked at the south-western end by a single skin of bricks (1055).

The whole trench was covered over by a layer of mixed black-brown silt ash (1013), 0.40m deep.

Located centrally were the remains of a ferrous metal bore-hole (1006, 8.10) that was associated with the electric pump adopted in the 1960s. The brine shaft was surrounded by a square concrete base 0.4m high (24.35m AOD on its top).



8.6: Flue 1009/ 1010, north facing



8.8: Square brick foundation, 1053, north-west facing



8.9: Square brick foundation, 1053, south-east facing



8.7: Flue 1009/ 1010, southern end, south-west facing



8.10: Ferrous metal bore-hole, north facing

Phased Interpretation

Phase 4: The brine shaft (1012) belongs to the start of the Red Lion Inn. It is presumed to be the one described in 1894. It corresponds closely to the location on the 2nd Edition Ordnance Survey Map of 1898.⁴⁹ The wood lining is almost certainly original and its state reflects the water logged saline preservation conditions. The shaft would appear to have been lined initially with wood. It is not clear how far the wood lining extended down the shaft, but it is highly probable that it continued until solid bedrock was encountered.

The flue (1009, 1010, 1011) was a contemporary development associated with the building of the Engine House. It was designed to take exhaust fumes away from the boiler house located in the eastern side of the Engine House. From here it passed, originally to Chimney 4. The orientation of the flue encountered during excavation suggests although it may originally have passed to Chimney 4, it appears to have been realigned to pass towards the back-end of the north-east and north-west Fishery Pans.

Phase 5-6: Some of the adaptations around the brine shaft are not necessarily original, but the work surface (1008) was presumably contemporary with the earliest development of the brine shaft.

Phase 7: Insert discussion of reorientation.

8.2 Trench WB02: Final Strip of SH5 Base

The following description covers the watching brief that occurred during the stripping of deposits overlying natural clay subsoil after the cessation of excavations in Stove House 5 by Oxford Archaeology North conducted in January and February 2013 (OAN 2013; see AS005 above). The watching brief was conducted by Chris Hewitson (CWAC Project Archaeologist) and Lewis Stitt (OAN).

The natural subsoil consisted of yellow-brown clay (1058) consistently encountered across the site at a depth of 22.20m AOD. This was overlain by a further deposit of mixed clay (2083) that covered the entirety of the area from which mid-19th

century artefacts were recovered (see OAN 2013, 17).



8.11: WB03, Wooden box drain, 1063, south facing



8.12: WB03, Wooden Box drain, 1063, during excavation

Above these deposits was a layer of mixed black rubble and silt (1060). Two drains cut this layer. One, a wooden box profile drain (1063), was

⁴⁹ See Volume II, 3.3

aligned north-south (AS079; 8.11, 8.12). It was 0.30m wide and c. 4.0m long, with a depth of 0.25m. On initial analysis the wood appears to be oak (*Quercus*). This continued across the area from the south, on the same alignment as drain 2017 (see Section 9 below), but to the south-east. It continued to the north where it was seen in section (see Trench WB3 below). A brick-lined drain, c. 0.6m wide (1061) ran east-west and was located under the eastern wall of Stove House 5. This was connected to a single bricked lined manhole (1062; 8.13) and was located directly under the Stove House 5 wall foundations.



8.13: WB03, Brick lined manhole, 1062, under Stove House 5, east wall, east facing



8.14: WB03, Stove House 5 watching brief, final strip, brick structure 1064, west facing

Located centrally and cutting the natural subsoil was a brick-built structure (1064; AS078; 8.14, 8.15, 8.16). Constructed in hand-made red brick and orientated east-west, the structure represented the remains of a pit. It was in two parts, to the west was a narrower brick pit 0.98m (N-S) x 2.10m (E-W) that led directly into a larger rectangular pit 1.50m (N-S) x 1.65m (E-W). It survived after excavation to a depth of 0.44m (21.77m AOD). Both elements had a machine-

pressed brick-lined floor. It was located adjacent Building 1 in the area of the site where floor remains were absent (2080).



8.15: WB03, Stove House 5 watching brief, final strip, brick structure 1064, west facing



8.16: WB03, Stove House 5 watching brief, final strip, brick structure 1064, north-west facing

Phased Interpretation

Phase 3: The remains of the drain running north-south appear to post-date the cobble surface adjacent to the Smithy excavated by OAN (OAN 2013). They do however, appear to be part of this element of the work and possibly represent drainage for the smithy complex associated with the Alliance Salt Works dating back to the mid-19th century.

The large pit located during the watching brief element of the work corresponds with a feature marked W.M. on the 1882 Ordnance Survey Map.⁵⁰ The remains appear to relate to a weighing machine in this location presumed to be for weighing salt prior to transport. The brick cavity would have housed a platform with the smaller trench holding a balance beam. Salt barrows would be sat upon the platform during the weighing of salt with counter-weights on the balance beam.

Phase 7: The remains visible on site were rapidly back-filled after the demolition of the smithy and cottages in the mid-20th century and replaced by Stove House 5 in 1965.

8.3 Trench WB04: Excavation of Pads for Emergency Exits North of Stove House 5

After the completion of the Stove House 5 concrete raft foundations a further three small foundations were excavated north of the slab to accommodate the foundations for the emergency exit from the upper floor level of the new building (see AS005 above). These were:

- Pad SH5-1: 1.2m (N-S) x 1.5m (E-W) in size, c. 1.8m deep (base at 22.00m AOD, 8.17). Consisted of yellow-brown grey clay natural (1058) at the base overlain by a mixed deposits of rubble, clinker and brown-black sand-silt material (1065). This was overlain by grey gravel that had been used to infill the excavations undertaken around the Brine Shaft (see above).
- Pad SH5-2: 1.2m (N-S) x 0.8m (E-W) in size, c. 1.8m deep (base at 22.00m AOD). Consisted of

yellow-brown grey clay natural at the base overlain by mixed deposits of rubble, clinker and brown-black sand-silt material (1066).

- Pad SH5-3: 1.2m (N-S) x 0.8m (E-W) in size, c. 1.8m deep (base at 22.00m AOD, 5.18). Consisted of yellow-brown clay natural at the base overlain by mixed deposits of rubble, clinker and brown-black sand-silt material (1067). Located on the western side of the trench were the remains of a wooden drain (1068) that ran north-south. It continued from the south from drain 1063 (described above WB03). This was only seen in section but was at least 1.20m long and 0.20m deep (located at a depth of 22.40m AOD at its top). It was of box construction of planks of oak (*Quercus*).



8.17: WB04, Pad SH5-1, north-east facing



8.18: WB04, Pad SH5-3, west facing

⁵⁰ See Volume II, 2.6, 2.7 and 2.10

Phased Interpretation

Phase 3: The wooden drain was part of the drainage within the Alliance Works to the east of the Smithy complex. The use of wood suggests it was part of the earliest drainage system on site.

Phase 4-7: The upper layers of loose clinker silts were associated with levelling of the site at various periods prior to construction of Stove House 5 in 1965.

8.4 Trench WB05: Soft Strip West of Stove House 5

During remedial work around Stove House 5 after the construction of the concrete slab it was necessary to soft strip the upper horizons west of the Stove House 5 slab in order to create a level surface for scaffolding around the building. The soft-strip was to a depth of 200-300mm below current ground levels.

Located within the area were the remains of a fragmentary wall foundation (1069), orientated north-south, which ran for c. 14.0m. It turned east-west at its northern end (1070), was highly disturbed and fragmentary (see AS005 above, 8.19, 8.20). It was c. 1.5m long. It was constructed of three skins of machine-pressed red brick.

At the southern end the wall again turned east-west and was part of a complex of walls originally investigated during excavations in Trench 2 during 2011 (see Section 4 above). The north-south wall was identified as wall 21. It returned east-west as wall 19, with a complex of perpendicular walls 16, 18 and 20. These walls all comprised machine-pressed bricks, each measuring 230 x 120 x 80mm, and bonded with a lime-based mortar.

The complex of walls corresponded to the western side of the North-East Fishery Pan identified in OAN excavations (see Section 9 below). This had an eastern and northern wall (2024) and a series of walls at the south (2021, 2022, 2023) that related to the furnaces (see Trench 2, Section 4 above).

Phased Interpretation

Phase 5: The brick walls related to the eastern side of the north-eastern of four 'fishery' pans constructed around 1900. The main wall 1069 related to the western stove wall. The smaller

walls at the south related to the furnaces located at the front of the pan where the fires were set. To the north of the pan complex was a chimney identified during OAN excavations (see Section 9 below).



8.19: WB05, SH5, west strip, North-East Fishery Pan, north facing



8.20: WB05, SH5, west strip, North-East Fishery Pan, south facing

8.5 Trench WB06: Footings for Pump House

Five excavations in the Pump House involved excavating beneath the corner posts for concrete pads to support the posts. A further excavation (WB06-06) was designed for a concrete pad to support the southern end of the Steam Engine. The excavations were c. 1.0m x 1.5m in size and 0.7-0.8m deep (see AS005 above, AS080, AS081). They were undertaken in October and November 2013 and January 2014.

Trench WB06-01 (8.21) was located on the northern side of the Pump House under the central post. The earliest deposit was the former eastern wall of the South-East Butter Pan (1071) that was on the western side of the trench (recorded elsewhere, Area G3, Section 10 below).

At the base of the trench was a small brick pier, two courses high, (1077). Adjacent to it, and designed to support the post of the Pump House was a grey flagstone (1076). The remainder of the trench was filled with black brown clinker and silt layer (1071).



8.21: Trench WB06-01, west facing



8.22: Trench WB06-02, west facing

Trench WB06-02 (8.22), was located on the northern side of the Pump House under the north-east post. A single feature was located in the western section of the trench; a brick pier, 690mm wide, 5 courses high, (1078). The remainder of the trench was filled with black brown clinker and silt layer (1072).

Trench WB06-03 (8.23), was located on the western side of the Pump House under the central post. The earliest feature was located in the western section of the trench; a brick pier, 860mm wide, 4 courses high, (1079). Over this and resting

on it was a ferrous metal brine pipe, 180mm diameter, with a 260mm flange (1080). This ran north-south and appeared to head towards pier (1078) in Trench WB06-02. The trench was filled with black brown clinker and silt layer (1073).



8.23: Trench WB06-03, west facing



8.24: Trench WB06-04, north-west facing

Trench WB06-04 (8.24), was located on the western side of the Pump House under the south-west post. The earliest feature was a ferrous metal steam pipe (1081), 40mm diameter, 700mm long, aligned south-east to north-west. In the north-west corner of the trench was a later mass concrete block, 700mm high, 800mm long, 400mm wide (1083). Over this was a small stub wall, of machine-pressed red brick, 4 courses high, (1082). This formed the southern sill of the Pump House. The remainder of the trench had been filled with black brown clinker and silt layer (1074). This had been disturbed in the south-east corner by a High Voltage electricity cable laid in 2006.

Trench WB06-05, was located on the southern side of the Pump House under the south-east post. It was excavated to less than 200mm due to the proximity of the chimney. It was filled by black brown clinker and silt layer (1075). Trench WB06-06, was located south of the Steam Engine inside the Pump House. A ferrous metal water pipe (1085) ran south-west to north-east across the trench. The trench was otherwise filled with black brown clinker and silt layer (1084).

Phased Interpretation

Phase 6: The earliest remains relate to the footings for the South-East Butter Pan [1071]. The pan has been incorporated into the remains of the Nodding Donkey Complex and Pump House. For more details see Volume IV. The remains of brine pipe (1080) and the associated brick piers pre-date the Pump House and the brine extraction complex. It is possible, due to their orientation and location that they date to the same time as the South-East Butter Pan. If so they fed the pan from the rear as the fire holes were located at the northern end (the chimney was at the south and drew the heat underneath the pans). This would be an unusual set-up for the brine pipes. An alternative is that they extend around the edge of the site and fed Pan House 3 and 4. An east-west brine pipe was visible in a series of trenches (PH4 - 3081, 6261, HC16-1, HC16-2 and HC16-3; PH3 – 6930, 3157, HC20, Section 7 above; the external works area G3, Section 10 below). This may have connected with the brine pipe here. The piers may be associated with the Rhomboid-Shaped Building and be part of footings for the building that housed the Butter Pans. There is no evidence for the structure with the exception of its outline on the 1898 and 1910 Ordnance Survey Maps.⁵¹ Some walls along the southern side of its outline may suggest that it was surrounded by a wooden stud wall on low brick sill walls (see below Area G3 and G7, Section 10).

Phase 7: The Pump House itself was originally constructed in the late 1930s (see Volume IV). Some of the features excavated including the post pad in Trench WB06-01 relate to the construction of the original Pump House. The steam pipe (1081)

dated to this period. It ran from the north-east corner of the Boiler House, under the Accommodation Road and entered the Pump House in its south-west corner feeding the Steam Engine and Steam Windlass. The Pump House was extensively rebuilt in 1980.

8.6 Trench WB07: Footings for Boiler House

The work involved the excavation of the interior of the Coal Store (WB07-01) to allow a new floor to be inserted where the original steel plates had eroded. The excavated area was 2.80m (east-west) by 2.40m (north-south; see AS005 above AS082). It was excavated to a depth of c. 0.4m. The work was undertaken in September 2013. In addition two concrete footings for buttresses were excavated (WB07-02/03) on the southern side of the Boiler House. These were 1.10m x 0.60m and 0.50m deep each. The work was undertaken in October 2013.



8.25: Trench WB07, coal shed interior, south-east facing



8.26: Trench WB07, coal shed, cast iron pipe 1088

Trench WB07-01 was located within the interior of the Coal Store (8.25, 8.26). In front of the boiler were a series of three walls. A low brick wall of

⁵¹ See Volume II, 3.3, 3.51

machine-pressed, red brick (1094), orientated north-south, was in front (east side) of boiler. Extending east-west were two machine-pressed, red-brick walls (1091, 1092), 6 courses high and 2 skins wide, that formed side wall beneath the Coal Store floor. Between these was a further wall of machine-pressed, red-brick, 6 courses high, and 2 skins wide, that was a cross wall beneath the Coal Store floor (1090). At the eastern end was another two low, machine-pressed, red-brick walls (1096, 1097) forming the eastern sill wall of Coal Shed. The voids beneath the floor and between these walls contained a cast-iron pipe (1088), running east-west, centrally, from the base of the Boiler, designed for the discharge of water (8.26). Black ash and clinker deposit (1098) filled the space below the floor boards. Wooden boards were located, against the southern, eastern and northern wall of the Coal Store (1087, 1089, 1095). Ferrous metal plates, in front of Boiler (east side, 1093), were part of former cover for whole floor. Some had been replaced by a series of wooden floor boards (1086).



8.27: WB07, boiler house buttresses, north-east facing

Trench WB07-02/03 were located south of the Boiler House (8.27). Both revealed the remains of the foundations of the southern wall of the Boiler House (6800). It had two brick corbels at the base. Otherwise the trench was filled by a layer of black-

brown, clinker and silt layer (1099 and 1100 respectively).

Phased Interpretation

Phase 7: The majority of the remains date to the late-1930s when the boiler house was built (see Volume IV for details of the Boiler House). It was built to serve the boiler for the steam engine and brine extraction apparatus. The floor was originally open to allow for exhausting water from the boiler but slowly became filled with coke and clinker as the hut was also used as the Coal Shed.

8.7 Trench WB08: Footings for Smithy

The work involved the excavation of a strip footing to support the sill wall [6884] along the southern end of the Smithy. The trench was 5.20m long and 0.80m wide. It was excavated to a depth of 0.70m. The work was undertaken in March 2014. The earliest deposit was a layer of crushed clinker and slag residues (1101) beneath Smithy to form base for the floors. This was at least 0.70m deep. On either side of the trench were the remains of the sill walls of the Smithy (6870, 6884, 6889). The remains of 15 floor boards of Smithy Store 2 (6917) covered the trench.



8.28: WB08, Smithy foundation, southern end, west facing

Phased Interpretation

Phase 6: The Smithy was constructed in c. 1900, but appeared to have been extended during its lifespan to the south to allow for a joiner's store (see Volume IV for full details). In order to build the extension a large amount of waste material from the Smithy including clinker and slag residues from forge waste was used to build the ground up. The material was well drained and allowed the floorboards (6917) to be placed directly on the ground with very little moisture seepage occurring.

9. 2013 EXCAVATION OF STOVE HOUSE 5 FOOTPRINT

By Oxford Archaeology North

9.1 Introduction

A single trench placed across the entire footprint of Stove House 5 was subject to controlled archaeological excavation. The excavation was carried out in three stages. In the first instance, the trench was excavated to a depth of 600–700mm below the current ground surface. After all remains of archaeological significance at this level were recorded, further excavation was carried out to a depth of c. 1.0–1.2m below modern ground level (see AS005 above, AS083). All features were recorded at this level, and the trench was then excavated to a final depth of c. 1.5m below the current ground level.

The majority of the excavated structures had been constructed utilising hand-made bricks. The bricks used in the smithy buildings were almost certainly original, although those in the salt works structures had been re-used, probably on more than one occasion, and thus could not be used to indicate a date.

9.2 Description

The earliest features on the site were the two land drains (2105 and 2107). These were cut into a layer of clay, which almost certainly represented the natural geology. The natural geology, and land drains (2105 and 2107), were overlain by another deposit of clay (2083), which probably represented levelling of the site associated with the initial development of the Alliance Salt Works in 1856; fragments of pottery recovered from layer 2083 have been dated to the mid-19th century (Section 4, AS084). The land drains were similarly associated with this initial industrial development of the site.

The remains of two brick buildings were exposed in the centre of the excavated area. These buildings are first shown cartographically on the 1868 sale plan, and appear on all subsequent maps of the site until 1954, including an aerial view dating to 1947. It seems likely that these buildings were the remains of the Alliance Works pan

smithy, and an associated small boiler/engine house.

The south-western building (Building 18)⁵² comprised two main rooms, measuring 7.8m x 4.0m, with smaller additional rooms to the south-east and north-west (9.1). All of the component walls comprised hand-made bricks bonded with crumbly, lime-based mortar. The large main room to the southwest measured 4.3m x 4.0m, and was bounded by walls 2047 and 2060, which were both two courses wide. The building retained the remnants of a tiled floor (2058), laid on a bedding of ash and crushed brick (2059). Set into the south-west wall of the room was a brick-built fireplace (2062), which was 1.15m wide and 0.65m deep. An area of tiles in front of the fireplace may have been a later addition.



9.1: General view of the smithy (Building 18), looking west

The main room in the north-eastern part of the building was bounded by walls 2060, 2061, 2051 and 2047. It measured 3.5m x 2.75m, and had an entrance through wall 2051 at its north-eastern corner. The south-western two thirds of the room had a brick floor (2054), with the remaining third showing evidence of a tiled surface (2055), both of which had been laid on a bedding layer of ash and crushed brick (2080). A fireplace (2056) had been built against the north-western wall, constructed from brick with a cladding of refractory bricks (9.2), suggesting that the fireplace was operating at a much higher temperature than that of a normal domestic hearth.

⁵² Building 18, after numbering system on Ward's Plan, see Volume II, 2.9

Set into the south-eastern wall at floor level was a 2.35m x 0.5m sandstone block (9.3), which incorporated a rectangular recess carved into it for a machine setting. At its south-western end were four small holding down bolts, and at the north-eastern end it had two holes drilled into of 100mm and 30mm diameter respectively.



9.2: Firebrick-lined hearth, looking north-west



9.3: Building 1 south-east room looking north-east, showing the hearth on left and machine bed on right

A service trench (2110) containing a lead pipe (2108) was exposed immediately to the south-east of the building. The pipe was evidently plumbed into the smaller of the two holes in the block and the remains of a ceramic drain were observed below it leading from the larger hole.

The room occupying the north-western part of the building measured 2.45 x 0.98m, and was bounded by walls 2047 and 2061. The remains of a wooden beam (2049) set in the floor at its north-eastern end represented a doorway into the building. This room incorporated a brick floor (2048).

Two smaller rooms had been added to the north-west of the main rooms. The south-western of these measured 3.2m x 1.3m, and was bounded by walls 2057, 2045, 2043 and 2044, and had a brick floor (2046). This floor continued into the north-eastern smaller room, which measured 2.1m x 1.3m, and was bounded by walls 2047 and 2044. The north-western wall had been partially built over by the furnaces for the fisheries pans, suggesting that the north-western outbuildings had been demolished when the Lion Salt Works was established, but the rest of the building remained in use, passing eventually from the Alliance Works to the Lion Salt Works. The north-eastern end of this room had also been subject to some disturbance, represented by layer 2042, so that it was not possible to tell if there was originally a north-eastern wall to room. However, it seems possible that the room may have ended in line with the wooden door beam 2049, and may have been open fronted.

The remains of a small cobbled yard (2072), and a brick-built outshut comprising walls 2068, 2070 and 2071, was exposed to the south-east of Building 18 (9.4). The yard only survived in the southern corner of the building complex, but may have continued originally to the south-west, where disturbed cobbles were excavated. The brick outshut measured 2.2m square, contained a brick floor (2069), and was open to the north-east.



9.4: Brick outshut and cobbled next to Building 1 looking north-east

Water pipe 2108 ran below the cobbles and the outshut, and appeared to be an original feature rather than a later addition. To the east of the outshut, and cut by drain 2017, were three

discrete patches of cobbles (2073). These may have represented the remains of a road, which originally afforded access to the building.

An L-shaped section of brick walling, which represented the remains of a smaller building (Building 17),⁵³ lay to the north-east of the Building 18 (9.5, 9.6). This section of wall ran 1.8m aligned south-west/north-east, in line with the wall 2047 of Building 18, and then returned to the north-west for a distance of 3.1m. It had been truncated at its north-western and south-eastern ends. The south-western wall of Building 17 was probably represented by wall 2052, although only fragmentary remains survived. Building 2 would have measured at least c. 4.9m x 2.9m.



9.5: The brick-built foundations of Building 17 looking east



9.6: North-western wall of Building 17, with Building 18 in background, looking south-west

It is possible that a short, L-shaped section of walling (2087) had also formed part of this building, although this had been largely removed

by a brick and stone plinth (2041), which had been inserted to support one of the cast-iron pipes between the 'nodding donkey' and the brine shaft. This would indicate that Building 17 went out of use and was demolished by 1938, when the 'nodding donkey' was put into use.

Interior features were limited to the remains of a brick floor in the eastern corner of the building, and two rectangular blocks of stone (2077 and 2078), situated to the south-east. Block 2078 had two holding down bolts set into its upper surface, and resembled the foundation bed for an engine or other item of heavy machinery. It is tempting to suggest that they housed a small steam-power plant associated with the smithy, and whilst firm evidence is lacking, the demolition of Building 17 in the second quarter of the 20th century may have reflect a change from steam to other forms of power generation.

A brick floor surface (2050) was revealed between wall 2051 at the north-eastern end of Building 18, and wall 2052 at the south-western end of Building 17. Surface 2050 appeared to extend between the two buildings, terminating at the entrance into Building 18 marked by wooden beam 2049. The south-eastern end of this surface had been destroyed by later activity, represented by layer 2113.

A spread of compacted black cinders (2020) was excavated to the south-west of Building 18. This seemingly represented a repair or replacement of cobbled yard 2072 (see above). Excavation demonstrated that layer 2020 was c. 400mm thick, and overlay compacted grey clay 2020. Layer 2020 was cut by a 370mm diameter circular borehole (2063) for a dipping well.

The final stage of mechanical stripping revealed that layer 2083 covered most of the northern part of the excavation area, and may have represented a levelling deposit as it overlay the natural geology. Most of the artefacts recovered from layer 2083 dated to the mid-19th century, which is consistent with the initial development of the site for the Alliance Salt Works. Layer 2083 sealed two land drains (2105 and 2107), which similarly derived from the initial preparation of the site in

⁵³ Building 17, after numbering system on Ward's Plan, see Volume II, 2.9

the mid-19th century. Drain 2105 was aligned south-west/north-east for 12.1m, and was cut by later drains 2009 and 2011. Drain 2107 took an L-shape route, extending 2.75m northwest from drain 2105, and then returning to the south-west where it was cut by drain 2009.

The excavation area was largely enclosed by a two-course wide wall of machine-made bricks (2001), which formed a square structure measuring 18.8m x 18.5m, although excavation extended slightly beyond this footprint to the north-west and south-west (9.7). The position of wall 2001 corresponded with the footprint of Stove House Five depicted on historical mapping. Wall 2001 had been built on a concrete foundation (2002) that splayed out a further 100mm from the wall.



9.7: Outer walls are Stove House 5, with Buildings 17 and 18 in the centre and the North-East Fishery Pan in the foreground, looking east

A brick-built manhole (2111) measuring 0.83m x 0.63m had been inserted through the wall on its south-eastern side, affording access to a ceramic drainage pipe that ran beneath the wall. Another manhole (2004) was exposed in the south-western part of the excavation area, immediately beyond wall 2001. Manhole 2004 measured 1.2m x 1.1m and comprised machine-made bricks (9.8). It acted as a junction for three ceramic drainpipes (2007, 2009 and 2011). Drain 2007 approached from the north-west, drain 2009 from the south-east, and drain 2011, which showed some evidence of brick lining, from the north-east.



9.8: Manhole 2004, looking north-west

All of these drains were filled with mixed clay, and contained ceramic drain pipes. At the north-western end of drain 2007 was a square ceramic drain cover (2005). Drain 2011 had been truncated by a previously unknown rectangular trench (2013), which probably represented an archaeological trench excavated by a local group but not recorded. Another similar drain (2017) lay parallel to drain 2011 along the south-eastern edge of the excavated area. All of the drains respected wall 2001, suggesting that they were associated with the construction of Stove House 5.

A series of brick walls exposed along the north-western side of the excavation area formed a rectangular structure that almost certainly represented the remains of the south-western fisheries salt pan depicted on historic mapping. The main wall (2024) of this salt pan ran north-east/ south-west for 16.2m, and was three courses wide (9.9). At the south-western end wall 2022 continued to the north-west for a distance of 3.8m, where brick wall 2021 extended to the south-west. A short stub of internal walling (2023) ran southwest from wall 2022 (9.10). These walls formed a 3.8m wide chamber at the south-western end of the structure. The south-western end of this chamber had been destroyed by the insertion of drain 2007, and thus its original length could not be determined accurately. The north-eastern end of wall 2024 extended beneath later wall 2001, where it was truncated; the entire north-western part of the structure had evidently been removed. Nevertheless, it is likely that the 3.8m width of the north-west chamber represented the full original width of the fisheries pans.



9.9: Fishery salt pan, showing wall 2024 extending along the centre of the excavated area, with the remains of the furnaces on the left, looking south-west



9.10: The north-western end of the fishery pan, looking north-west



9.11: Limited excavation across wall 2024, looking south-west

Limited manual excavation across wall 2024 provided a vertical section of the sequence of deposits within the fisheries pans (9.11). Inside the main structure was a 30mm thick lens of

compacted mixed clay and sand with abundant stone and brick fragments (2018). Outside the main structure, and in the area of the pan furnaces, was a 35mm thick band of mixed clay with brick fragments (2019), which retained some evidence of heating. Below this on both sides was a 150mm thick layer of smooth, black ashy clay (2082), into which wall 2024 had been cut, with an 80mm thick layer of compact cinders and crushed brick (2081) below. Below this was a layer of compact grey clay with abundant fragments of brick, stone and slate (2083), which was also observed across the south-western part of the excavated area immediately above the natural clay.

Extending south-eastwards from the exterior elevation of wall 2024 was a series of brick walls, all of which had been truncated by drain 2011. Walls 2025, 2026 and 2032 were the most substantial, each four brick courses wide, and probably represented the main walls of a series of furnaces used to heat the fisheries pans. Walls 2027-2030 appeared to be the remains of internal partitions within the furnace structures. Walls 2037-2040, situated on the opposite side of drain 2011, were all that remained of the outer south-eastern wall of the furnaces. It is likely that a row of square-section wooden posts (2064-2067) that lay parallel and to the south-east of the fisheries pans were the remains of a wooden boundary fence separating the Lion Salt Works from the Alliance Salt Works.

The remains of a rectangular chimney (2033) fitted apertures for two flues were revealed immediately to the north-east of the fishery pan (9.12). The chimney comprised a 2.0m x 1.8m brick inner structure surrounded by an outer shell of concrete, into which a cast-iron pipe was set around the internal brick structure. A 0.95m wide brick flue (2034) extended into the chimney from the east, probably from the boiler below the brine tank. This flue had been blocked subsequently with brick (2112), probably when the 'nodding donkey' was installed in 1938. The second flue (2114) was 1m wide and entered the chimney from the north-west, probably from the furnaces associated with a second fisheries pan. This flue was not blocked, indicating that it remained in use

until the fisheries pans were demolished between 1947 and 1954. Neither the chimney nor the flues were excavated entirely during the excavation. Immediately to the north of flue 2034 was a rough brick surface (2086), which may have formed part of a surface surrounding the brine shaft and the associated pipes.



9.12: Chimney 2033 and blocked flue 2034, looking west

The eastern end of flue 2034, and the north-eastern end of drain 2011, had been damaged by modern activity, represented by layer 2035. This was one part of a large area of disturbance comprising deposits 2035, 2042, 2053 and 2113, which cumulatively represented modern disturbance to buried remains across much of the northern part of the excavated area.

The upper layers encountered in the excavation area comprised a series of mixed demolition and dumping layers (2000, 2089-2100). These layers all derived from the dumping of material in the area following the dismantling of Stove House 5 in 2009.

9.3 Interpretation

Phase 3: The Alliance Salt Works

The earliest features exposed during the excavation comprised two land drains (2105 and 2107), which were cut into the natural clay geology and overlain by layer 2083. These drains and the overlying layer of clay probably derived from the preparation of the site to enable the development of the Alliance Salt Works in 1856, immediately to the south-east of the excavation area. A 19th-century date for these remains is also

suggested from the group of finds recovered from layer 2083. Other excavated remains that may be ascribed to this mid-19th century phase of development include the pan smithy for the Alliance Salt Works, the footprint of which is shown on the sale plan of 1868.⁵⁴

The structural remains of the pan smithy comprised hand-made bricks bonded with lime-based mortar, consistent with a mid-nineteenth-century construction date. Similarly, the two tiled floors were constructed from tiles manufactured using a process invented in the 1840s and patented in 1863, adding weight to an interpretation of the remains having been constructed in the mid-19th century.

The principal smithy building (Building 18) comprised two main rooms, together with two smaller rooms and an outshut. The north-eastern main room contained a stone foundation bed for an item of machinery, which was serviced with a water supply and drainage, and a hearth. The latter incorporated refractory bricks, suggesting that it had been designed to withstand temperatures that were considerably higher than those generated in a domestic fireplace. It is thus likely to represent the remains of a small furnace, consistent with those employed typically for smithing. The remains of the two open-fronted rooms are consistent with workshops or storage areas.

It seems possible that Building 17 may have been intended to house a small steam-power plant associated with the smithy and ancillary structures. In particular, a boiler may have been located inside the building, perhaps raising the steam required by a small engine situated mounted onto the stone blocks (2077 and 2078) excavated within the footprint of a wooden outshut to the south-east of Building 17.

The excavated remains of the Alliance Salt Works smithy incorporated a fireplace hearth in the south-west corner of Building 18. This appeared to have been inserted into existing fabric, suggesting that the building had been remodelled for a different function, possibly office or even domestic

⁵⁴ see Volume II, 2.7

use. The Alliance Salt Works closed in 1898, and it is likely that the Lion Salt Works took over this building a few years earlier, as the smaller rooms exposed in the north-western part of the excavated area were demolished to accommodate the construction of the fisheries pans and the wooden boundary between the two works between 1890 and 1898.

Phases 4 And 5: The Lion Salt Works (1894) and Initial Expansion (1899-1937)

The fishery pans and associated chimney, flues and brick surface were all established by 1890-1898. Two fishery pans were built, producing coarse salt for the fish and meat preservation industries. The structure uncovered within the excavation area undoubtedly represented the remains of the north-eastern fisheries pan and associated furnaces. The chimney served the furnaces of the fisheries pans and the original pumping mechanism for the brine shaft. This comprised a single boiler and horizontal engine, situated within the brick building below the brine tank.

Flue 2034 was connected to the boiler, whilst and flue 2114 served the north-western fishery pan. The brick surface associated with the chimney and flue 2034 was probably part of a hard-standing surface surrounding the brine shafts and pipes.

The cartographic evidence indicates that Building 17 was demolished between 1910 and 1938, which is corroborated to some extent by the archaeological evidence. The remains of this building were cut by a brick pipe plinth that was constructed to serve the 'nodding donkey' that was installed in 1938.

Phase 6: Further Expansion of the Lion Salt Works (1938-47)

In 1938, the original steam pump for the brine shafts was replaced with the 'nodding donkey' to the south-west. This rendered the boiler and engine below the brine tank redundant, and resulted in the blocking of flue 2034. The flues from the pan furnaces were still in use at this time, and thus flue 2114 would have remained open.

The south-eastern and north-eastern fisheries pans were demolished between 1947 and 1954, with the north-western and south-western pans

seemingly continuing in use until 1960. It is likely that the chimney was also demolished after this date.

Cast-iron pipe 2003 ran from the 'nodding donkey' to the brine shaft, forming part of the pumping mechanism for the shaft. The routes of other pipes can be traced across the site from the position of several stone and brick plinths, which acted as foundation blocks for carrying the pipes above ground. Several other pipes were exposed across the site carried above ground by, several of which can be seen standing around the Nodding Donkey. One of these plinths (2041) was uncovered within the excavated area, and is contemporary with pipe 2003.

Phase 7: Addition of Pan and Stove Houses 4 and 5 (1954-65)

Stove House 5, represented in the excavation area by wall 2001 and concrete footing 2002, was built in 1965, the last open salt pan to be built in Britain and remaining in use after all other open pans had gone out of production. It appears that a series of drains were laid immediately prior to construction with two south-west/north-east-aligned internal drains running into a drainage system surrounding the pan house. The construction resulted in the demolition of the remaining Building 18. The brick structure of the stove house had partially collapsed following the closure of the works in 1986, and was eventually dismantled in 2009 and the ground cleared and levelled.

Building 18 is visible on an aerial photograph 1947, and is also shown on the Ordnance Survey map of 1954. It seems likely that it was demolished in the late 1950s prior to the development of Stove House 5 in 1965.

10. 2014 WATCHING BRIEF ON EXTERNAL WORKS

By Chris Hewitson

The external works involved excavation of a series of trenches for mechanical and electrical services throughout the site. This was done by the building contractor or their sub-contractor under direct archaeological supervision (i.e. the control of the Project Archaeologist or Oxford Archaeology North). The external works package was designed in conjunction with the Project Archaeologist to minimise disturbance to below-ground archaeological remains. The following areas were identified (See AS006 below for detailed locations):

Table 10.1: Watching Brief External Works – Excavations (January to June 2014)

**SW = Surface Water, FW = Foul Water, LV = Live Voltage Electricity, Trunk = combination of SW, FW, LV, Data Ducts and Gas as applicable*

Location	Services, Work	Trench Size (width, depth in mm)
A_Ollershaw Lane	SW	500, 850
B_Pan Garden/ SH1	n/a	
C1_Pan 2, North	SW	500, 850
C2_Pan 2, South/ Loading Bay	SW	500, 850
D_Site boundary adjacent to canal	n/a	
E1_East of Stove House 5	LV	500, 850
E2_Pan 5 Support	n/a	
F_Nodding Donkey Complex	n/a	
G1_Foul Pump, North of SH5		2500, 2500
G2_SH5 boundary, west of Nodding Donkey	Trunk, FW	2500, 1100
G3_East of SH4	Trunk	1200, 1100
G4_SH4/ PH4/ Loading Bay	SW	1000, 850
G5_PH3/ PH4 to Red Lion Inn	Trunk	2450, 1100
G6_Corner Red Lion Inn	Trunk	2450, 1100
G7_PH3/ PH4	SW	500, 850
H1_Car park	LV, Soft	500, 850

Location	Services, Work	Trench Size (width, depth in mm)
	Strip	
H2_Manager's Office	SW, LV	500, 850
I_Main Entrance	SW	1100, 850
J_Smithy	SW	500, 850

Excavation was undertaken to an approximate depth of 1.50-1.80m below floor formation level. The location of the trenches was marked out in advance of work in agreement with Wates Construction by the Project Archaeologist.

10.1 – Area A, Ollershaw Lane

Introduction

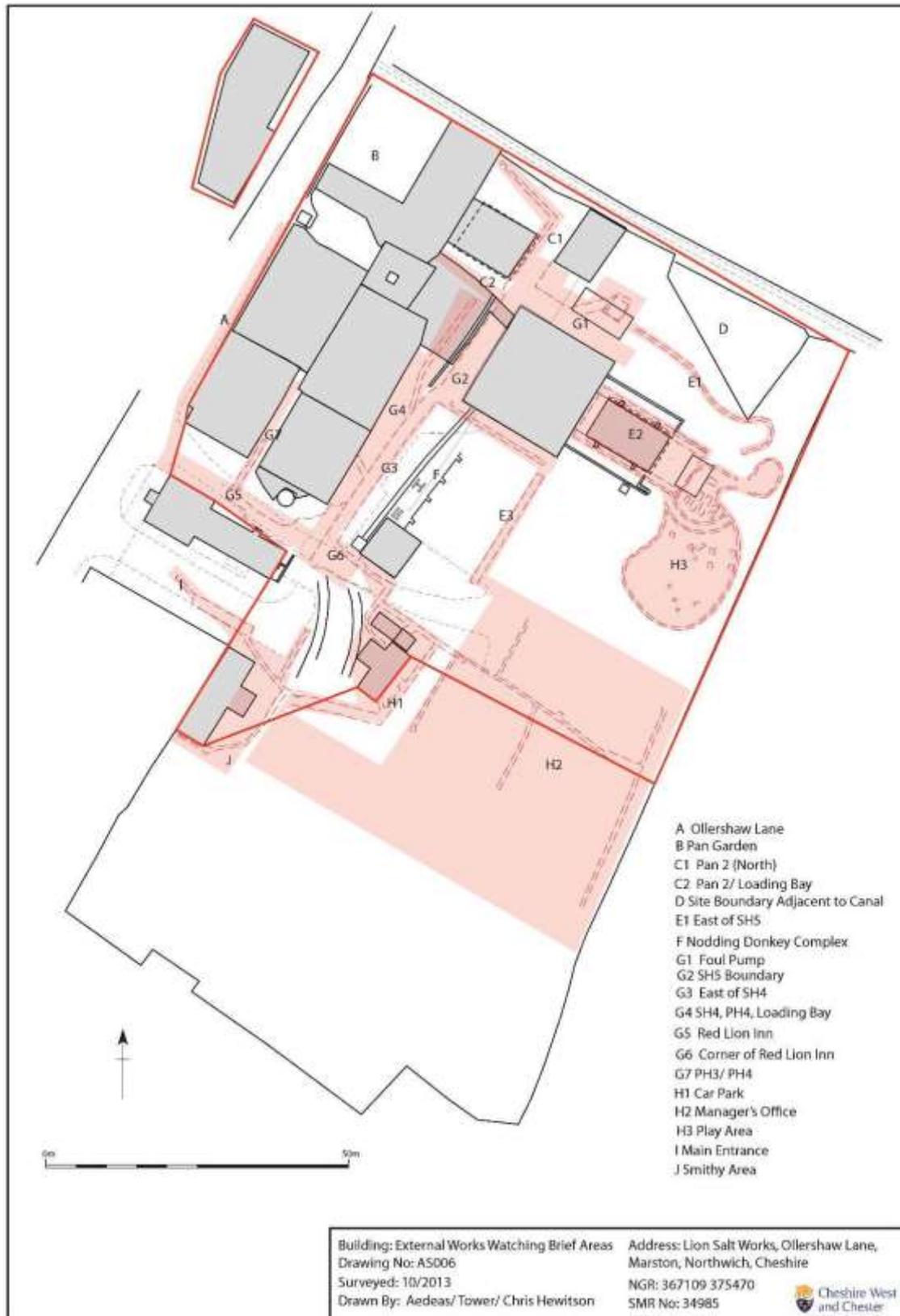
A single trench was excavated along the boundary of the Scheduled Monument on Ollershaw Lane in order to provide surface water drainage for Pan House 3 and Stove House 3. The trench was excavated on ground that sloped from north-south, from 26.32m to 24.24m AOD. It was 40.0m long, 0.50m wide and excavated to a depth of 0.60m.

Description

The area along the verge of Ollershaw Lane was made up compact clinker ash make-up layer (2389), 0.40m deep. This layer followed the slope of the road from the north to the south. This was overlain by a shallow layer of topsoil (2390), c. 0.2m deep (see AS006 below, 10.1, 10.2).

Phased Interpretation

The clinker-ash material was derived from the stoves of the pan houses and was commonly used to build-up roads where subsidence had occurred. Localised subsidence may have begun to occur on Ollershaw Lane as it passed over the bridge. The ash material was brought in to build-up the surface of the road.





10.1: External Works, Area A, Surface Water Trench, North Facing



10.2: External Works, Area A, Surface Water Trench, South Facing

10.2 – Area C, Pan 2, North, South and East

Introduction

North of Pan 2, a single drainage run was excavated from the north-east corner of Stove House 2, around Pan 2 to meet with the surface water drainage from Stove House 5. The trench was orientated WNW-ESE for 13.0m before turning sharply around the east of Pan 2, and running north-south for 13.0-14.0m. It was, 0.6m wide and excavated to a maximum depth of 0.6-0.8m (see AS006 above, AS085; 10.3, 10.4).

In addition to the east of Pan 2, an excavation was undertaken to assess the ground make-up beneath a series of concrete slabs. The excavated trench was 2.4m (east-west) x 1.4m (north-south) and excavated to a depth of 2.20m, although the base became inundated with water (AS086; 10.5, 10.6).

Description

The earliest remains were grey-brown natural (1058) encountered at a depth of 2.0m below ground-level. This was overlain by a very soft, loose deposit of black clinker silt with red clay (2298) and mixed red brown clay silt layer (2297), that retained groundwater easily (10.6). This indicated an area of subsidence directly relating to borehole associated with the electric submersible pump. It extended in a diameter of 3.40m around the bore-hole.

The area of soft ground was covered by the remains of a machine-pressed, red brick, floor surface (2268), designed as work area in front of Pan 2 (10.5, 10.6). It was later replaced by a series of two skimmed concrete surfaces, with rough lain brick underneath. The lower layer of concrete slab (2277) was 7.5m (north-south) x 3.5m (east-west) x 0.40m deep. The upper layer of concrete slab (2276) was 7.5m (north-south) x 3.5m (east-west) x 0.25m deep. An east-west aligned wooden timber (2269) between Pan 2 and the Brine Tank, c. 3.50m long, retained concrete 2277 at its northern side. An east-west, machine pressed, red brick, wall foundation (2263) between the Pan 2 ditch and the Brine Tank may have been part of Pan 2 or an earlier pan in this location. As a whole

this appeared to form the base to the caboose structure in front of Pan 2.

The front of the pan had a series of sumps and drains (10.4). A yellow brick sump (2265), 1.20m (east-west) by 0.90m (north-south), with a brick base at a depth of 0.60m, was located at the eastern end of the north ditch of Pan 2. A ceramic pipe (2266), 9" diameter, entered from the ditch on its western side. Another ceramic pipe (2267), 9" diameter, exited to the south. The sump was covered with a ferrous metal plate (2264).

The area north of Pan 2, was covered with loose black clinker silt (2262) that varied in depth between 0.60m and 0.80m (10.3).



10.3: External Works, Area C, Surface Water Trench, North of Pan 2, North-West Facing



10.4: External Works, Area C, Surface Water Trench, East of Pan 2, North Facing



10.5: External Works, Area C, Test Sondage, East of Pan 2, North-East Facing



10.6: External Works, Area C, Test Sondage, East of Pan 2, North-East Facing

Phased Interpretation

Phase 4-7: The earliest deposits in this area relate to subsidence associated with localised brine extraction from the brine stream that flows across the upper bed of salt. Extraction of brine in solution has led to the formation of pockets beneath the ground and clear evidence of a localised zone of subsidence was already apparent from the sloping brickwork of the Engine House beneath the Brine Tank. Deposits 2297 and 2298 appear to relate to subsidence, caused initially by extraction between 1894 and 1937. A further episode of extraction from the early 1960s until the end of the sites working life in 1986 must also have contributed to this localised subsidence. The

subsidence appears to have impacted in a roughly circular crater, c. 3-5m in diameter. This takes in the corner of Stove House 5 (north-west), under the eastern end of Pan 2 and the southern corner of the Engine House and Brine Tank. This was successfully treated by boring and grouting in 2012. In addition the rebuilt Stove House 5 was designed on a reinforced concrete raft to negate the effect of future subsidence.

Phase 7: Pan House 2 was entirely rebuilt in the early 1970s. All the deposits and structures associated with the pan date to this time. This includes the remains of the drainage system running along the front of the pan (see 2264, 2265, 2266, 2267) and the brick and concrete surfaces in front of the pan (2268, 2276, 2277), which appear to have acted as a working surface.

10.3 – Area E1, East of Stove House 5

Introduction

A shallow low voltage electricity service trench was laid in the area east of Stove House 5 (see AS006 above, AS087). It followed the northern boundary of Pan House 5. The original specification stated it would follow the southern boundary of Pan House 5 but this was altered prior to excavation. It began in the area north of Stove House 5 and culminated north-east of Pan 5. It was c. 35m + in length, 0.5m wide and 0.5m deep.

Description

The earliest deposit related to a series of brick structures visible in plan during the watching brief. Located 15.0m east and 2.0m north of Stove House 5, north-east corner was a series of three north-south flue wall foundations (2373, 2374, 2375; AS087, 10.7, 10.8, 10.9). These were hand-made, red brick, flue walls with brick laid in header form, aligned north-south. The western two 2373 and 2374, appears to form a dead draught along the side of a furnace. A single small hand-made, brick pier, wall foundation (2372), 0.70m x 0.70m in size, abutted flue wall/ dead draught (2373).



10.7: External Works, Area E1, Electricity Cable Trench, West Facing



10.8: External Works, Area E1, Remains of Fine Pan, Alliance Works, West Facing



10.9: External Works, Area E1, Remains of Fine Pan, Alliance Works, North Facing

Further to the east the structure took a different form (10.7, 10.8, 10.10). A curved flue wall (2376) initially ran east-west and turned to run north-south. It was again made of hand-made, red brick. A second flue wall (2377) ran over curved wall 2376. It appeared to be bonded to it and part of the same structure. A further flue wall (2388) was located between 2375 and 2376. It was a single skin of hand-made, red brick, that formed a possible corner wall of the stove house or the flue system as it passes into the stove house.



10.10: External Works, Area E1, Remains of Fine Pan, Alliance Works, West Facing

Exiting from curved wall 2376 was two curving walls, (2378, 2379), one on top of the other, continuing to the east as a line of header bricks. The walls were seen further to the east as two walls (2382, 2383) aligned east-west, a single skin of stretcher bricks wide. The curved nature of the walls suggests it is drainage channel or a flue wall.

A single flue wall (2380) ran at an unusual angle to the remainder of the walls. It was aligned north-west to south-east and appeared to be un-associated; it had five headers in a row. At the very eastern end of the trench was an area of red sand and rubble spread (2381) associated with area in NE corner of site. No clear form or structure. It appeared to be demolition rubble from a collapsed

of dismantled pan or stove house (10.11, 10.12). The whole area was overlain by loose black clinker silt (2384).



10.11: External Works, Area E1, Electricity Cable Trench, East End, South-West Facing



10.12: External Works, Area E1, Flue Remains, North Facing

Phased Interpretation

Phase 3: The remains appear to be part of a pan structure. The plan of the site by Thomas Ward of c. 1880⁵⁵ suggests that the area lies in the vicinity of Building 1, 2, 3 and 4 of the Alliance Salt Works. These were the remains of a covered fine pan in the north-east corner of the site. It may have formed part of a firing or draught system under a pan. Alternatively this could be in the corner of the

⁵⁵ See Volume II, 3.52

Stove House. A similar structure was encountered in Building 12 during excavations in 1994/ 1995 (see Section 2 above). The general form and size of these enigmatic structures suggests that the mid-19th century fine pans were much smaller than later 20th century pans.

10.4 – Area E2, Pan 5 Support

Introduction

The area between the troughs represented the bases of a series of flues of Pan House 5. These were photographically recorded during 2009 enabling work. Their plan has been extrapolated from these photographs and historical records. It is clear from the photographs that the flues were almost entirely removed. As part of a variation on the 2012 Scheduled Monument Consent, dated August 2012, it was agreed to remove the troughs and allow for the excavation of a base for the repositioned Pan 5 (previously housed on scaffold). This below-ground excavation has been monitored and recorded by watching brief (see AS006 above, AS087; 10.13, 10.14, 10.15, 10.16, 10.17).

This involved the excavation of an area 10.0m (north-south) x 18.0m (east-west) to a depth of c. 0.1-0.5m below the current ground level. This was done in two stages, as the pan had been on scaffold in a location that covered the eastern half of the current excavation. The western half was excavated first, the eastern half was excavated second. A further two trenches were excavated to accommodate steel girders that supported the pan. These were 1.0m (north-south) x 18.0m (east-west) and were excavated to a further depth of 0.45m below the formation level described above.

Description

This represented the second time that the remains of Pan 5 have been excavated. They were initially uncovered as part of the dismantling and demolition works associated with Pan and Stove House 5 in 2009. No formal record of the excavation of the interior of Pan 5 was produced and description is reliant on photographs.

The earliest deposit was a layer of red sand and silt with some rubble (2370) and (2371), located at the bases of the north and south trenches for Pan 5

steels (10.17), at eastern end of the area outside of the footprint of the original Pan 5 furnace (see below). This was the top of demolition layer associated with the collapse and demolition of the Alliance Salt Works. A layer of red sand and rubble (2366), formed the layer for building of the furnace of Pan 5. The material was not dissimilar to other instances where it appears to have formed a 'caulk' for the stoves.

The furnace of Pan 5 was built directly onto this layer. It was built exclusively of machine-pressed, yellow brick, with wedge shaped frogs, marked 'SNEYD', two skins thick, and 0.22m wide. The construction consisted of two east-west walls; the north wall foundation (2354) and south wall foundation (2356) survived for length of c. 9m, separated by a distance of 6.6m. On the southern side was an area of brickwork forming footing of pier (2360), 0.70m x 0.80m (10.13, 10.14).



10.13: External Works, Area E2, West Side, East Facing

At the eastern end were two wall foundations (2355) and (2368), orientated north-south, which survived for length of c. 6.6m (10.15, 10.16). Between them was a cross-wall (2358) extending east-west, 1.50m long. These wall foundations formed two chambers. Within these chambers were two small brick pier bases or floor areas of yellow brick, at the north (2357) and at the south (2359).

The remains of the northern ditch of the Pan House, survived as a series of wall foundations. At the western end this was a short cross-wall (2364) forming the base for the western pier of northern wall. At the eastern end were remains of an upstanding yellow brick wall (2361), orientated north-south, c. 2.60m long. A remnant wall

foundation (2363) of the northern side of the ditch, orientated east-west, survived for c. 2.0m. The ditch appeared to have another intermediate wall foundation (2367), orientated east-west, which supported the base of the ditch. Remains of the southern ditch consisted of an upstanding yellow brick wall (2362), forming the eastern wall of southern ditch, 2.40m long.



10.14: External Works, Area E2, Remains of Pan 5 Furnace, North Facing



10.15: External Works, Area E2, East Side, North-West Facing

The area was covered on its western side, by a layer of mixed clinker rubble (2365) that overlies demolished remains of the Pan 5 furnace. This layer dates back to the demolition of the structure in 2009. Outside of the footprint of the Pan 5 furnace was a mixed rubble and clinker layer (2369), c. 0.5m deep.



10.16: External Works, Area E2, Remains of Pan 5 Furnace



10.17: External Works, Area E2, East Side, South-West Facing

Phased Interpretation

Phase 3: The upper demolition layer of the Alliance Works was encountered at a depth of c. 23.70m AOD.

Phase 7: Pan House 5 was constructed in 1965. All the remains of the furnace date to this period. These remains represent the very base of the furnace. The upstanding remains of the Pan furnace have been recorded in detail elsewhere (see Volume IV). The furnace would originally have had two ditches either side. Within the interior of the furnace were a series of east-west flues that continued to the west into Stove House 5, flue level. Two chambers were formed at the eastern end of the furnace by walls (2355), (2358) and (2368). Pan 5 furnace was oil-fired from the start and did not use coal at any time. This area was part of area in front of pan for the oil injectors. These used electronic sparks to ignite the oil. The two chambers created an area, in which the combustion of the oil was confined creating more intense heat for the pan above. The pan itself

shows the effect of the oil as the area immediately below these chambers has been subject to repeated repairs where corrosion has occurred.

10.5 – Area E3, South of Stove House 5

Introduction

A shallow low voltage electricity service trench was laid in the area South of Stove House 5. It followed the western line of the new access road in a direction north-south from the south-east corner of Stove House 5. It was c. 21m long, 1.0m wide and 0.4m deep (see AS006 above, AS007; 10.18).



10.18: External Works, Area E3, North Facing

Description

The earliest deposit encountered within the trench was the top of a brick rubble layer, containing red brick within a red sand matrix (2386). This lay at the base of the trench at a depth of c. 0.5m below the adjacent pathway. It represented the top of demolition deposits in this area.

It was overlain by a layer of black clinker silt overburden (2385), c. 0.4-0.5m deep. At the southern end of the trench this had been cut by a deposit of loose soil fill with ash and clinker (2387). This appeared to be the remains of Trench 94/95-I from the 1994/ 1995 excavation.

Phased Interpretation

Phase 5: The remains within the trench related to the period in the 1890s when the Alliance Salt Works was demolished and levelled. Subsequently layers of ash and clinker from the furnaces of the Lion Salt Works were deposited across the site to level it.

10.6 – Area G1, Foul Pump, North of Stove House 5

Introduction

In order to allow pumping of foul waste from Stove House 5, it was necessary to build a foul waste storage facility with associated pump (see AS006 above, AS085). This involved the excavation of a trench 3.5m x 3.5m in size, to a depth of 2.1m (21.85m AOD) below current ground level (23.96m AOD). This was located north of the rebuilt Stove House 5 and south-east of the Engine House/ Brine Tank.

In addition a foul drainage run passed from the foul tank to the south-west and continued around the western side of Stove House 5. This involved the excavation of a trench, 7.5m in length 2.5m wide and 1.10m (22.80m AOD) below finished ground level (23.89m AOD).

Description

The earliest deposit excavated was mixed grey brown silt layer overlies natural subsoil (2303), 0.3m at a depth of c. 22.0m AOD (see AS006 above, AS088, AS089).

Built into this was a conglomerate brickwork base of mixed red brickwork with concrete/ mortar infill (2307). It was 1.50m (north-south) by 1.20m (east-west) in size and 0.60m (10.19). It was designed to accommodate two sandstone bases above (2305/ 2306). Large, sandstone, tying-down block (2305; 10.21, 10.22), was orientated north-south, 1.50m x 1.10m x 0.60m in size, with two visible tying down pins set within the block. Located directly north of 2305, and located in northern section of excavation was large, sandstone machine base (2306; 10.20). It was 1.10m (east-west) in cross section and 0.6m deep.

Abutting the machine base (2305, 2306, 2307) and to the south, was a brickwork foundation for large

structural wall (2304; 10.19), orientated east-west. It was four courses wide, and excavated to a depth of 1.10m, with rough brickwork at the base 0.70m wide, and machine-pressed, red brick above. It was a substantial east-west wall of a large building located at northern edge of site adjacent to the canal side.

This was covered by compact, black, silt and clinker layer (2302) with rubble, spread across the area 0.65m deep, under loose, black, clinker silt and rubble layer (2301), 0.70m deep, spread across area north of Stove House 5. In one location there was a cast-iron brine pipe (2300; 1023, 1024), orientated east-west, 7" diameter and 2.80m long, with collars at either end. It continued to the east and west outside area. It related to the brine pipe that exited the brine tank to the east, (1001), and a short section uncovered to the east and displaced during soft-stripping around Pan 5.

Layers 2303, 2302, and 2301 were visible in the foul drainage run orientated ENE-WSW. Set within layer 2301, was a wooden post (2308), embedded vertically in ground immediately south-west of Electric Submersible Pump borehole (1006). It had a cross section of 0.40m x 0.40m. This was the south-west post of the former headstock.



10.20: External Works, Area G1, Sandstone Base in section, 2306, note sandstone base removed above



10.19: External Works, Area G1, Foul Pump Excavation, North-West facing



10.21: External Works, Area G1, Sandstone Machine Base, 2305; North-West Facing



10.22: External Works, Area G1, Sandstone Machine Base, 2305; North Facing



10.23: External Works, Area G1, Brine Pipe, north facing



10.24: External Works, Area G1, Brine Pipe, east facing

Phased Interpretation

Phase 3/4: Machine bases 2305/ 2306/ 2307 appeared to have been used for tying down late-19th century machinery, such as a large steam engine, a crushing machine, or a beam engine or pump. It is not clear precisely what they relate to. The adjacent and related wall foundation (2304) was substantial and sufficiently large to be associated with a large warehouse, from the Alliance Works. However, the features appear to relate to two enigmatic buildings on the 1898, 2nd edition and 1910, 3rd edition Ordnance Survey Maps.⁵⁶ They would appear to be associated with machinery in these two small buildings such as a steam engine.

Phase 5-7: The remainder of the overlying layers including 2301 and 2302 appeared to have been clinker material from the stoves, deposited on this part of the site in order to back-fill episodes of localised slumping around the brine-shaft and bore-hole. The extraction of underlying salt deposits adjacent to the engine house/ brine tank had led to at least c. 1.5-2.0m of localised slumping of deposits.

10.7 – Area G2, Stove House 5 boundary

Introduction

A series of trenches were excavated around the boundaries of Stove House 5. The widest and deepest of these was the foul drain. This continued from Area G1 above (see AS006 above, AS083, AS085; 10.25, 10.26, 10.27, 10.28, 10.29, 10.30, 10.31), carried along the western side of Stove House 5 (10.32, 10.33, 10.34, 10.35, 10.36) before turning to the south and continuing into Area G3 (see below). This involved the excavation of a trench, 23.5m in length, 2.5m wide and 1.10m deep below finished ground level. A series of other services were laid within this trench that served the main trunk route from Stove House 5 to the exterior of the site on Ollershaw Lane. This included electric, gas and data conduits.

Around the northern, western and southern edges of Stove House 5 (AS083) a series of surface water drainage channels were laid with down water spouts to drain pipes.

⁵⁶ Volume II, 3.3, 3.51



10.25: External Works, Area G2, Foul Water Trench, north of SH5, north-west facing

At the very north of the trench were slabs 2276 and 2277, a lower layer of concrete slab (2277), 7.5m (north-south) x 3.5m (east-west) x 0.40m deep, and an upper layer of concrete slab (2276), 7.5m (north-south) x 3.5m (east-west) x 0.25m deep (10.27). These are described in greater detail above in Area C.



10.27: External Works, Area C/ G2, concrete slabs, north facing



10.26: External Works, Area G2, Foul Water Trench, North of SH5, south-west facing

Description

The earliest deposit encountered was mixed grey clay silt layer (2272) and (2299) that formed the interface with natural subsoil in this area (see AS090). At the northern end of the trench was mixed red brown clay silt layer (2297), which was overlain by loose black clinker silt with red clay (2298), which was very soft and retained groundwater easily. The layers appeared to slope south to north indicating area of subsidence in radius around borehole associated with the brine shaft and electric submersible pump, which extended 3.40m (north-south). At the southern end there was a notable edge to these layers suggesting the edge of the area of subsidence.



10.28: External Works, Area G2, Foul Water Trench, north-west corner SH5, west facing

At the southern end of the trench, the foundations of the North-East Fishery Pan Furnace had been constructed (see AS085, AS090; 10.32, 10.33). This was one of four fishery pans that existed on site. It was previously excavated during the 2013

excavation of the footprint of Stove House 5 (see Section 9 above) and during the watching brief on the peripheral areas around Stove House 5 (see Section 8 above). The South-East Butter Pan is described in the 1992-1993 excavations (see Section 2 above) and Area G3 (see below).



10.29: External Works, Area G2, Foul Water Trench, North-West corner SH5, south facing



10.30: External Works, Area G2, Surface Water Drainage, east facing



10.31: External Works, Area G2, Surface Water Drainage, south-east facing



10.32: External Works, Area G2, North-East Fishery Pan, south facing

The North-East Fishery Pan furnace consisted of four walls, three of which were located in the current area (2287, 2288, 2289; 10.32, 10.33, 10.34, 10.35, 10.36). The wall foundations were of machine-pressed yellow brick in Stretcher bond,

two skins thick, surviving to 7 courses high, with a corbelled foundations at the base. The southern wall (2289) was orientated ESE-WNW and equivalent to 2022 (see Section 9). It was not bonded with wall 2287 but appeared to be inserted between east and west walls of the furnace. The western wall (2287) was 15.70m in length and orientated NNE-SSW, supported by buttresses 2281, 2282, and 2283. The northern wall (2288) was orientated ESE-WNW, equivalent to 2024 (see Section 9). Against the western wall were a series of three piers/ buttresses (2281), (2282) and (2283). These were 70m x 0.50m in size and constructed of machine-pressed yellow brick.



10.33: External Works, Area G2, North-East Fishery Pan, south-west facing



10.34: External Works, Area G2, North-East Fishery Pan, north-west facing

There was a compact clinker ash layer (2271) and (2278) over the area south of the furnace, 0.90m deep. At the southern end of the furnace was a series of two areas of brickwork floor (2279) and (2280) of machine pressed red brick, laid on-side in a Stretcher bond. This was laid over a bedding layer of compact ash. The area appears to have formed a working surface at the southern end of the pans, designed for the fire grates into which coal was placed to fire the furnace. This would then have been stoked up through the linear flues within the pan.

The interior of the North-East Fishery Pan furnace was filled with loose mixed grey clay silt fill (2292), 0.55m deep spread across the entire area, which appeared to be re-deposited natural clay. It was covered by a crushed red brick and sand layer (2291), spread across the interior of the North-East Fishery Pan. Similar layers seen in interior of other furnaces, and form a distinct layer designed as a 'caulk' for the furnaces.



10.35: External Works, Area G2, North-East Fishery Pan, south-west facing



10.36: External Works, Area G2, North-East Fishery Pan, north facing

To the north of the furnace was a series of wall foundations. A narrow, single skin thick, machine-pressed, yellow brick wall foundation (2286) may have been associated with the furnace. It was seen in section only. To the north of this were two flue walls (2284 and 2285; AS090; 10.37), running east-west, 2 skins thick, orange-red machine pressed brick, surviving to a height of 8 courses that ran towards Chimney 4, and were designed to vent the North-West Fishery Pan. Chimney 4 was located just north of the furnace and was recorded during the excavation of Stove House 5 footprint (see section 9). There was no clear relationship with Chimney 4 and the furnace and this suggests the flue entered at a higher level. The flues were set within a layer of mixed black clinker silt (2294) and (2295) to the north and south. The flues 2284/2285 of Chimney 4 were backfilled with brick rubble and black clinker silt (2296) when they became redundant.



10.37: External Works, Area G2, Flues 2284 and 2285

The whole trench was covered by a layer of mixed clinker ash and rubble layer (2290). At the southern end of the trench, an east-west cut for pipe trench (2275) ran down the southern side of SH5, 0.40m wide at least 0.90m deep. It had a ceramic drain (2273) at the base that ran west to join sump (2237, see Area G3 below) and continued to the east along the southern side of Stove House 5. It was 12" diameter pipe, and formed the drainage of Stove House 5. The trench was filled with a cinder and clinker mix (2274).

The excavation of OAN Evaluation Trench 2 was recorded as a loose mixed backfill (2293) towards the south of the trench.

Phased Interpretation

Phase 4: Chimney 4 was built in conjunction with the establishment of the engine house, brine shaft and brine tank as one of the first jobs undertaken in 1894. Henry Ingram Thompson is known to have started sinking the brine shaft in August of that year.

Phase 5: The North-East Fishery pan was established shortly after the construction of the Lion Salt Works and appears on the 2nd edition Ordnance Survey map of 1898. It adopted Chimney 4 but no clear relationship between the two structures suggesting that the flue entered the Chimney above ground level. A flue was inserted from the west from the North-West Fishery Pan that was built in around 1899-1900.

Phase 6: The area shows clear evidence of the subsidence that afflicted the area around the brine shaft. The depth of clinker ash deposits is in the region of 1.5-2.0m deep in an oval radius 5.0-6.0m in diameter with the shaft at its centre. This has resulted in the subsidence of the Engine House towards the shaft. Each episode of subsidence appears to have resulted in more and more waste ash material from the furnaces being dumped in the locality to build-up the layers.

The demise of the brine shaft was followed by the dismantling of both North-West and North-East Fishery Pans to their foundations. Chimney 4 was probably dismantled at this time with the flues blocked one-by-one from the boiler in the Engine House, the North-West and finally the North-East Fishery Pan.

Phase 7: The brine borehole was excavated in the 1960s and the headstock erected. Subsequently Pan 2 was remodelled and it is likely the brickwork surfaces and concrete slabs were laid down at this time.

10.8 – Area G3, East of Stove House 4/ West of Nodding Donkey

Introduction

A single large trunk route containing the main surface water drainage, the foul drain, electric, gas and data conduits ran north-south down the main route east of Stove House 4 and Pan House 4 and

west of The Nodding Donkey complex and Pump House. This was a continuation of the trunk route in Area G2. It ran for c. 25m north-south and was 2.5m wide and 1.10m deep below finished ground level (see AS006 above, AS091, AS092, AS093; 10.38).



10.38: External Works, Area G3, overhead, north facing

Description

The earliest deposit encountered at a depth of 22.93m AOD, was mixed grey clay silt layer (2299) that formed the interface with natural subsoil in this area (also visible in Area G2, see above). It was overlain by a layer of dark, brown-orange, silty-sand, mixed with clinker (2231), c. 0.4m deep.

At the northern end cut into this layer were the remains of machine-pressed, red brick-lined sump (2237), two brick skins wide, with two ferrous metal rails on north and south side. It was originally covered by ferrous metal plate (2232). A ceramic pipe entered from the north and continues to south visible as linear cut (2236) of the drain. It was filled by clinker and panscale, with fragments of slag, which contained deposits of clay tobacco pipe (2233).

Running the length of the eastern side of the trench, was the remains of the South-East Butter Pan (10.39, 10.40, 10.41, 10.42). The western wall of the furnace of the South-East Butter Pan (2213; 10.43), survived to a height of 6 to 7 courses in eastern section of trench, for a length when finally exposed of c. 14.0m. It was constructed of machine-pressed, red brick in English Garden Wall bond, four stretchers to one header. It was orientated NNE-SSW, and ran parallel to the eastern wall of the furnace (1017; for details see

Volume IV: The Nodding Donkey Complex). This was supported on the western side by a series of four brick piers/ buttresses (2215, 2216, 2219, 2220). They were built of machine-pressed, red brick, 5 courses wide, 6 courses high, with a brick corbel at the base. They were roughly 0.60m x 1.00m in size.



10.39: External Works, Area G3, brick piers/ buttresses (2215, 2216, 2219, 2220) and wooden sill beams (2214, 2223, 2238), north facing



10.40: External Works, Area G3, wooden sill beam (2223), north-east facing

Between each pier was wooden sill beams (2214, 2223, 2238; AS091, AS092; 10.39, 10.40) orientated NNE-SSW, running parallel to wall 2213, 0.60m to the west. The sill-beams underlay buttress 2215, 2216, 2219 and 2220. Sill beam 2214 and 2215 were c. 7.5m in length and 0.25m

wide. They had a series of nine tenons for studs, 0.75m apart and 0.25m wide. To the north was a further sill-beam 2223, 3.05m long, 0.25m wide plain with a plain upper with no tenons. On top of the beam were a series of pads, designed to act as supports for the hurdle structure above (see 2221; 2224, 2225, 2226, 2227, 2228; 10.42). These were made of bricks, or wood or a combination of the two, and 0.2-0.35m square in size. The wood re-used elements of sill-beams.



10.41: External Works, Area G3, overhead, showing butresses of the south-east butter pan, north facing

To the east of these structures was a remnant sill wall foundation (2217), of machine-pressed red brick in Stretcher bond, NNE-SSW orientated, 2 courses wide, which survived for c. 1.2m and then discontinues. It ran parallel to wall 2213 and sill beam 2214. Perpendicular to the other walls and sill-beams was a wooden cross-beam (2222), orientated east-west extending from the western section. These structures were possibly associated with the construction of the hurdles west of the South-East Fishery Pan.

The area around the South-East Butter Pan foundations was covered by a dark brown/ black clinker deposit (2230), c. 0.6m deep. This formed

the base for a number of surface level structures associated with the furnace.



10.42: External Works, Area G3, Buttress and pad detail of hurdles supports, south-east facing

At the northern end of the trench was the remnants of a brick paviour floor surface (2235; 10.44), of machine-pressed, red brick laid in Stretcher bond. This formed the working surface for firing the furnace. A brick drain cover of machine-pressed, red brick (2234) running NE-SW dissected the floor surface.

At the southern end was a similar coarse brick paviour floor surface (2208, 2209; 10.45, 10.46) of machine-pressed red brick, laid on side in Stretcher bond, c. 5.20m long by 1.10m wide. Set within the floor surface were a series of wooden pads (2210, 2211 and 2212), like those described above, designed to support the hurdle structure around the furnace. In the very southern corner was a brick chamber (2341; 10.47, 10.48) of machine-pressed and hand-made, red brick mix, 2 courses wide, 5 courses deep, filled with clinker and silt and compacted. On top was a wooden frame (2340). This appears to have been the remains of a sump for the pan ditches.

Located south of this floor surface were the remains of the wood casing (2204/ 2338; 10.46) for an east-west orientated brine pipe (2205). The wood casing had two parts, a lid and box casing below. The cast-iron brine pipe was not excavated

and was left within the wooden box. A fragment of salt pan (2206) had been used to cover the brine pipe. It was constructed of three ferrous metal riveted plates, 1.12m x 0.91m in size, and was probably a remnant of the South-East Fishery Pan.



10.43: External Works, Area G3, western wall of the furnace of the South-East Butter Pan (2213), east facing



10.44: External Works, Area G3, brick floor surface (2235) and brick drain (2234) at north end, south facing



10.45: External Works, Area G3, brick paviour floor surface (2235), north facing

Two brick wall foundations, which appeared to represent the base of a flue, ran at a slight angle to the brine pipe above (10.46). The northern of these walls foundations (2200/ 2342), was of machine-pressed red brick, 2 skins wide, orientated ESE-WNW. Parallel to the south was wall foundation (2201/ 2337), 2 skins wide, orientated ESE-WNW. Between the two walls was a brick paviour floor surface (2202) and (2203), of red brick, laid on-side in Stretcher bond. In places this was skimmed with concrete (2343). Their orientation corresponded with the earlier 'Rhomboid-shaped building', a large salt warehouse.

A single cast-iron brine pipe (2218), orientated NW-SE, ran across the trench. It was removed by machine just c. 0.2m below surface, and had no clear connection to existing pipework. It may have been displaced from its original location. A series of four electrical cables (2207), overlay brick floor 2208. Grey gravel (2229) had been laid over the top of trench, as part of restoration, 0.1m deep.



10.46: External Works, Area G3, wood casing (2204/ 2338) for brine pipe (2205), wall foundations (2200/ 2342, 2201/ 2337), overhead

Phased Interpretation

Phase 4: The earliest remains in this area appear to be associated with a rhomboid-shaped building. This was a large building first depicted on the 2nd Edition, Ordnance Survey Map of 1898.⁵⁷ Located at the south of the trench, wall foundations 2200 and 2201 ran at a slight angle to the other structural elements in the trench. They appeared to correspond with the southern wall of the rhomboid-shaped building. No interior details of this building could be established, although brick floors, 2202, 2203, 2208 and 2209 may be an original floor surface.

It is not clear when the South-East Fishery Pan was established. The 1910 Ordnance Survey Map⁵⁸ continues to show the rhomboid-shaped building dominating the south of the site with the North-West and North-East Fishery Pans also built by this time. Chimney 3, was also visible on the 1910 map and it appears that the rhomboid-shaped building was designed to cover a series of three butter pans.

The remains of the South-East Butter Pan furnace were visible as the western wall 2213, supported by a series of brick piers. The eastern wall was visible upstanding as wall 1017, that carried on around and the southern wall corresponded with wall 1051, within the Pump House (see Volume IV for details). The evidence from the western side has revealed that the edge of the pan had a series of wooden hurdles, supported on sill-beams with

upstanding posts. These were later replaced by a series of pads made of brick or wood. Similar wooden structures were uncovered in 1993 (see Section 2 above), whilst remains of structure beneath the Pump House suggest that a wall ran around the outside of the complex (see Section 8 above).

The furnaces were presumed to have been fired from the north. No evidence for the fire grates was uncovered, but the brick floor would have acted as a working surface. At the south were the remains of Chimney 3 and this would have drawn the heat under the pan, north-south. The flue would have entered at a level c. 1.2m above current ground level. This suggests that the sides of the furnace would have stood at least c. 1.5-2.0m above the current ground level, a level similar to the current height of Pan 4.

Running along the western side, and draining the ditches of the South-East Butter Pan was the remains of two brick sumps (2237, 2341) and connecting pipework (2236). This appears to be dated by clay tobacco pipe to the earliest two decades of the 20th century. It strongly suggests the drainage was associated with the laying out of the Butter Pans.



10.47: External Works, Area G3, brick chamber for sump (2341), north facing

⁵⁷ Volume II, 3.3

⁵⁸ Volume II, 3.51



10.48: External Works, Area G3, External Works, Area G3, wood casing (2204/ 2338) for brine pipe (2205), wall foundations (2200/ 2342, 2201/ 2337), north facing

The brine pipe 2205, has been excavated on several occasions. It continued to the west through the Historic Core (Section 7, HC16), eventually depositing brine in Pan 3. It also continued to the east. A north-south brine pipe was excavated in the Pump House foundations on the eastern side (1080, see Section 8, WB06-03), and may connect with this brine pipe. It originally circumnavigated the eastern side of the butter pans and filled Pan 3. It later filled Pan 4.

It is not clear how the butter pans were filled. This pipe could have been used to fill the back-end of the pan. It seems unlikely as this would always be the coolest area of the pan, furthest from the fires and would consequently take a greater length of time to heat-up. It seems more likely that the South-East Butter Pan was filled from the front and north.

10.9 – Area G4, Pan House 4/ Stove House 4/ Loading Bay

Introduction

A total of six surface water drainage runs were excavated. From the down-spouts of Pan House 4, Stove House 4 and the Loading Bay into the main surface water drainage channel in G3. This included an additional run extending from Area G3 to the north and into the Loading Bay (see AS006 above, AS091; 10.49). These trenches were each 1.0m wide and sloped from the surface to a depth of 0.85m deep from finished ground level.



10.49: External Works, Area G4, north end in Loading Bay, north facing

Description

At the north end of the area, as the trench entered the Loading Bay, the remains of a mixed black clinker and ash deposit (2348), 0.2m deep, acted as bedding for a discontinuous brick floor surface (2349, 2351, 2352; 10.50, 10.51). The floor surface was made of machine-pressed, red brick, laid on-side in the Stretcher bond, stretchers laid north-south. It was dissected a wooden board (2350), 200m wide, between brick surfaces 3249 and 3251, aligned NW-SE.



10.50: External Works, Area G4, brick floor surface (2349, 2351, 2352), south facing



10.51: External Works, Area G4, brick floor surface (2349, 2351, 2352), overhead

The area was covered by a mixed black clinker and silt deposit (2347), 0.6m deep. Within this were the remains of a ferrous metal plate (2353), 0.5m x 0.2m in size and 5mm thick, with a series of rivet holes. It appeared to be a discarded plate from one of the pans. The remainder of the trench, north of this area through the Loading Bay, was overlain by ceramic building material, clinker and silt deposit (2346), 0.7m deep at maximum. The area was covered by grey gravel (2345) during the restoration (10.49).

At the southern end of the Area, a single short leg, ran NW-SE. Within this trench were the remains of a brick wall foundation of the South-West Fishery

Pan, furnace on its eastern side (2254). It was aligned NNE-SSW, and built of machine-pressed, red brick, two courses wide, and four courses high. A single brick pier (2255) abutted butter pan wall foundation (2254; 10.52). It was made of machine-pressed, red brick, two courses wide, five courses high, aligned east-west, and 0.92m wide.



10.52: External Works, Area G4, butter pan wall foundation (2254) and brick pier (2255), north facing

Phased Interpretation

Phase 4: The southern area revealed fragmentary remains of the South-West Butter Pan on its eastern side. These have previously been revealed during foundation excavations in Pan House 4 (see Section 7, HC2). This suggested that the South-Central Butter Pan was of a contemporary design and similar to the South-East Butter Pan (see Area G3 above).

Phase 5: The brick floor surfaces uncovered at the northern end of Area G4 appears to correspond with the southern end of the North-West Fishery Pan. A similar brick floor was seen at the southern end of the adjacent North-East Fishery Pan (see Area G2 above). It was also uncovered in Trench 2 (see Section 4 above). There appear to be few remains associated with this structure, and it

appears to have been almost entirely destroyed during the construction of Stove House 4, the Loading Bay and Pan House 2. The exception is a north-south orientated wall 3161 uncovered during the watching brief on post pads in the Loading Bay (see HC24, Section 7 above). The rubble layer (2346) may correspond with the demolition of the original furnace.

10.10 – Area G5, Pan House 3/ Pan House 4 to Red Lion Inn

Introduction

This was the continuation of the trunk route from Stove House 5 to Ollershaw Lane containing surface water drainage, the foul drain, electric, gas and data conduits. It curved around from the north and Area G4, passing through Area G6, turning to the south-west before continuing east-west between Pan House 3 and 4 to the north and the Red Lion Inn to the south (see AS006 above; AS094, AS095). It was c. 24.0m long, 2.45m wide at its maximum and 1.1m deep below the finished ground level. Existing services were reused where possible, as opposed to excavating new services.

In addition a single run was excavated to create a cable diversion between two existing High Voltage Electric Cables (one date unknown, the other inserted in 2006). This allowed an excavation for the lift shaft base for disabled access to the Red Lion Inn. The lift shaft base was 2.0m (east-west) x 1.0m (north-south) x 0.5m deep, in size.

Description

The earliest deposit excavated was yellow-brown silt-clay natural (2391). It was excavated to a depth of 0.7m and occurred throughout the length of the trench. Above this layer was a granular clinker material (2324), 0.5m in depth that was visible elsewhere forming the base for a series of rail lines (AS004, AS095; see Area G6, Area G7 below).

At the western end were the remains of a wooden sleeper, aligned north-south and c. 0.4m in width (2392). On top of this was a metal pin (2393), c. 150mm in diameter, and extending c. 2.4m +, north-south continuing to the north towards the railway tracks. It had a central pivot connected to the sleeper below. A clip allowed it to be kept in place (10.53, 10.54).



10.53: External Works, Area G5, wooden sleeper (2392) and metal pin (2393), north-east facing



10.54: External Works, Area G5, metal pin (2393), north facing

Excavated through the layers of clinker were the remains of a series of later services (10.55, 10.56). These included a foul drain from the toilets located in the Red Lion Inn (2394), aligned broadly east-

west, with two man holes attached (2395, 2396). Overlying this and to the south was a surface water drain (2397), also aligned broadly east-west, with three man holes attached (2398, 2399, 2400). A series of smaller runs (2401, 2402) came from the downspouts of the gutters of the Red Lion Inn. A gas pipe (2403) entered the Red Lion Inn half way-along and continued east-west to the street. These services all exited the site into Ollershaw Lane to the west. The runs and manholes reused where possible for the later services.

A series of two High Voltage Cables crossed the area. The first (2404) ran broadly east-west, following the northern side of the Red Lion Inn c. 1.5-2.0m to the north. From there it continued WSW to ENE towards the pole-mounted, electricity sub-station. The second (2405) ran WNW to ESE across the area from a pole adjacent to the south-west corner of Pan House 3, from there it proceeded to the north-east corner of the Red Lion Inn and onwards, towards the pole-mounted, electricity sub-station. This cable corresponded with the 2006 watching brief (see Section 3 above). These line of these cables were excavated and a cable diversion put in place.

Adjacent to the Red Lion Inn, a foundation excavated for the lift shaft revealed deposits of clinker-ash (2324).



10.55: External Works, Area G5, remains of later services, west facing



10.56: External Works, Area G5, section through services, west facing

Phased Interpretation

Phase 5: The pin and sleeper arrangement appears to have been associated with the adjacent points on the railway tracks and allowed the points to be changed. No connection between the structure and the points was visible so this cannot be conclusively confirmed but it appears to be extremely likely.

Phase 8: The majority of the services appear to have been put in place during the refurbishment of the Red Lion Inn in the early 1990s by the Vale Royal Borough Council/ Groundworks Trust. Some may have an earlier origin, but plans dating to c. 1993 show the arrangement of pipes excavated on site. The earlier services were clearly subsumed in this arrangement.

10.11 – Area G6, Corner Red Lion Inn

Introduction

This area was a junction between a series of different service runs. It was located between the Red Lion Inn, the south-east corner of Pan House 4, and the south-west corner of Chimney 3/ Pump House (see AS006 above, AS094).

The services in this area included the continuation of the trunk route from Stove House 5 to Ollershaw Lane containing surface water drainage, the foul drain, electric, gas and data conduits. It curved around from the north and Area G4 (see above), passing through Area G6, turning to the south-west before continuing east-west through Area G5 (see above). It was c. 5.0m long, 2.45m wide at its maximum and 1.1m deep below the finished ground level.

A second run of services branched off and passed east-west along the southern side and into the Pump House. This was c. 10.0m long, 1.5m wide and 1.1m deep from finished ground surface.

Description

The earliest deposit was yellow-brown sandy clay that formed the natural subsoil (2391). This was excavated to a maximum depth of 0.45m. Above this was grey silt-clay subsoil, which contained organic residues (2325) and was 0.40m deep (see AS096).

At the northern side of the trench, running approximately east-west was a machine-pressed, red brick, wall foundation, two courses wide and five courses deep (2406; AS094; 10.57). This appeared to be the remains of the boundary wall of the Lion Salt Works, excavated in Area G7 (see below).



10.57: External Works, Area G6, wall foundation, (2406), east facing

A compact layer of clinker silt and slag residues (2324) formed a base for a series of two railway tracks and points (AS094; 10.58, 10.56, 10.57, 10.58, 10.59, 10.60, 10.61, 10.62, 10.63, 10.64). The rails were supported on a series of wooden sleepers, roughly perpendicular to the rails. These were of a standard cross-section, 0.16m deep and 0.30m wide but varied in length up to 4.20m where they supported the points (see below, sleepers 2344, 2405, 2406, 2407, 2408, 2409, 2410, 2411). Where the tracks split into two the sleepers were shorter c. 1.8m in length (e.g. 2243, 2244). Not all the sleepers were fully exposed. A single wooden sleeper (2249) was located between the northern and southern set of rails. Their positions were betrayed by the presence of chairs that connected the rails to the sleepers below.



10.58: External Works, Area G6, railway tracks, overhead



10.59 External Works, Area G6, railway tracks, overhead

Two sets of rails existed. The northern pairs were ferrous metal rail, orientated WNW curving to south-east, (2239, 2240). They were 60mm wide, 140mm deep. Pairs of shoes (cleats) attached to the sleepers 2243, 2244 below. The southern pair

were represented by ferrous metal rails (2241, 2242/ 2330), orientated north-west curving to south-east, 60mm wide, 140mm deep, with pairs of shoes (cleats) attached to sleepers below (sleepers not exposed). The rails continued to the east. Points (2332, 2335, 2242/ 2331, 2248/ 2339) allowed the salt vans and coal carriages to transit between the two lines.

Between the railways tracks and running parallel to them were a series of wooden boards, 0.3m wide, parallel to the tracks, designed to create working surface over rails (2245, 2246, 2247, 2334). The area was covered with compact clinker silt (2322). Adjacent to Pan House 4 was a large concrete slab.



10.62: External Works, Area G6, northern set of rail tracks (2239, 2240), south-east facing



10.60: External Works, Area G6, northern set of rail tracks (2239, 2240), north-west facing



10.63: External Works, Area G6, rail tracks during excavation underneath, overhead



10.61: External Works, Area G6, southern set of rail tracks (2241, 2242/ 2330), south-east facing



10.64: External Works, Area G6, rail tracks during excavation underneath, west facing



10.65: External Works, Area G6, rail tracks during excavation underneath, north facing

East of the railway tracks was a remnant floor surface that had been truncated by later surfaces. It was machine-pressed, red brick floor surface, with bricks aligned east-west (2250, 2253). It was cut by an electricity service cable laid in 2009 (2251, 2252).

Phased Interpretation

Phase 3: No evidence of the Accommodation Road was located in this area. The earliest deposits related to the natural ground levels.

Wall foundation (2404) would appear to be related to the earlier boundary with the Red Lion Hotel. This was shown on maps between 1868 and 1898 prior to the arrival of the rail tracks and was incorporated into the earliest layout of the Lion Salt Works as the southern boundary wall.

Phase 5: The rail tracks and points were put in place in c. 1905. The points suggest a system was in place that allowed vans and carriages to come up to the works on one line. They would then be transferred back to the sidings on Cross Street, south of the site, on the opposite line. This would allow vans or carriages to be waiting to allow continuous loading/ unloading to occur. No evidence for the pulley mechanism to draw the carriages up the rail lines was found.

The area would still have maintained road access along the Accommodation Road to the Fishery

Pans and later the Loading Bay and Stove House 4. The area between the pans was levelled by a series of sleepers running parallel to the track.

10.12 – Area G7, Pan House 3/ Pan House 4

Introduction

This area was located between Pan House 3 and Pan House 4. It contained a single surface water drainage trench running north-south. It continued to the south and joined the main surface water drainage pipe in Area G5 to the south (see above). The trench was 10.0m long (north-south), 0.6m wide (east-west) and excavated to a depth of 1.1m below finished ground level (23.32m AOD at base; see AS006, AS094).

Description

The earliest deposit was mixed grey silt clay (2325) that formed the interface with the natural subsoil in this location. It was overlain by a layer of black clinker and silt (2323, 2324; AS097).

At this level was wall foundation (2327; 10.66), a single layer of brickwork located beneath floor 2315/ 2316, two courses deep and laid on edge to form a corbel course. It was constructed of machine-pressed, red brick, and orientated WNW-ESE. The wall had been subsequently robbed. The robber cut (2329) went through floor surface 2315/ 2316. It was filled with a loose mortar and clinker fill (2328).



10.66: External Works, Area G7, wall foundation (2327), south facing

Running beneath the rail tracks (see below) was a wooden hollow drainage leat (2321), running north-south, 0.20m x 0.20m cross-section, designed to drain the area north of the tracks towards the south. It acted as a 'French' drain.

Black clinker and silt layer (2323), was the build-up for floor surfaces 2309, 2311, 2315, 2316 (10.67). A sloping brick surface, 2309, 2311, 2315, ran north-south and abutted wall 2327. It was built up of machine-pressed, red brick, laid on-side in Stretcher bond, and orientated ENE-WSW, at a slight angle to the later buildings of Pan House 3 and 4 (10.68). In total it covered an area of c. 4.5m (north-south). The floor formed part of an exterior floor surface outside pan houses, contemporary with the Phase 4, rhomboid-shaped building. Within the floor surface were a series of wood timbers (2310, 2314), 0.30m wide, aligned east-west, with no clear function. The remains of the wooden casing for the brine pipe (2312) were also set within this floor. It was made of a large timber trough with ferrous metal brine pipe inside, 0.35m wide. It was uncovered previously (see Area G3 above; Section 5.8, 3081, HC16, 3157, HC20) and appears to be contemporary with Fishery Pans (SW and SE) and later reused for PH3 and PH4.



10.67: External Works, Area G7, under the rail tracks, south facing



10.68: External Works, Area G7, brick surface, 2309, 2311, 2315, north facing



10.69: External Works, Area G7, rail tracks (2317, 2318), north facing

When the railway sidings were built, wall foundation 2327 appears to have been dismantled. The surface was extended towards rail lines as brick floor (2316), identical to 2315 further to the south. It was laid on-side in Stretcher bond, machine-pressed, red brick. It abuts the rail tracks and was contemporary with their insertion.

The build-up of clinker ash material (2324), supported the rail lines and sleepers, 2317, 2318, 2319, 2320. The ferrous metal rail tracks (2317, 2318; 10.69), ran broadly east-west. They were very badly corroded in this location, with a single chair visible on each. The tracks were 80mm wide, 180mm deep, with an overall gauge that measured 1.51m. They were supported by a north-south wooden sleeper, treated with preservatives (2326), 2.70m long (north-south), 0.12m deep. There were a series of seven sleepers (2319) laid parallel between tracks, each 0.20m wide, 0.12m deep, impregnated with pitch/ bitumen. Wooden sleeper (2320) ran parallel to track 2318 on its southern side. Again it was 0.20m x 0.12m in cross-section. The sleepers were designed to provide a walking area between the rails and Pan House 3 and 4.

Two ferrous metal water pipes (2313) ran ENE-WSW across the area above the brickwork surface. Overall the area was covered by black clinker and silt layer (2322) over the brick surfaces 2309, 2311, 2315, 2316.

Phased Interpretation

Phase 3: The earliest remains appears to be associated with the wall foundation (2327) of the southern boundary of the Red Lion Hotel. This was put up during the 19th century.

Phase 4: The rhomboid-shaped building initially dominated the southern end of the site and was visible on the 1898 Ordnance Survey Map. The footprint of the boundary wall (2327) was reused during the construction of the rhomboid-shaped building. It appears to have formed the southern wall of this building. It was only two courses wide. This suggests that it was a sill wall of a timber-building, as opposed to a structural wall. Within the building was a pavioir brick floor (2309, 2311, 2315).

Phase 5: Pan House 3 was built in c. 1899 shortly after this and dissected the western end of the rhomboid-shaped building. Brine pipe casing (2312) continued to Pan 3 to the north-west and was probably inserted at this time.

Shortly after the rail tracks were inserted and were certainly in place by c. 1905. This resulted in the

dismantling of boundary wall (2327) and opening up of the southern end of the site towards the rail lines. A single set of rail lines were present here. This was the location where coal would be directly unloaded from the carriages and placed against the wooden barricades in front of the pans.

10.13 – Area H1, Manager’s Office

Introduction

This area was located in the vicinity of the Manager’s House, Boiler House and Pump House. It is designed to accommodate a series of surface water drainage channels for the downspouts of the roof drainage of these buildings (see AS006).

Description

The natural subsoil at the south end of the site was yellow-brown silt-clay (2419), 900mm below the surface. Above this was an interface layer of mixed grey-black clay (2418), 250mm deep. This was generally overlain by mixed black clinker-silt layer with some rubble (2413), derived from the furnaces and spread across the eastern and southern part of the site (AS098; 10.70).



10.70: External Works, Area H1, services south of the Manager’s House, south-west facing

South-east of the Manager’s House a narrow, c. 50mm deep, salt scale/ pan scale layer (2417), was laid down in thin white band, extends for c. 3.5m.

This was used as a yard or working surface as it kept dry during rain. It was overlain by black clinker silt layer (2416) similar to deposit 2413. A further dump of waste material, a layer of clinker and slag (2420), c. 250mm thick, was located east of the Manager's House (10.71, 10.72).



10.71: External Works, Area H1, services east of the Manager's House, north facing



10.72: External Works, Area H1, services north of the Manager's House, west facing

Within these layers were a series of features. A ceramic land drain (2414) orientated NW-SE, extended from the southern end of the Manager's House. A 2½" diameter, ferrous metal out-pipe (2421; AS098; 10.73) extended from the base of the boiler, c. 4m to the east from the coal shed. It turned sharp at a right angle to the south and

extended for a further 11m. The pipe was designed to take waste water away from the boiler. The sharp angle of the pipe was surrounded by brick (2422), designed to protect the pipe.



10.73: External Works, Area H1, metal out-pipe (2421) from the boiler, south facing

A brick paviour floor surface, of very eroded, hand-made red brick (2423; AS098; 10.74), was laid in stretcher bond with a semi-circular surround directly east of the door as an entrance path for the Manager's House. The path continued around the side of the Manager's House to the Pump House and main works as a brick path (2425, 2427; 10.75, 10.76), 0.70-0.90m wide, initially orientated north-south and curving to run east-west. It continued to the east as 2250/2253 in Area G6.

A ferrous metal steam pipe (2426), extended from the north-east corner of the Coal Shed, orientated NE-SW, and entered the Pump House in the south-west corner as pipe 1081 (see WB06 above). It was 40mm diameter, (1½") and designed to carry steam to the engine and windlass. It connected to the vertical pipe in the corner of the Coal Shed (6810).



10.74: External Works, Area H1, brick floor surface (2423), west facing



10.75: External Works, Area H1, brick floor surface (2425), west facing



10.76: External Works, Area H1, brick floor surface (2427), west facing

The remains of the flue from the western side of the Boiler House continued under the occupation road (AS098; 10.77). It was represented by two flue walls (2428, 2429) of machine-pressed red-brick, two skins wide. The total width of the flue was 0.90m, and it extended for c. 9.5m. Initially it exited the Boiler House running east-west, turned sharply and ran SE-NW, and then turned again to run east-west into the base of Chimney 3 in the Pump House (10.78).

Phased Interpretation

Phase 5: The remnant layer of salt scale (2417) may suggest the original surface outside the Manager's House was a rudimentary layer of waste salt that formed a dry surface during wet weather.

Phase 6: A series of structures related to the construction of the Boiler House, contemporary with the boring of the bore-hole north of the Pump House in 1938. These included the flue (2428, 2429) to Chimney 3, the steam pipe (2426) from the boiler and the out-pipe (2421) from the base of the boiler. These appear to have been constructed in the earliest part of 1938 as part of the preparation for the new pumping facilities.

Phase 7: The brick path was probably a later addition that allowed the Thompsons to pass from the Manager’s House to the works when the ground was waterlogged. It appears to have been laid on top of the steam pipes and the flues from the boiler discussed above.



10.77: External Works, Area H1, Flue from the western side of the Boiler House (2428, 2429), south-east facing



10.78: External Works, Area H1, Flue from the western side of the Boiler House (2428, 2429), north-west facing

10.14 – Area H2, Car park

Introduction

This area was originally excavated in 2009 as part of the Phase 1a Enabling Works to create a car park and base for the temporary white store (see Section 3, above). The work involved excavating a series of narrow trenches were laid out across the car park for low voltage electricity cables to feed a series of post lights for the car park (see AS006, AS099, AS100).

Description

The remains of pan house, Building 13 were represented by three hand-made red brick wall foundations, running parallel to each other and orientated east-west (10.79). The first and northernmost was three skins thick (2433), and was probably surviving foundation of the kiln wall. Just to the south was a further wall two skins thick (2434) and a further wall, a single skin thick (2435), 2.3m to the south. Brick rubble and clinker ash (2436) between walls 2434 and 2435 was part of the original rubble infill. Overall these represented the remains of the hurdle ditches within Building 13.

The stove house, Building 12, to the east of Building 13 was represented by a series of walls located during the watching brief. The south-east corner was excavated as a substantial hand-made red brick wall foundation, five skins thick, aligned east-west and corbelled at the base (2442; 10.80, 10.81). It continued to the north as hand-made red brick wall foundation (2443; 10.82), four skins thick, aligned north-south and forming the eastern side of Building 12. The southern side was only visible for short length in section as a hand-made red brick wall foundation, orientated east-west (2438). Extending from this was a narrow hand-made, red-brick, wall foundation (2437), aligned north-south. It was two skins wide, and may have been a buttress. Otherwise the southern side of the building was represented by mixed red brick and red sand layer (2432), c. 0.40-0.50m deep extends for a total of c. 18m (10.83). This was the collapse of material from the adjacent Building 12.



10.79: External Works, Area H2, pan house, Building 13, walls (2433, 2434, 2435), north facing



10.81: External Works, Area H2, stove house, Building 12, wall foundation (2442), east facing



10.80: External Works, Area H2, stove house, Building 12, wall foundation (2442), west facing



10.82: External Works, Area H2, stove house, Building 12, wall foundation (2443), south facing



10.83: External Works, Area H2, brick and red sand collapse (2432) from Building 12, west facing

At the south-east corner of Building 12, was a brick drainage leat (2441), aligned north-south, with a ferrous metal plate on top. This was drainage running beneath the stove house possibly draining the hot house. A brine pipe (2440), 4" in diameter, and aligned broadly north-south may have fed brine to the pan house. A brine cistern lay to the south-east of the site and it may have fed from this.

A jigger tool (2439), excavated accidentally by machine and broken, was originally c. 2m in length. It was a remnant of a jigger pillar previously excavated in 1994/ 1995. This was designed to lift the pan during the repair of ferrous metal plates within the pan.

At the very eastern edge of the site and south of Building 12 was a brick paviour surface (2444; 10.84). It was made of rough hand-made, red-brick in Stretcher bond, with a row of brick on edge along the side forming a wide track. It appeared to be a remnant of the Occupation Road, aligned east-west and continuing to the east.

The whole area of the car park was covered with black clinker silt (2431) derived from furnaces and

dumped across the eastern and southern side of the site (10.85, 10.86).



10.84: External Works, Area H2, brick paviour surface (2444), south facing



10.85: External Works, Area H2, extensions across the car park, north facing



10.86: External Works, Area H2, extensions across the car park, north facing

Phased Interpretation

Phase 3: The remains of Building 13, the pan house, Building 12, the stove house and the associated brine pipes, leats and jigger tool all relate to the Alliance Salt Works. This is part of a fine pan complex at the southern side of the site. It was previously excavated in 1992-1995 (Section 2 above) and during the 2011 evaluation (Section 4 above). The northern side was discovered in excavation for the Play Area (see Area H3 below). The size of the building was slightly smaller, yet comparable to the Pan/ Stove House 3 or 4 yet it was free-standing like Pan/ Stove House 5.

Excavations within Building 13 confirmed this was the remains of the kiln and ditches under the southern of two pans within the pan house. Building 12 represented the remains of the adjacent Stove House. The walls excavated were the outline of the building. Evidence including the jigger tool appears to confirm the supposition that the pans were simply demolished when the works was dismantled and rubble piled on top of the levelled site.

10.15 – Area H3, Play Area

Introduction

During February 2015 excavations were conducted for the installation of a play area to the east of Stove House 5 and Pan 5 instillation. In order to facilitate the play area a number of trenches for the borders of the play area and concrete foundations for the equipment were excavated (see AS006, AS100).

The borders of the play area were curvilinear and covered an area of 33.5m (north-south) by 17.5m (east-west). The excavations were generally 0.6m wide and between 0.4m to 0.8m deep at a maximum depth of 23.44m AOD (10.87).



10.87: Area H3, Play Area, Excavation for borders, north facing

Seven concrete bases were excavated on the southern side of the complex (A1-A7) for a climbing frame. These were generally 0.5m x 0.8m and 0.8m deep. At the northern end were four six concrete bases (B1-B6) for a slide and tower. These were generally 1.0m x 0.8m in size and 0.5m deep. Two larger trenches (B3, B4) were 3.50m x 0.9m and 0.5m deep. Centrally were six concrete bases (C1-C6) for a number of pieces of

equipment. These were generally 0.8m x 1.0m and 0.6m deep (10.88).



10.88: Area H3, Play Area, excavation for central concrete bases, south-west facing

Description

The earliest deposit in the area is a mixed red clay silt layer (2451) associated with the interface of the overburden with the natural grey clays. In the north-east border of the area a hand-made, red-brick, wall foundation (2452) was aligned north-south before turning at right angles to the west (2453). It was two brick courses wide (brick size 9" x 4¼" x 2¾") (10.89). This related to the remains of Building 4 of the Alliance Salt Works.



10.89: Area H3, Play Area, Wall foundation 2452, 2453, east side of Building 3, south facing



10.90: Area H3, Play Area, Wall foundation 2454, north side of Building 12, east facing



10.91: Area H3, Play Area, Wall foundation 2456, north side of Building 12, east facing

At the south of the area located at the base of the borders and concrete foundation A4 were the remains of the northern wall of Building 12 of the Alliance Salt Works. It consisted of a hand-made, red-brick, wall foundation aligned east-west (2454, 2455, 2456; 10.90, 10.91). At the eastern end

there was slight evidence of a wall perpendicular and turning to the north (2457). It was two brick courses wide (brick size 9" x 4¼" x 2¾"). A single brick marked 'Jabez Thompson, Ornamental Brickworks, Northwich' was recovered from the brick rubble dislodged during excavation of the trench (10.92).

The area overall was covered by a mixed layer of loose brick rubble and black clinker ash (2458) that was a combination of debris collapsed from the demolished stove houses and levelling material derived from waste from the furnaces operating on site.



10.92: Area H3, Play Area, brick from wall foundation 2456, north side of Building 12

Phased Interpretation

Phase 3: The brick wall foundation alignment at the northern end of the area appeared to be the remains of the eastern side of a stove and pan house complex numbered 1, 2, 3 and 4 on Thomas Ward's plan.⁵⁹ This building would appear to have been a stove house with two attached pan houses to the west.

At the southern end of the area was an east west wall that formed the northern wall of Building 12 a stove house of a combined pan and stove house complex (with Building 13). This delineates the northern side of the building (see Section 10.14 above). The presence of Jabez Thompson bricks in the wall strongly dates the foundations to the 1870s and Phase 3 of the Alliance Salt Works. Similar bricks have been recovered from the southern side of the structure (see Section 2.3 above).

⁵⁹ Volume II, 3.51

10.16 – Area I, Main Entrance

Introduction

Two trenches were excavated at the entrance of the site. The first was a shallow trench running north-south across the roadway for shallow low voltage electric cables. The second was for surface water drainage and adopted existing service trenches east-west into the roadway (see AS006, AS102).

Description

The earliest deposit was mixed grey black clay and clinker (2446, 2450), build-up of material above the natural clays that also supported the rail tracks. Built into this was the remains of brick wall foundation (2449), visible in the south facing section, machine pressed red brick in the Stretcher bond (10.93). This appears to have been remnants of an outhouse formerly located in the garden of cottages on Ollershaw Lane. Over this was grey gravel formation layers (2445, 2448) c. 400mm deep, under the tarmac roadway (2447) (10.94).



10.93: Area I, Wall foundation 2449 visible in section, north-west facing



10.94: Area I, excavations under the roadway, north facing

Phased Interpretation

Phase 3: The remains of the brickwork and build-up layers date to the late-19th century, c. 1877 contemporary with the building of the cottages that later became the Red Lion Inn. They appear to relate to an outhouse at the rear of the cottages.

10.17 – Area J, Smithy

Introduction

This area was located in the vicinity of the Smithy. It was designed to accommodate a series of surface water drainage channels for the downspouts of the roof drainage of the Smithy. The drainage channels ran from the southern side, then curved around the eastern side, before turning along the northern side of the Smithy. The channels were 0.4-0.5m wide and 0.5-0.9m deep below current ground level. They ran for c. 22.0m (see AS006, AS102; 10.95).



10.95: External Works, Area J, mixed clinker ash and rubble (2258) east of Smithy, north facing

Description

The earliest deposit in the Smithy garden was a red clay subsoil layer (2257), located 0.90m below the current ground level. This was overlain by a deep layer of mixed clinker ash and rubble (2258), 0.70m deep. This layer formed the basis for the continuation of the railway lines (10.96) visible in Areas G5 and G6 (see above). The tracks were supported by wooden sleepers of which (2256) and (2260), c. 2.0m long, cross-section 0.40m x 0.20m, was an example. A metal bracket or chair attached the sleepers to the rails above. A single ferrous metal rail track survived on the western

side (2261). This was originally the western of two sets and the eastern set had been removed. It continued from the north in a NNW-SSE orientation curving to the south. It had a cross-section 80mm x 180mm. The whole area in the Smithy garden was covered by a humus-silt topsoil layer (2259).



10.96: External Works, Area J, metal rail track (2261), east facing

Phased Interpretation

Phase 5: The initial building up of the layers in this area of the site appeared to have occurred by the early 1900s. It would appear that the land had become a dumping ground for coal waste derived from the furnaces of the fine and common pans on site. The material drained well and this explains the notable change in level between the site, and the rear gardens along Ollershaw Lane, that were built earlier and are lower in height than the site. The land appears to have been built up by around 0.7m. The railway lines were laid out by about c. 1905. The build-up of material described above would have levelled the railway lines and allowed them to enter the works on a gradual incline. There is a notable fall in level towards the south-east where the sidings with the Cheshire Lines Committee, Northwich Salt Lines were located. The railway lines continued to the north where they were visible in Area G6. The absence of any other remains of the tracks within the Smithy vicinity suggests that the railway lines were taken up and sold for scrap metal by the Thompson's in the 1950s when the railway lines ceased being used.