

**Stocksbridge NI School – Outreach Children’s Centre,
Nr: Sheffield, South Yorkshire.**

**Report on a Watching Brief
undertaken during ground investigations.**



Bolsterstone Glass House looking west

ARS Ltd Report 2007/10
February 2007

Compiled By:
Jessika Shakarian and Brian Marshall
Archaeological Research Services Ltd
Suite 7 Angel House
Bakewell
Derbyshire
DE45 1HB

Checked By:
Dr. Richard Chatterton

Tel: 01629 814540
Fax: 01629 814657
admin@archaeologicalresearchservices.com
www.archaeologicalresearchservices.com

Stocksbridge NI School – Outreach Children’s Centre.

**Report on a Watching Brief
undertaken during ground investigations.**

ARS Ltd Report 2007/10

February 2007

Archaeological Research Services Ltd

Contents

| | |
|--|----|
| List of Figures..... | 1 |
| Executive Summary..... | 2 |
| 1. Introduction..... | 3 |
| 2. Location..... | 3 |
| 3. Background..... | 4 |
| 4. Aims of the Project..... | 6 |
| 5. Methodology..... | 6 |
| 6. Summary of the Results..... | 7 |
| 6.1 Bore Hole Results..... | 8 |
| 6.2 Trial Trench Results..... | 9 |
| 7. Conclusion..... | 15 |
| 8. Publicity, Confidentiality and Copyright..... | 17 |
| 9. Statement of Indemnity..... | 17 |
| 10. Acknowledgments..... | 17 |
| References..... | 18 |

List of Figures

| | | |
|-----|--|----|
| 1. | Location map of Stocksbridge..... | 3 |
| 2. | View of Bolsterstone Glass House looking east..... | 5 |
| 3. | View of Bolsterstone Glass House looking west..... | 5 |
| 4. | View of bore hole 1 under excavation..... | 8 |
| 5. | View of Trench one..... | 9 |
| 6. | View of Trench two..... | 10 |
| 7. | View of Trench three..... | 11 |
| 8. | View of Trench four..... | 12 |
| 9. | View of Trench five..... | 13 |
| 10. | Plan of site showing location of bore holes and trenches..... | 14 |
| 11. | Map (1926) showing clay workings on development site..... | 15 |
| 12. | Map (1902-1925) showing clay workings on development site..... | 16 |

Executive Summary

An archaeological watching brief was undertaken by Archaeological Research Services Ltd (ARS Ltd) on behalf of Sheffield City Council Design and Project Management, Development, Environment and Leisure (DEL) at Stocksbridge NI School – Outreach Children’s Centre, Pot House Lane, Stocksbridge, Sheffield. The work involved a watching brief on three rotary bore holes and five trial trenches which were excavated to establish ground conditions for the design of foundations and substructures in the construction of the proposed Children’s Centre.

The archaeological watching brief had been commissioned because of the proximity of the site to Pot House Farm, part of which is a 17th century building which between the 1650’s and 1750’s operated as Bolsterstone Glass Works. The farm complex has standing remains of the glasshouse that are protected as a Scheduled Ancient Monument (SM SY 1279). Excavations in recent years have revealed furnaces and waste deposits that extend beyond the immediate building.

1. Introduction

After consultation with South Yorkshire Archaeology Services (SYAS), Sheffield City Council Design and Project Management commissioned Archaeological Research Services Ltd (ARS Ltd) to undertake a watching brief on the drilling of three rotary bore holes and the excavation of five trial trenches on the school playing field at Stocksbridge NI School, Pot House Lane. The watching brief was recommended due to the proximity of the 17th century Bolsterstone glasshouse (SM SY 1279), located on the opposite side of Whitwell Lane from the development site.

2. Location and Geology

2.1 Stocksbridge is situated on the B6088 within the Pennine foot hills, 12 miles north-west of Sheffield (SK 26 98 SE).

2.2 The solid geology of Stocksbridge consists of the Carboniferous Westphalian Coal Measures and the Millstone Grit Series. The site overlays the Halifax Middle Coal Bed which consists of interbedded grey mudstones, siltstones and sandstones (B.G.S. 2002, 58).

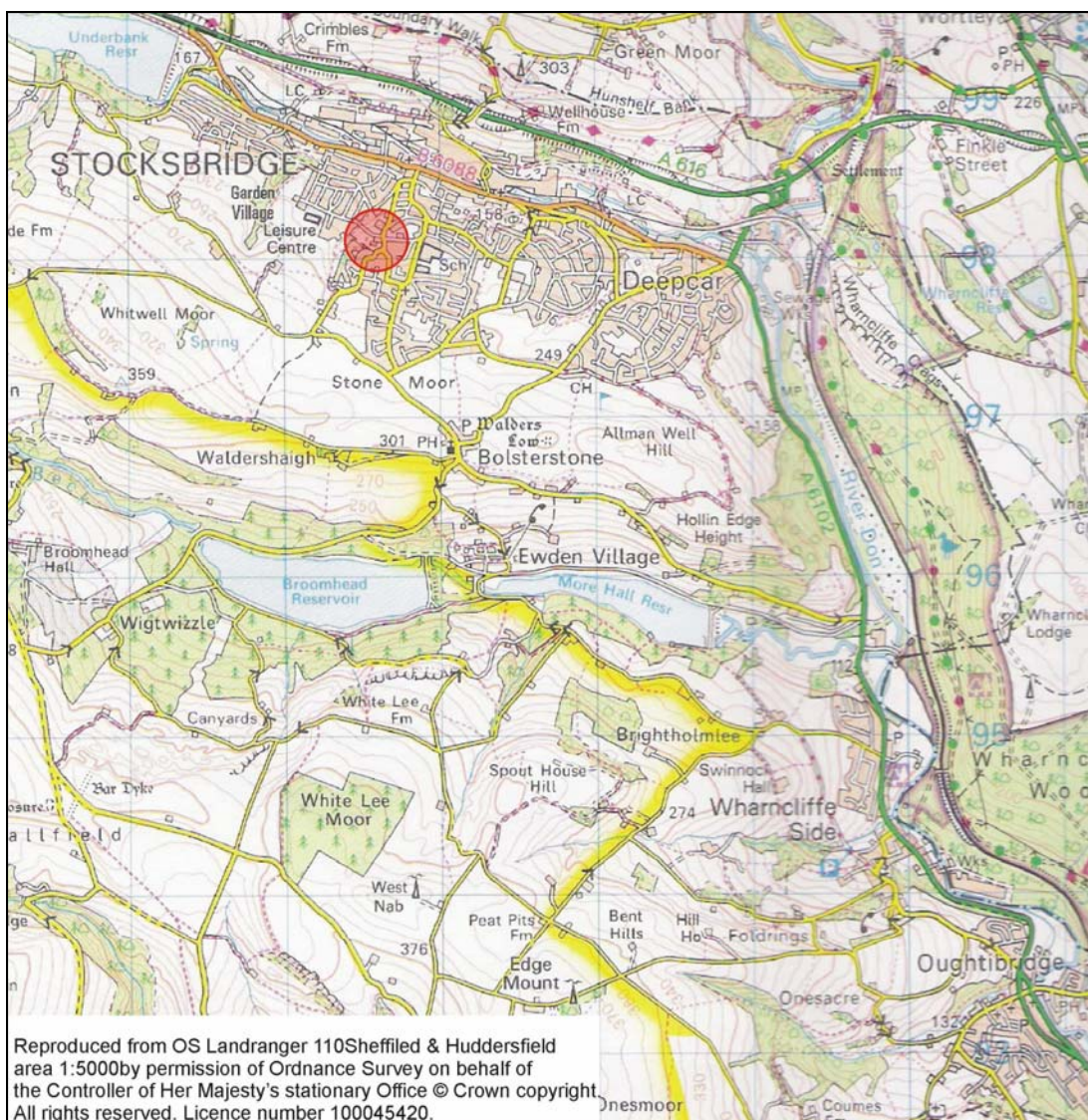


Figure 1. Location of Stocksbridge and the development area.

3. Background

- 3.1 The name Stocksbridge probably derives from the Saxon name meaning 'tree bridge' or 'wooden bridge' (Branston 1983, 40). The bridge at Stocksbridge was originally wooden and crossed the Little Don River at a point which traditionally formed a boundary between Hunshelf and Waldershelf, the parishes of Penistone and Bradfield (Branston 1983, 40). It was at this crossing point that the hamlet of Stocksbridge grew, eventually developing into a thriving industrial centre during the Industrial Revolution.
- 3.2 In 1842, Samuel Fox brought great prosperity to the area when he took over the cotton mill and developed it into a steelworks. He exploited local coal seams to develop steam power, creating considerable employment for miners (Branston 1983, 48). Other businesses utilised the fireclay deposits underlying the coal, leading to the development of many tile, brick and pipeworks in the area (Branston 1983, 48). One of these pipeworks was set up by William Brook at Pot House, situated north of the development site (Branston 1983, 48).
- 3.3 The 17th century glasshouse, which forms part of Pot House Farm on the other side of Whitwell Lane to the development site, is the only one of its kind in the country (Kenworthy 1941, 14). The Bolsterstone Glasshouse, at its height, produced glassware that rivalled that being produced in, or imported into, London (Kenworthy 1941, 15). The glasshouse produced a wide variety of bottles and decorated tablewares in a soda-lime and lead glass, together with plain and coloured window glass (Ashurst 1987, 147). The manufacture of glass was abandoned in the 1750's probably due to competition from larger glasshouses that were producing cheaper, lower-quality glass (Kenworthy 1941, 40). In 1761, Bristol had 15 glasshouses and Stourbridge had 9 or 10 which probably led to a slow decrease in demand for glass from the Bolsterstone works (Kenworth 1941, 40). Archaeological evidence suggests an accident, resulting in molten glass being spilt over the coal bed, may have caused further problems for the works (Ashurst 1993, 31). Such an accident would have rendered the furnaces unusable without expensive repairs and in a time of low income this may not have been possible. In 1777, the works were eventually given over to making pottery produced slip-decorated and black-glazed redware (Ashurst 1987, 147).
- 3.4 Excavations of the glasshouse during the 1980's revealed information regarding the structure of the furnaces and the production of glass at Bolsterstone. The melting furnace was different from others of that period due to some innovative modifications. Whilst other glasshouses were operating with just one furnace, Bolsterstone was operating with four (Ashurst 1993, 30). A major drawback of the direct furnace technique was the loss of heat as fresh air passed through the coal. Excavations revealed that the Bolsterstone furnaces were equipped with a provision for pre-heating the incoming air, a process not found in other furnaces until the 18th century and not widely adopted until the 19th century (Ashurst 1993, 30). The system was highly efficient as it saved two tonnes of coal per ton of glass and makes Bolsterstone particularly important as a precursor for later glasshouse models (Ashurst 1993, 29).



Figure 2. View of Bolsterstone glass house looking east.



Figure 3. View of Bolsterstone glass house looking west.

4. Aims of the Project

4.1 The project undertaken was an archaeological watching brief, as stipulated in the brief supplied by the South Yorkshire Archaeology Service (SYAS). The aims were as follows:

- To oversee the drilling of the three rotary cores and the excavation of five trial trenches.
- To ensure any archaeological features were fully recorded and interpreted.
- To alert all interested parties to the possible destruction of archaeological features.

5. Methodology

- 5.1 A watching brief was maintained on ground works at the site which took the form of three 30m deep, rotary bore holes and five trial trenches, approximately 1m x 2m in size. These investigative ground works were intended to establish ground conditions for a future building project.
- 5.2 Initially, the investigations were to consist of both compression and rotary bore holes. Unfortunately, the compression borer could not operate due to the compact nature of the geology. The open hole rotary bore holes were made by experienced operators who excavated to a depth of 30m. This method does not produce a core, rather, the soil is monitored by a visual inspection of the chippings being produced by the hammer.
- 5.3 The trial trenches were opened by machine using a toothless ditching bucket and were excavated in level spits of a maximum depth of 0.2m to the first archaeological horizon or naturally occurring substratum. All machine excavation was carried out under careful supervision by an archaeological officer from ARS Ltd.
- 5.4 A watching brief was maintained on the excavation of the trial trenches which were recorded according to the normal principles of stratigraphic excavation.
- 5.5 All bore holes and trenches were located on a site plan and recorded by photographic and written records. The site grid and all levels taken were tied into the National Grid.
- 5.6 No suitable deposits for environmental sampling or scientific dating were found during the watching brief.
- 5.7 There were no archaeological finds recovered during this watching brief and, as a result, there was no finds processing upon completion of the fieldwork.

6. Summary of Results

6.1 Bore hole results

- 6.1.1 Bore hole one was located on the west of the site, 12.2m from the south-west corner of the school where the fence joined the building. The topsoil (001), which existed to a depth of 0.3m, was a fine grained, sandy silt that was dark brown (7.5YR 3/2) in colour. At a depth of 0.3m below the surface of the ground a natural sandstone substratum (002) was revealed. The sandstone was between four and five metres thick and had a particularly strong band at about 3.9m below the surface of the ground. Beneath the sandstone a void was uncovered which was approximately 5.5m below the surface of the ground. The vertical extent of the void was 1.5m to 2.5m. Below the void a series of mudstones and shales (003) were excavated for the rest of the bore hole, a length of approximately 22m.
- 6.1.2 Bore hole two was located on the south of the site close to the public footpath, 29.9m south of bore hole one and 27.7m from the west corner of the school. The topsoil existed to a depth of 0.1m, below which was a natural sandstone substratum (002) which existed to a depth between 5m and 6m below the surface of the ground. A band of sandstone encountered at 3.5m below the surface of the ground was above a void that had a vertical extent of 2.8m. The void was encountered between 5m and 6m below the surface of the ground. The voids encountered in bore holes one and two are likely to be the remains of mine workings. Below the void a series of mudstones and shales (003) were excavated for the rest of the bore hole, a length of approximately 21m.
- 6.1.3 Bore hole three was located towards the centre of the site close to trench five. The topsoil (001) existed to a depth of 0.1m. Below this was a natural sandstone substratum (002) which existed to a depth between 5m and 6m below the surface of the ground. A band of sandstone was encountered 3.5m below the surface of the ground, below which was a band of coal (004). The vertical extent of the coal was between 2m and 3m. Below this a sandstone substratum continued for approximately 2m before encountering mudstones and shales (003) that were excavated for the rest of the bore hole - a length of approximately 19m.



Figure 4. Rotary bore hole 1 under excavation.

6.2 Trial trenches

6.2.1 Trench 1 was located on the east side of the site, 25.26m from the access gate next to the road (Fig. 10). The trench was 2.32m long and 0.92m wide with a depth of 1.35m. The topsoil (001) (7.5 YR 3/2) existed to a depth of 0.38m, which overlay a natural sandstone substratum (002) which comprised a fine-grained, sandy clay (10 YR 5/6) with broken pieces of sandstone ranging in size from 0.30m x 0.25m to 0.5m x 0.45m (Fig. 5). The sandstone (002) was excavated to a depth of 0.97m. No archaeological finds or deposits were uncovered in this trench.



Figure 5. View of Trench 1 looking west (Scale: 2m).

6.2.2 Trench 2 was located on the east of the site, 20.1m from the access gate next to the road (Fig. 10). The trench was 2.3m long and 0.95m wide, with a depth of 1.35m. The topsoil (001) existed to a depth of 0.35m which overlay a natural sandstone substratum (002), excavated to a depth of 1m (Fig. 6). No archaeological finds or deposits were uncovered within this trench.



Figure 6. View of Trench 2 looking west (Scale: 2m).

6.2.3 Trench 3 was located on the east of the site 30.5m from the from the access gate next to the road (Fig. 10). The trench was 2.83m long and 0.9m wide, with a depth of 1.7m. The topsoil (001) existed to a depth of 0.3m which overlay a natural sandstone substratum (002), excavated to a depth of 1.4m (Fig. 7). No archaeological finds or deposits were uncovered within this trench.



Figure 7. View of Trench 3 looking west (Scale: 2m).

6.2.4 Trench 4 was located on the east of the site 7.13m from the wall next to the road (Fig. 10). The trench was 0.8m long and 0.7m wide, with a depth of 1.6m. The topsoil (001) existed to a depth of 0.4m which overlay a natural sandstone substratum (002), excavated to a depth of 1.2m (Fig. 8). No archaeological finds or deposits were uncovered within this trench.



Figure 8. View of Trench 4 looking north (Scale: 2m).

6.2.5 Trench 5 was located in the centre of the site close to the school and bore hole three (Fig. 10). The trench was 1.96m long and 1.03m wide, with a depth of 1.1m. The topsoil existed to a depth of 0.29m which overlay a natural sandstone substratum (002), excavated to a depth of 0.81m (Fig. 9). No archaeological finds or deposits were uncovered within this trench.

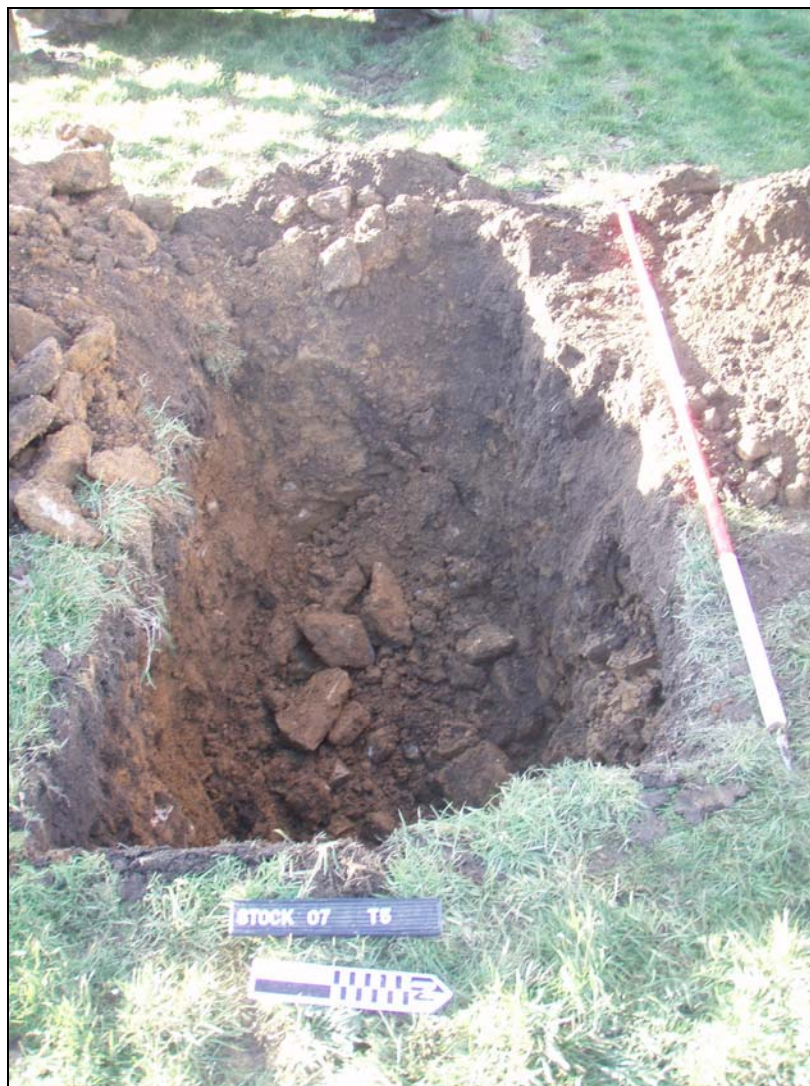


Figure 9. View of Trench 5 looking west (Scale: 2m).

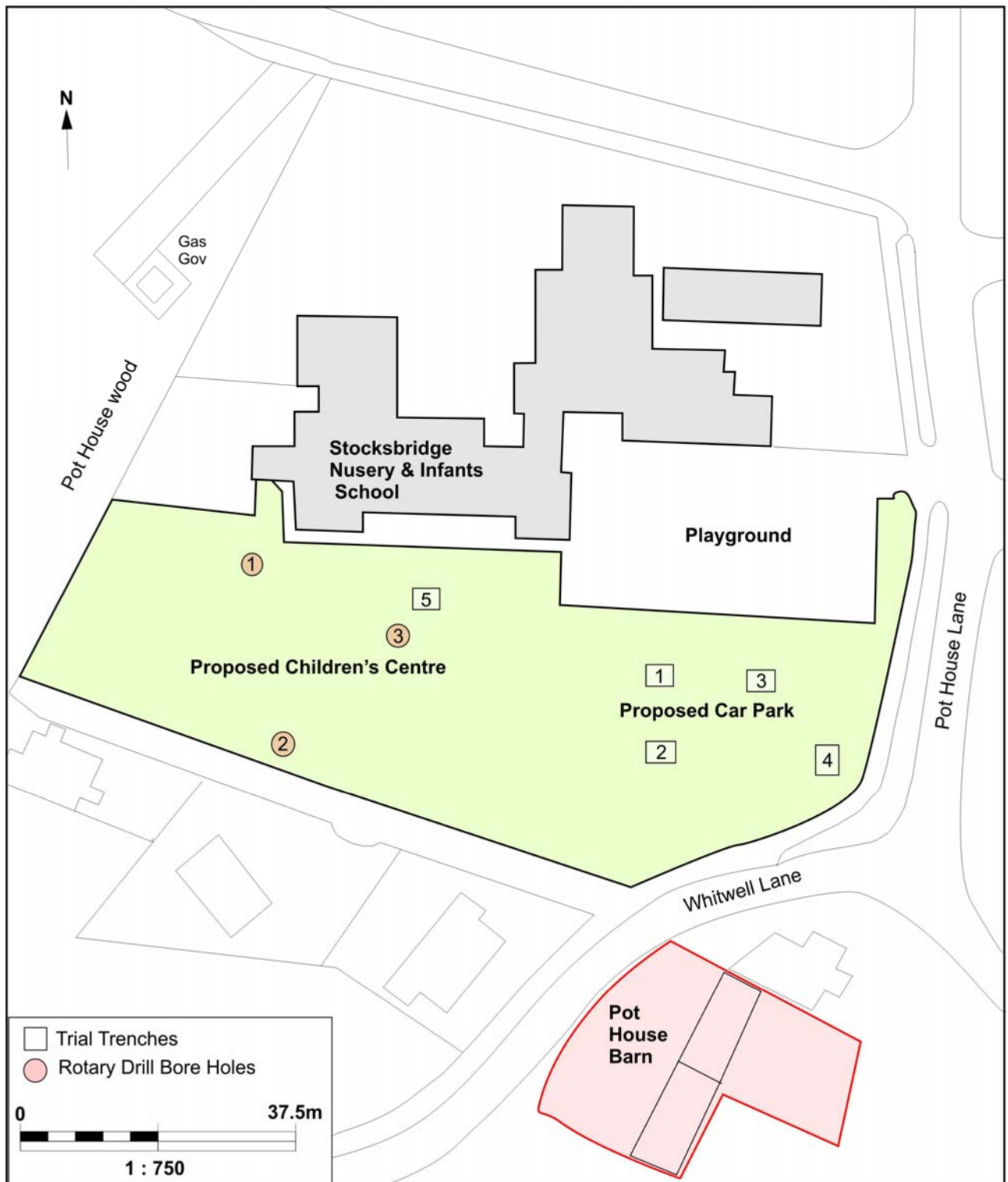


Figure. 10 Plan of the site showing location of bore holes and trial trenches.

7. Conclusions

7.1 The bore hole excavations revealed mine workings already known to be located under the school and the development site. Geological maps of the area from the early 1920's show a network of shafts probably associated with the pipeworks at Pot House Works (Figs. 11 and 12). The locations of the voids correspond with the old maps and were between 1.5m and 2m in depth. A deposit of coal was uncovered in bore hole three at the same depth as the voids found in the other bore holes. The deposit probably indicates a column of coal left between mine shafts for structural reasons.

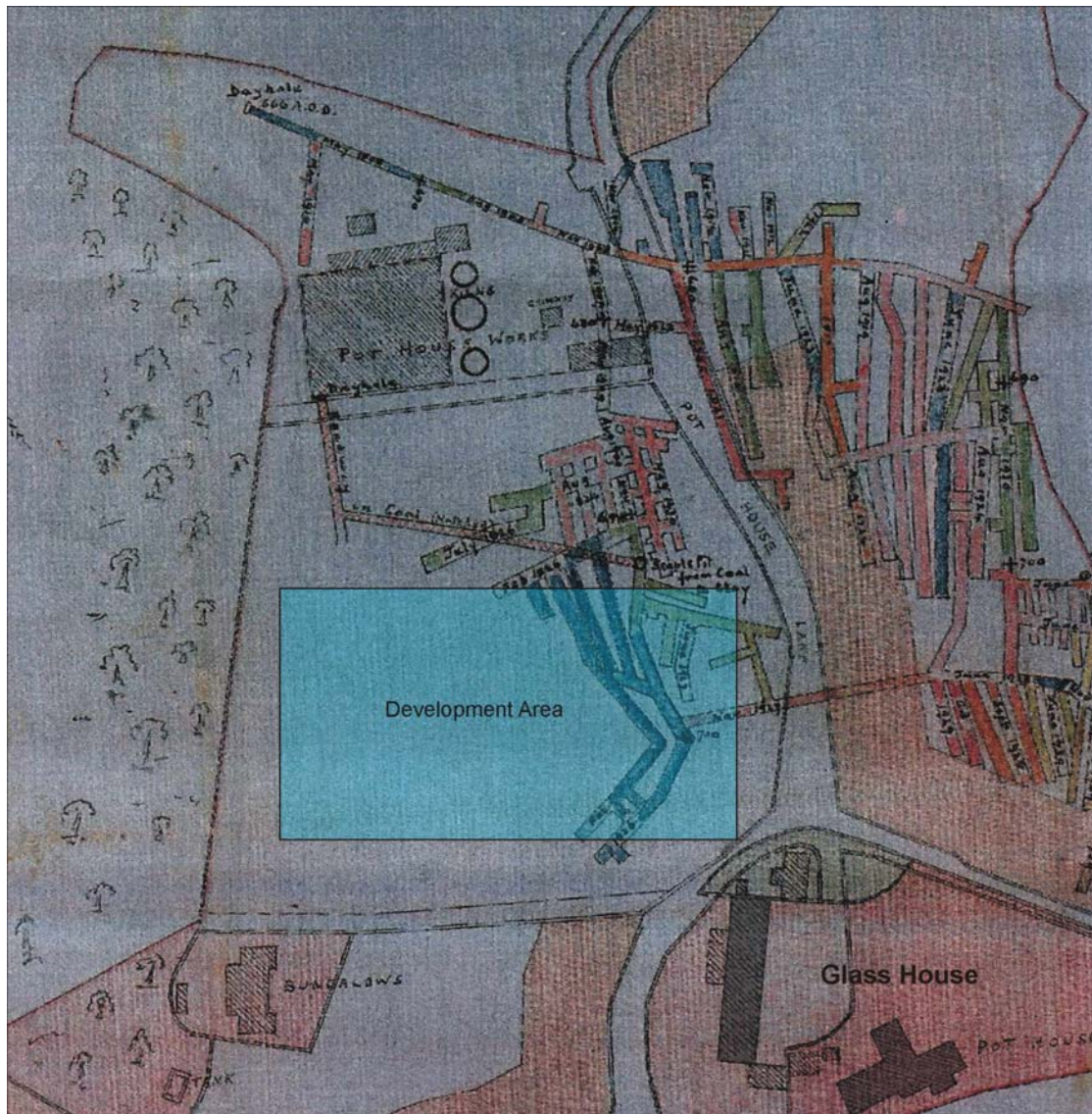


Figure 11. Map showing clay shale workings of Halifax Middle Coal Bed, 1926, Scale 1:1200.

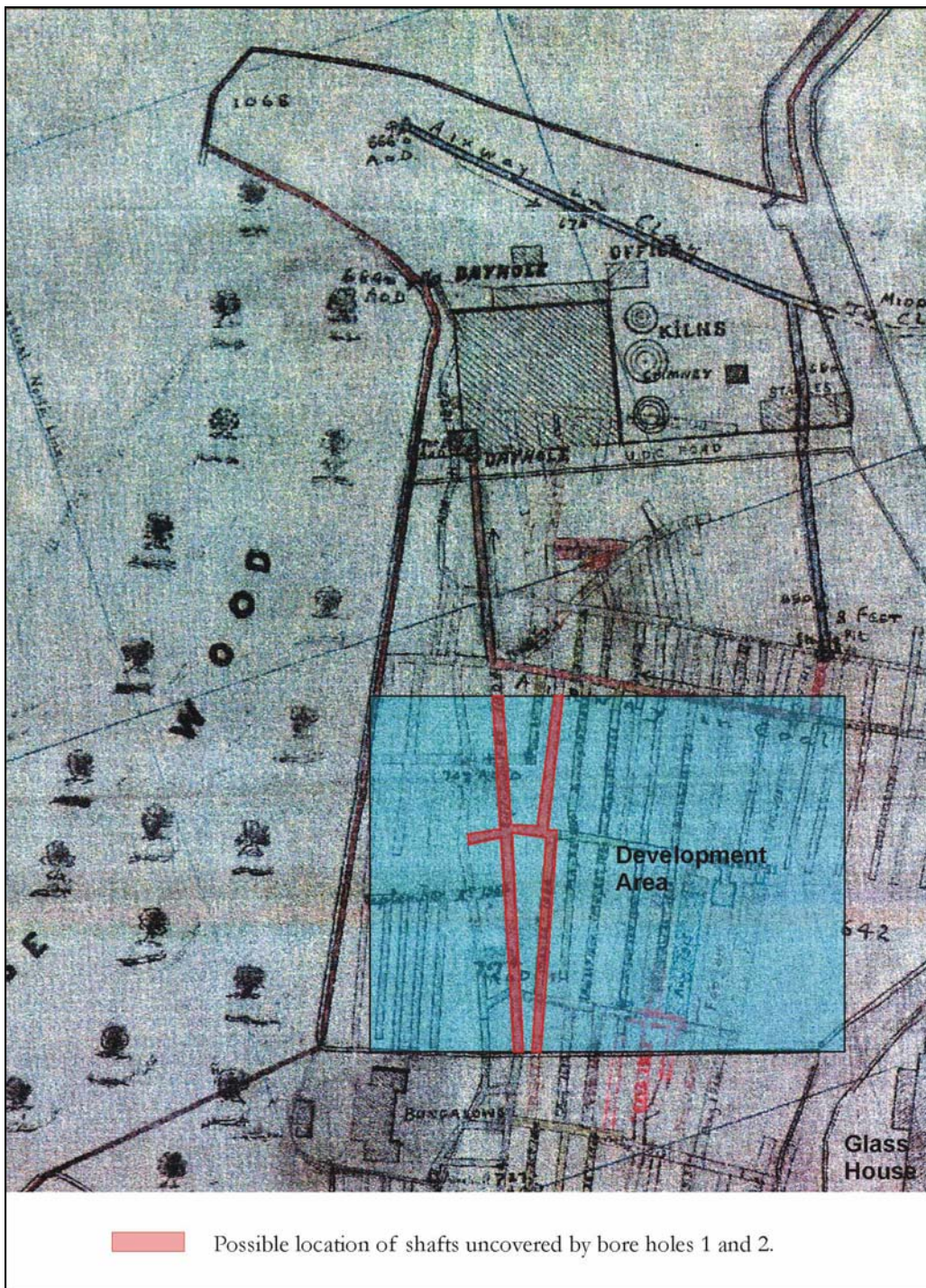


Figure 12. Map showing clay shale workings of Halifax Middle Coal Bed, 1902 -1925, Scale 1:1200.

- 7.2 The trial trenches did not reveal any archaeological deposits or finds. In each trench the topsoil (001) directly overlay the natural sandstone substratum (002) which, from the borehole investigations, continued to a depth of 5m.

8. Publicity, Confidentiality and Copyright

Any publicity will be handled by the client.

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

9. Statement of Indemnity

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

10. Acknowledgements

ARS Ltd would like to thank all those involved in the running of the project, especially Dick Cubison of Sheffield Design and Project Management Development, Environment and Leisure, Dr. Mourice Czerewko, Principle Engineering Geologist at Scott Wilson Ltd and Craig Ailot of Soil Mechanics.

References

Ashurst, D. 1987. Excavations at the 17th – 18th century Glasshouse at Bolsterstone and the 18th century Bolsterstone Pothouse, Stocksbridge, Yorkshire. *Post-Medieval Archaeology* 21: 147-226.

Ashurst, D. 1993. *The History of South Yorkshire Glass*. J.R.Collins.

Branston, J. 1983. *History of Stocksbridge*. Stocksbridge Town Council.

British Geological Survey. 2002. *The Pennines and adjacent areas*. B.G.S.

Kenworth, J. 1917. Glass making at Bolsterstone, near Sheffield, from about A.D. 1650 to 1750. *Journal of the Society of Glass Technology*. Pamphlet 241.

Kenworthy, J. 1941. *Bolsterstone Glass House and its place in the history of English glass making*, The Early History of Stocksbridge and District. Handbook 6. Stretton Villa, Deepcar.

Kenworthy, J. 1915. *Clay, fire-stone, and gannister in the Little Don Valley - Lead-mining in the Ewden Valley*. The Early History of Stocksbridge and District. Handbook 4. Stretton Villa, Deepcar.