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**Dark Lane Colliery
Mirfield
West Yorkshire**

Archaeological Excavation

Report No. Y055/12

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Summary

An archaeological excavation at Dark Lane Colliery, Mirfield, West Yorkshire, was carried out by CFA Archaeology Ltd on the remains of three banks of late 19th and early 20th-century coke ovens. Two trenches were excavated through the oven banks; Trench 1 through Bank 3 and Trench 2 through banks 1 and 2. The substructure of the oven banks were recorded, showing the foundations consisted of large parallel walls infilled by shale and made ground. Other features of note were the vestigial remains of railway lines which supplied the site with coal for coking and transported the coke from the site to be used as fuel.

1. INTRODUCTION

1.1 General

This report presents the results of archaeological works undertaken by CFA Archaeology Ltd (CFA) on behalf of Orion Homes Ltd, at the site of former coke ovens, at Dark Lane Colliery, Mirfield, West Yorkshire, between 30 April and 21 May 2012, prior to the construction of housing. The CFA code and number for the project is NORM/2053.

All work was undertaken in accordance with a specification produced by David Hunter of West Yorkshire Archaeology Advisory Service (WYAAS) on behalf of Kirklees District Council (Appendix 4) in order to comply with a condition on planning (2010/91763/E1). In order to ensure consistency with previous archaeological works (ASWYAS 2006), the same numbers have been followed.

1.2 Site Location and Description

The development area was located on the site of the former Dark Lane Colliery, Mirfield, West Yorkshire (NGR: SE 2178 2061). The site covered an area of approximately 1.9 hectares, bordered to the north and west by housing and to the south and east by Holroyd Park (Fig. 1). Output from the coke oven site was discontinued in the mid 20th century and the structural remains were in various states of disrepair since their disuse and abandonment. Much of the site had been significantly covered by made ground and material resulting from demolition.

The site was situated on relatively level ground that sloped gently to the south at approximately 48.9m above the ordnance datum (AOD). A visual survey of the site immediately prior to the programme of archaeological works failed to find any discernible traces of the ovens themselves. Any remains were indistinguishable from the deposits of demolition rubble which covered the majority of the site, and the documented 'upstanding' features from previous archaeological works (ASWYAS 2006) were not visible.

1.3 Previous Archaeological Work

A desk-based assessment and building survey was conducted in May 2006 (ASWYAS 2006) which identified a series of upstanding features that included the remains of coke ovens, flues and revetment walls. The poor state of preservation of the remaining

coke ovens and the associated infrastructure was noted, as was the potential for buried remains (ASWYAS 2006).

1.4 Historical and Archaeological Background

The desk based assessment identified the development coke ovens as being part of the rapid development of new industries in the area during the 19th century. The following summarises the desk-based assessment to provide background to the project.

Coke is a light carbonaceous substance which is produced by baking a form of low-sulphur bituminous coal in an airless oven at temperatures of up to 1000°C. The baking process removes unwanted components such as water, coal-gas and coal-tar and fuses the carbon and residual ash together. The resultant fuel is ideal for metallurgical production processes such as blast furnaces. The use of coke as a fuel in the iron industry began in the early 18th century and by the end of that century, it was widely adopted across the country. The beehive ovens, of the type which were in use at Dark Lane were first used for the production of coke in 1759 and were still used, albeit on a smaller scale until the outbreak of the Second World War.

A bank of coke ovens had been built along the south-eastern edge of the site by 1905. By 1914 this row of ovens was extended to the south-west and a new row of ovens and a chimney were constructed immediately to the north-west which was served by extended railway spurs.

Three banks of coke ovens were built. Bank 1 comprised five pairs of opposed ovens separated by a central flue with a chimney at the south-west end. A working platform would have flanked the rows of ovens and allowed coal to be unloaded and coke to be loaded into colliery rail waggons.

Bank 2 originally comprised eleven pairs of ovens and a central flue. This bank would have had loading platforms along its long axis with a railway line for colliery waggons which ran parallel to the bank. Bank 3 continued on the same alignment as Bank 2 and had 6 pairs of coke ovens and a central flue. The survey recorded that the design of the coke ovens varied very little between banks.

1.5 Aims of the Excavations

In accordance with the specification, the objective of the project was to fully record, analyse and report all archaeological remains within the areas of interest on the site prior to their destruction during development, specific aims were to:

- record the internal structure of each coke oven battery by means of a transverse section, and;
- record evidence of the charging/discharging platforms and transport arrangements associated with the coke ovens.

Research objectives followed the regional research agenda for industrial archaeology (Gomersall 2005) and the relevant English Heritage thematic research agenda (2010a).

2. WORKING METHODS

2.1 General

The works were undertaken in accordance with the specification (Appendix 4), relevant Standards and Guidance documents (IfA 1995, 2001), and CFA's standard procedures. The excavation and removal of all overburden was carried out using a mechanical excavator equipped with a smooth-bladed bucket under constant archaeological supervision. All further excavation required to fulfil the terms of the brief were carried out by hand.

The specification required the excavation of three trenches of approximately 20m length by 5m wide through each bank of coke ovens. Due to the considerable depth of the deposits and the need for stepping the trenches and the restrictions of space, two trenches were excavated in separate phases, though still traversing the entire banks of ovens. Trench 1 created a section through Bank 3 and Trench 2, created a section through banks 1 and 2. Due to the depth of the excavations which required the removal of between 4 and 5m of loose overburden, both trenches were stepped out in sections 1m high and 1m wide to allow the safe excavation to the full required depth.

The archaeological works were able to record a full stratigraphic sequence down to the undisturbed natural geological layer. Trench positions were located and surveyed using industry standard GPS equipment. Archaeological features were recorded by GPS and Lieca TCR307 reflectorless EDM. A Nikon 35mm SLR camera was used for black and white photographs using Ilford HP5 film. Recorded prints were printed on Fujicolor Crystal Archive Paper.

The weather conditions varied during the fieldwork but were generally overcast and wet, though with some warm and sunny days.

2.2 Standards and Guidance

CFA Archaeology is a registered organisation (RO) with the Institute for Archaeologists (IfA). All work was conducted in accordance with relevant IfA Standards and Guidance documents (IfA 1995, 2001), English Heritage guidance (EH 2005, 2008a, 2008b, 2010a and 2010b), and CFA's standard methodology.

2.3 Monitoring

The archaeological works were monitored by David Hunter, a Senior Archaeological Officer for the West Yorkshire Archaeology Advisory Service, who was informed in advance of the works taking place and visited the site on 02 May 2012.

2.4 Archiving

The site archive currently consists of a folder of completed excavation records recorded from both trenches. The site archive will be ordered and stored according to

relevant national guidelines (Brown 2011, Ferguson and Murray 1997 and IfA 2001) at the Tolson Museum, Ravensknowle Park, Wakefield Road, Huddersfield. Once the report has been accepted by the West Yorkshire Historic Environment Record, a summary of the results of the archaeological works will be submitted for inclusion in OASIS.

3. RESULTS

3.1 General

To ensure consistency and concordance with previous interpretations of the coke ovens and associated remains, the numbers ascribed to individual coke ovens follow those used in the desk-based assessment (ASWYAS 2006).

3.2 Trench 1

The trench was 24.5m long, with a maximum width of 15m at the top and 2.3m at the base (Fig. 2). The trench position correlated with the position of six ovens (33-38) in Bank 3 (ASWYAS 2006). Approximately 1m of overburden was removed before the archaeological horizon was reached.

After the removal of the overburden, the remains of walls (001, 002, 003, 019 and 021) were seen in plan (Fig. 2). The excavation continued to remove made ground deposits, predominantly shales and red blaes. A series of stepped excavations continued to remove made ground until undisturbed natural was reached at 46.6m AOD (Fig. 7).

In plan the excavated trench revealed two sets of parallel walls of limestone construction (Fig 2; 001, 003, 019, and 021). Both were braced by limestone (Fig. 8; 002 and 020). The bracing walls were tied into the main walls and were therefore probably part of the same construction. The internal cavities of both sets of parallel walls (001, 003, 019, 022) were filled by deposits of grey shale (004, 022, and 023) (Figs 4a, 4b and 6a). The construction of the parallel walls created a large internal space (8.7m north-west to south-east) which was filled by deposits of grey shale (032) and red blaes (031) (Fig. 6a). The deposits of shales and blaes provided the made ground on top of which the former coke ovens were constructed. The deposition of the infilling shales was rapid and mortar scars on the internal elevation of the walls (Fig. 9; 003 and 019,) show that the wall was constructed in segments, after which the internal space would have been filled in before wall construction was again continued.

When this process was virtually complete, the limestone masonry foundations of a central flue were constructed (Figs 4a and 6a; 028, 030). These foundations supported the vaulting and the structure of the coke ovens (Figs 4a, 6a and 10; 024 and 026). A deposit of large, heat-affected limestone fragments filled the internal space between the flue foundations (028 and 030).

The south-west facing section of Trench 1 showed the vestigial remains of two coke ovens. A single layer of bricks (026) was all that remained of Oven 38. The bricks were bedded onto a layer of screed (026) which covered the flue foundation 030 (Fig. 10). A similar screed layer (025) was deposited prior to the construction of the

masonry wall of Oven 37, situated to the north-west. The wall of Oven 37 was constructed of an external red-brick outer skin 0.65m wide, with a 0.40m internal lining of refractory brick (101). The refractory brick-lining only survived for three courses. It was abutted by the partial remains of the base of the oven floor (Fig. 4a; 037). The oven floor was dry laid on a bedding layer of fine sand, which had been affected by intense heat. A truncated deposit of heat affected sand (035) to the south-east, where Oven 38 was situated, probably provided the same function as Deposit 034. The remaining deposit within the outer walls of Bank 3 was a deposit of made ground (038) which comprised demolition material from the former coke ovens as well as modern debris (Figs 4a, 6a and 10).

To the north-west of Wall 021, the remains of 7m of railway were recorded. It comprised five sets of partially-rotted wooden sleepers between 2.42m and 2.6m long and about 0.3m wide (Figs 2, 6a and 7). The sleepers were within a compacted dark-grey layer of sand, ash and fine gravel, which overlay 0.54m of grey shale. The natural substrate was reached at 46.78m AOD (Fig. 4d).

3.3 Trench 2

Trench 2 transected banks 1 and 2. The trench was 35.5m long, 15m at the top and 2.3m at the base (Figs 1 and 2). The area of the trench was covered by overburden consisting of bricks, refractory material, sandstone and limestone fragments and boulders, and a large amount of modern detritus including plastics and wood.

The excavation in Trench 2 recorded the continuation of the parallel revetment walls were recorded in Trench 1 (Figs. 3 and 6b; 041, 043, 069 and 072). The walls continued with the same method of construction and were filled by grey shale (070). A bracing wall (042) was recorded between walls 041 and 043. To the south-east of Wall 043, a 10m stretch of railway line was recorded. Although the sleepers themselves had all but rotted away, the position of ten were recorded (045-054). The sleepers would have been deposited on the surface of compacted cinder and ash (056) which overlay a preparatory levelling deposit of crushed limestone fragments (055) (Figs 3 and 11).

The revetting walls to the south-east of Bank 2 (041 and 043) were built directly onto the natural substrate. A 0.18m thick deposit of made ground (057) covered the natural substrate throughout banks 1 and 2. This had accumulated or been deposited after the revetting walls (041, 043) had been built, but prior to the construction of wall 065, which was the south-east wall of Bank 3. This must reinforce the theory that Bank 2 predated Bank 3. The made ground was overlain by deposits of grey shale (058 and 067) and red blaes (Figs. 6b; 059 and 068). All deposits had merging horizons which indicated the dissipating effects of heat from the coke ovens above (Fig. 12).

The stratigraphy of Bank 2 continued with masonry (075 and 076) as the limestone constructed foundations of the central flue of Bank 2 (Fig. 6b; 13). Wall 075 overlay a deposit of shale and sand which had been affected by intense heat. This was unsurprising, as part of the deposit was within the flue. The flue was filled to the surviving height of the masonry by a deposit of heat-affected sand, which contained small fragments of brick and shale. It is likely this deposit had accumulated whilst the flue was in use. After the construction of the flue, deposits of shale (078, 073) were

used to raise the ground to the required formation level of the coke oven bases and foundations. The only surviving remnant of a coke oven in Bank 2 was the heavily disturbed remains of a brick foundation (079), which was bedded on a screed layer of mortar. This was partially covered by a deposit of heat-affected sand (080) which provided the bedding layer for the surface of the floor (081). Deposit 080 had within its matrix large fragments of red brick and refractory brick, which may indicate that Surface 081 was possibly re-laid or was a secondary surface (Figs 5b and 6b; 14). All deposits relating to Bank 2 were covered by demolition material (071).

Banks 2 and 3 were defined by revetting walls (072 and 065 respectively) and the continuation of the north-east to south-west orientated railway recorded in Trench 1. Only the remains of two sleepers were recorded (062 and 063) within a surface of crushed cinder and ash. Made ground (071) had been deposited between walls (072 and 065) and overlay the railway (Figs 3 and 6b 15).

Bank 1 did not have the parallel arrangement of walls previously recorded. Instead a single revetted wall (065) to the south-west (Figs 3 and 6b; 15). The full extent of Bank 1 was not revealed within the trench due to access constraints on site, but it was presumed that a similar wall existed to the north-west. A series of shale deposits (067, 068) made up the bulk of the made ground in Bank 1. Intense heat had heavily affected Deposit 068, with a merging horizon recorded; probably as heat had dissipated from the coke ovens above (Figs 6b and 16). A tip of crushed coal, cinder and ash had been tipped against the internal north-west elevation of Wall 065. This change of infilling material was probably a result of what was available at the time.

The remains of a brick foundation for a coke oven (097) were recorded. The masonry was 0.85m wide, 0.66m high and was covered by a surface of refractory bricks (087), which would have been part of the oven floor. Foundation 097 seemed to be curving and it is likely that the masonry (095) was a continuation of the circumference of the coke oven. Between the masonry foundations (095 and 097) a deposit of red blaes, cinder and ash provided the levelling material for the coke oven floor. Brickwork (086) may be the remnant of the inwardly-curving wall of the coke oven dome (Fig. 6b; 17). At a similar level, the remains of a second coke oven were recorded. The internal skin of the oven (083) was constructed from refractory brick and had a vitrified face. The outer skin (084) was constructed from red brick. The remains of a heavily vitrified brick surface (082) were located to the north-west (Figs 6b and 18). Between the two coke ovens in Bank 1, were the heavily-disturbed remains of a probable central flue (096, 090 and 095). The stratigraphic sequence in Bank 1 was completed by deposits that were typically generic demolition deposits (088, 089 and 092) (Figs 6b and 17).

3.4 Brick Assessment

by Philip Moore

A total of twelve bricks from secure contexts were retained from the excavations. The bricks were all 20th century in origin. Only two bricks had any identification markings and both of these were recovered from the remains of the cokes ovens in Bank 1. See below for a catalogue of sampled bricks (Table 1).

Sample 11 (084) was stamped ‘BRIGHOUSE’ and came from the Brighthouse Brick, Tile & Stone Company who extracted their clay from a quarry at Gooder Lane, Raistrick. The brick is early 20th century, machine pressed with well-defined frogging on both sides. It was retrieved from the masonry which formed the outer wall of a coke oven in Bank 1. Internal to this was an arch brick of refractory material which would have formed the circular, inside wall (083) of the coke oven (Sample 12). The Brighthouse Brick, Tile & Stone Company’s fortunes slowly waned after the Second World War and they ceased trading in 1962.

Sample	Context	Trench	Description	Size (mm)
1	037	1	Reddy orange, machine pressed, well defined rectangular frogged face. From coke oven base. Heavily affected by heat.	L 235 x W 110 x H 84
2	034	1	Reddy orange, pressed, refractory brick, narrow end for arching in coke oven internal wall. Heat affect.	L 235 x W 116-106 x H 84
3	024	1	Pinkish red, machine pressed, well defined rectangular frogged face, from external coke oven wall, heat affected.	L 235 x W 110 x H 80
4	026	1	Pinkish red, machine pressed, well defined rectangular frogged face, from coke oven foundations, heat affected.	L 230 x W 108 x H 80
5	017	1	Reddy orange, slightly discoloured by ash, Bull nose brick, redeposited, well-defined frogging. Retrieved from railway surface.	L 240 x W 114 x H 78
6	079	2	Reddish pink, machine pressed, with well defined rectangular frogged face, from coke oven foundation in Bank 2	L 230 x W 01 x H 82
7	081	2	Pinkish red, machine pressed, with well defined rectangular frogged face, from coke oven base, heat affected.	L 233 x W 108 x H 82
8	097	2	Reddy orange, machine pressed, with rectangular frogged with rounded edges, from coke oven foundation, heat affected.	L 225 x W 110-107 x H 80
9	087	2	Refractory brick, machine pressed, stamped 'cindrils', hard dark grey mortar on surface, heat affected, from coke oven base.	L 230 x W 108 x 75
10	095	2	Refractory brick, pressed arch brick, heat affected, from coke oven foundation,	L 216 x W 105-95 x H 74
11	084	2	Pinkish red, with well defined rectangular frogging on both sides, residual soft-sandy mortar, heat affected, from coke oven wall.	L 220 x W 100 x H 80
12	083	2	Pinkish red, refractory brick, probable arch brick, heat affected, from coke oven internal wall, heat affected. Stamped 'BRIGHOUSE'	L 220 x W 110-100 x H 80

Table 1: Catalogue of Sampled Bricks

The only other brick that can be firmly identified by a maker’s stamp was a refractory brick stamed ‘cindrils’ (9). This brick was produced by brick makers Joseph Morton Ltd. and was recovered from a coke oven surface (087) in Bank 1. The brick was produced at the Cinderhills Fireclay Works in Siddal which was established c. 1837; the date of manufacture is probably around the 1920s.

A bullnose brick (5) was recovered from a deposit in the railway surface to the north-west of Trench 1 (004). It had been deposited as a form of spacer between a railway sleeper (012) and the outer wall of Bank 1 (021).

Samples 1, 3, and 7 from Bank 1 were of the same brick type as samples 4 and 6 from Bank 2; they were machine pressed with well-defined rectangular frogged surfaces.

The bricks are of no further research value and may be discarded.

4. DISCUSSION

The excavation adds to the understanding of the architecture of the coke ovens previously reported (ASWYAS 2006). However, due to the subsequent demolition of the above-ground structure, elements previously identified were not recorded, except in some cases as vestigial below-ground remains such as the flue system in both banks. The ovens at Dark Lane were beehive ovens and the model and mode of coke making on the site typically fits with that described in Rhead (1924, 100-102), as the method of coke making in beehive ovens remained relatively unchanged in practice.

The results of the excavation do not challenge the arrangement of the coke ovens at Dark Lane as ventured by the 2006 survey, with parallel banks of ovens arranged back to back. The beehive element of the oven derives its name from the brick dome of the oven and the door opening; which would have been on the south-east and north-west sides of both banks. The domes of the coke ovens at Whinfield in Gateshead for example are part of a larger brick structure with only the very top of the dome, at its apex, showing. This apex was needed in order to gain access to the aperture for loading and the regulation of gases. It is possible; given the lack of masonry recorded in 2006 that the spaces between the ovens may have been packed by other material rather than encased in a masonry superstructure. Whatever superstructure that existed may have had a dual purpose. The first may have been to insulate the ovens and retain heat, and the second, to protect the ovens and raise the banks to provide working platforms. Raising the banks may have provided access to the aperture on top of the dome, either for loading or more probably for the regulation of gases, controlling the flow of air and cooling. Some coke ovens were loaded from above by carts or trolleys which ran on rails.

All the oven banks had access to the rail network via spurs which ran from Dark Lane Colliery to the north-west. The earliest railway spur ran north-east to south-west on the north-west side of Bank 3. This was presumably the method for transporting coal to the ovens and then removing the coke once the process had finished. This rail link would have been lower than the doors to the coke ovens which may have made loading the coke easier. It is less certain how the coke was removed from the ovens to the south-east of Bank 3, as a rail spur was not constructed there until the 1920's. Prior to that, the Ordnance Survey mapping shows an area of hard standing, possibly a surface, although no remains of this survived on site. The method of handling the coke from this side of the site, may have involved raking the coke from the ovens, a process probably made easier by the elevated bank upon which the coke ovens were situated and then carting it to the railway siding on the opposite side or transporting the coke in carts.

Both banks 2 and 3 were in use by the 1920's and were served by the rail spurs. The surface to the south-east of Bank 3 was narrowed and a rail spur connected this side of the bank to the colliery rail network. The earlier rail spur to the north-west of Bank 3 was extended, and ran parallel to Bank 2 on the same alignment. The Ordnance Survey mapping shows a railway spur running parallel to the north-west of Bank 1, but this area was out-with the limits of Trench 2. It is presumed the method of

unloading and loading coal and coke was similar to that employed at bank 3 (c.1907). It is obvious that the addition of extra banks of ovens during the 1920's increased output for which further rail spurs were needed.

The results of the excavation concur with the conclusion that Bank 3 was probably the last bank of ovens to be built. There is little to suggest this from the cartographic evidence. However, the construction of Bank 2 employed the same techniques used in Bank 3. Namely a parallel arrangement of dual revetting walls, albeit with foundations that were not as deep. On the other hand, Bank 1 employed a single revetting wall, which shows a deviation from the previous method of construction. Again the foundations for this structure are not as extensive as those employed on the other banks; an example of this is the foundations for the flue system which are clearly smaller than the foundations of Bank 2 recorded in Trench 2. These subtle changes in construction show a progressive development within the site. The revetting wall of Bank 1 also overlay a deposit of made ground, which had been deposited after the walls of Bank 2 had been constructed.

The vast amounts of shale and blaes that form the made ground of all the banks was probably waste from Dark Lane Colliery. As expected with such coke ovens, prolonged heat (in the region of 1000 c) was produced and this has been convected throughout the underlying deposits, producing the vibrant red colours of the shales, the colours dissipate the further from the heat source and grey shales are recorded at lower levels. Although the shales are sometimes seen as bands, they were deposited as a single phase; there are no re-cuts or amendments to the structures, although it is probably likely that the surfaces were re-laid periodically as the bricks disintegrated after repeated firings.

5. CONCLUSION

CFA Archaeology excavated two trenches at the former coke oven near Dark Lane Colliery, Mirfield. The excavation removed extensive amounts of made ground within each trench. The depths of the trenches required the sections to be stepped. The excavation recorded the remains of the coke oven banks; not only in plan but also provided detailed stratigraphic information which suggested that Bank was likely to have been the last constructed on the site (this is also supported by the typology of the bricks).

The excavation recorded the substructure of all three banks of ovens, which, prior to this phase of work was little understood. In this respect, the excavation has added to the knowledge of site, and to the typical morphology of coke ovens of this sort.

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APPENDICES 1 – 4

Appendix 1: Context Summary

Context no.	Trench	Fill of	Type	Description
000	Site			Natural Substrate.
001	1		Masonry	External revetting wall of Bank 3. c.2.4m H.
002	1		Masonry	Buttress between walls (001) and (003). 1.65m L >2.1m H.
003	1		Masonry	Internal revetting wall of Bank 3. c.0.8m W >2.5m H.
004	1		Deposit	Former railway surface. Friable, dark-grey, sandy-silt-ash. >7m L >4m W.
005	1		Cut	Cut for railway sleeper (006). Rectilinear cut. c.2m L c.0.2m W
006	1	005	Deposit	In-situ railway sleeper. Yellowish-brown wood
007	1		Cut	Cut for railway sleeper (008).
008	1	007	Deposit	In-situ railway sleeper.
009	1		Cut	Cut for railway sleeper (010).
010	1	009	Deposit	In-situ railway sleeper.
011	1		Cut	Cut for railway sleeper (012).
012	1	011	Deposit	In-situ railway sleeper.
013	1		Cut	Cut for railway sleeper (014).
014	1	013	Deposit	In-situ railway sleeper.
015	1		Cut	Cut for railway sleeper (016).
016	1	015	Deposit	In-situ railway sleeper.
017	1		Deposit	Brick spacers between railway sleeper (012) and wall (021). Four red bricks. 0.2m L 0.1m W.
018	1		Deposit	Brick spacers between railway sleeper (014) and wall (021). Four half bricks. 0.2m L 0.1m W.
019	1		Masonry	Internal revetting wall of Bank 3 >7m L 0.8m W >4m H.
020	1		Masonry	Buttress between walls (019) and (021). 1.84m L 0.6m W.
021	1		Masonry	External revetting wall of Bank 3. >7m L 0.7m W >4m H.
022	1		Deposit	Infill between walls (019) and (021). Loose red shale. >1m L 1.74m W 0.2-0.6m D.
023	1		Deposit	Infill between walls (019) and (021). Loose grey shale. >7m length 1.74m W >0.7m D.
024	1		Masonry	External wall of Coke Oven 37. 1m W 0.6m D.
025	1		Deposit	Layer of screed. Light-grey 1m W 30mm D.
026	1		Deposit	Brick base of Coke Oven 38. 0.65m W 0.1m D.
027	1		Deposit	Layer of screed. Light-grey. 0.2m W 30mm D.
028	1		Masonry	Stone foundations for flue and Coke Oven 37. 0.6m W 0.8m D.
029	1		Deposit	Mixed slump deposit infilling central flue. Red shale and sand. 1m W 0.45m D.
030	1		Masonry	Stone foundations for flue and Coke Oven 38. 0.8m W >0.6m D.
031	1		Deposit	Shale Deposit. Loose, orangey-red, fired shale. >9m L >8.8m W.
032	1		Deposit	Shale deposit. Loose, brownish-grey, shale. >9m L 8.8m W 0.1-2.0m D.
033	1		Deposit	Shale deposit. Infill between walls (001) and (003). Friable, reddish-grey, shale and sand. >9m L 1.6m W >4m D.

Context no.	Trench	Fill of	Type	Description
034	1		Deposit	Burnt deposit under Coke Oven 37. Light reddish-grey, fine silty-sand. 2m W 0.2-0.4m D.
035	1		Deposit	Burnt deposit under Coke Oven 38. Red, fine silty-sand. 1m W <0.2m D.
036	1		Deposit	Made ground. Friable, mid-grey, clayey-silt. 8.8m L 0.2-0.6m D.
037	1		Deposit	Base of Coke Oven. Brick surface. 1.35m W 0.2m D.
038	1		Deposit	Mixed spoil deposit / demolition debris. Loose, red, brown, grey, shale and stone. >10m L >10m W >1m D.
039	1		Deposit	Brick surface between walls (001) and (003). Fully, half bricks and brick cuts. 1.25 W 0.15m D.
040	1		Deposit	Deposit under brick surface (039). Reddish-grey, coarse silty-sand. 1.6m W 0.2-0.4m D.
041	2		Masonry	External revetting wall of Bank 2. >9m L c.0.7m W >1.5m D.
042	2		Masonry	Buttress between walls (041) and (043). 1.8m L c.0.7m W >1.6m D.
043	2		Masonry	Internal revetting wall of Bank 2. >9m L c.0.7m W c.2.3m D.
044	2		Deposit	In-situ railway sleeper. c.1.5m L c. 0.3m W .
045	2		Deposit	Infilling deposit of rotted railway sleeper void. c.1.5m L c.0.4m W.
046	2		Deposit	Infilling deposit of rotted railway sleeper void.
047	2		Deposit	Infilling deposit of rotted railway sleeper void.
048	2		Deposit	Infilling deposit of rotted railway sleeper void.
049	2		Deposit	Infilling deposit of rotted railway sleeper void.
050	2		Deposit	In-situ railway sleeper.
051	2		Deposit	Infilling deposit of rotted railway sleeper void.
052	2		Deposit	Infilling deposit of rotted railway sleeper void.
053	2		Deposit	Infilling deposit of rotted railway sleeper void.
054	2		Deposit	Infilling deposit of rotted railway sleeper void.
055	2		Deposit	Deposit underlying railway bedding deposit (056). Crushed limestone fragments. >10m L >1.5m W.
056	2		Deposit	Bedding deposit for railway sleepers. Crushed ash and cinder. >10m L >1.5m W.
057	2		Deposit	Made ground. Friable mixed yellowish-grey, sandy-clay. c0.18m D.
058	2		Deposit	Shale deposit. Grey, crushed shale. >6m W c.1.6m D.
059	2		Deposit	Shale deposit. Greyish-red, crushed shale. c.4m D c.8m W.
060	2		Deposit	Shale deposit. Reddish-grey, crushed shale. Similar to 078
061	2		Masonry	Fragment of dislodged wall. 0.9m L 0.3m W.
062	2		Deposit	Vestigial remains of railway sleeper. c.2.13m L c.0.3 W 0.1m D.
063	2		Deposit	Vestigial remains of railway sleeper.
064	2		Deposit	Bedding deposit for railway. Crushed ash and cinder. >2.4m L c.0.54m D.
065	2		Masonry	Retaining wall of Coke Oven Bank 1. c.1m W >2m D.
066	2		Deposit	Shale deposit. c.3m W c.2m D.
067	2		Deposit	Shale deposit. Grey, crushed shale >7m W c.3m D.

Context no.	Trench	Fill of	Type	Description
068	2		Deposit	Shale deposit. Red, crushed shale. > 6m W c.2m D .
069	2		Masonry	Retaining internal wall of Coke Oven Bank 2. c 0.7m W.
070	2		Deposit	Shale Deposit. Infilling between walls (072) and (069). Grey, crushed shale. c.2m W c.2m D.
071	2		Deposit	Demolition deposit. Mixed rubble-shale c.3m W >1m D.
072	2		Masonry	Retaining wall of Coke Oven Bank 2. c0.7 W >1.4m D.
073	2		Deposit	Shale deposit. Reddish-grey, crushed shale. c.4m D c.8m W.
074	2		Deposit	Base of Coke Oven Flue. 4m W >0.1m D.
075	2		Masonry	Wall of Coke Oven Flue. 0.9m W 0.6m D.
076	2		Masonry	Wall of Coke Oven Flue. 0.9m W 0.7m D.
077	2		Deposit	Sand deposit. Red sand. 0.8m W 0.8m D.
078	2		Deposit	Shale deposit. Fine, crushed red blaes. c.3m D c.3m W. Similar to 060
079	2		Masonry	Disturbed Coke Oven Wall. Brick built. c.0.8m W c.0.25m D.
080	2		Deposit	Sand deposit. Bedding for surface (081). Red, coarse sand. >2m W 0.25m D.
081	2		Deposit	Coke Oven Base. Brick built. >1m W 0.1m D.
082	2		Deposit	Coke Oven Base. Brick built. 0.88m W 0.1m D.
083	2		Masonry	Coke Oven lining. Brick built. 0.22m L 0.11m W 0.5m D.
084	2		Masonry	Coke Oven wall. Brick built. 0.22m L 0.11m W c.0.6m D.
085	2		Masonry	Flue structure between oven walls (084) and (086). Limestone blocks. c.1.5m L c.0.15m W.
086	2		Masonry	Coke Oven wall. Brick built. 0.22m L 0.11m W c.0.55m D.
087	2		Deposit	Coke Oven base. Brick built. >1.2m L 0.5m W 0.1m D.
088	2		Deposit	Demolition deposit. Loose, grey, mixed rubble-shale. >1.5m W >0.8m.
089	2		Deposit	Deposit of degraded limestone. >1m W >0.6m D.
090	2		Deposit	Sand deposit for flue. Loose red sand. c.1m W >0.4m D.
091	2		Deposit	Mortar deposit. Friable yellow mortar. 1.26m W 0.3m D.
092	2		Deposit	Demolition deposit. Loose, grey, mixed rubble-shale. >2.5m W >0.7m D.
093	2		Deposit	Burnt deposit. Black coarse sand. Make up for oven base. c.3m W 0.2m D.
094	2		Deposit	Coal ash/Shale deposit, bedding for surface 087. Loose, fragmented red blaes. c.3m W 0.4m D.
095	2		Masonry	Coke Oven foundation. Brick built. 0.4m W 0.6m D.
096	2		Masonry	Crushed limestone and shale deposit from collapsed flue. Greyish-red, crushed shale. c.4m D c.8m W.
097	2		Masonry	Coke Oven foundation. Brick built. c.0.9m W. c.0.65 D
098	2	void	Deposit	Shale deposit. Infill between walls (072) and (069). Loose, grey shale. 1.8m W >4m D.

Context no.	Trench	Fill of	Type	Description
099	1		Deposit	Grey shale c. 1.35m D. Similar to 032 but located to north-west of wall 021.
100	1		Deposit	Lens of red blaes within deposit 099
101	1		Deposit	Deposit of made ground, similar to 036, c. 0.3m D.
102	1		Masonry	Internal lining of refractory brick, butting 024. W0.4m, three courses: Oven 37

Appendix 2: Drawing Register

Dwg No.	Sheet No.	Scale	Plan / Section	Description/contexts
1	1	01:20	Plan	Plan of railway sleepers in Trench 1.
2	2	01:20	Section	Top south-west facing section of Trench 1 showing oven bases.
3	3	01:20	Section	Middle south-west facing section of Trench 1.
4	2, 3	01:20	Section	Base south-west facing section of Trench 1.
5	4	01:20	Section	Middle and base south-west facing section of Trench 1, western extent.
6	5	01:20	Section	North-east facing section of Trench 1 showing walls (001) and (003) and brick surface (039).
7	6, 9	01:20	Section	Part of south-west facing section in Trench 2.
8	7	01:20	Section	Part of south-west facing section in Trench 2.
9	8	01:20	Section	Part of south-west facing section in Trench 2.
10	9	01:20	Section	Top part of south-west facing section in Trench 2.
11	5	01:50	Plan	Plan of railway sleepers in Trench 2.

Appendix 3: Samples Register

Sample No.	Area	Context	Feature	Sample type	Volume
1	Trench 1	37	Coke oven base.	Bulk	1 brick
2	Trench 1	34	Coke oven foundations.	Bulk	1 brick
3	Trench 1	24	Coke oven wall.	Bulk	1 brick
4	Trench 1	26	Coke oven foundations.	Bulk	1 brick
5	Trench 1	17	Brick spacer between railway sleeper (012) and wall (021).	Bulk	1 brick
6	Trench 2	79	Coke oven foundations.	Bulk	1 brick
7	Trench 2	81	Coke oven base.	Bulk	1 brick
8	Trench 2	97	Coke oven foundations.	Bulk	1 brick
9	Trench 2	97	Coke oven base.	Bulk	1 brick
10	Trench 2	95	Coke oven foundations.	Bulk	1 brick
11	Trench 2	84	Coke oven wall.	Bulk	1 brick
12	Trench 2	83	Coke oven lining.	Bulk	1 brick

Appendix 4: Specification

**WEST YORKSHIRE ARCHAEOLOGY ADVISORY SERVICE:
SPECIFICATION FOR ARCHAEOLOGICAL RECORDING AND EXCAVATION
DARK LANE COLLIERY, MIRFIELD, WEST YORKSHIRE.
PLANNING PERMISSION 2010/91763/E1**

Specification prepared on behalf of Kirklees District Council at the request of Linda Bradley of Orion Homes Ltd.

1. Summary

1.1 A limited amount of archaeological work consisting of excavation and recording three complete sections through three banks of late 19th and early 20th century coke ovens is proposed to mitigate the impact of development at the above site.

1.2 This specification deals with the required excavation, the preparation of a post-excavation assessment of the results of the excavation and with the preparation of a report on the site (in the event that no further analysis of the finds and samples resulting from the excavation is required). Any further fieldwork or further analysis arising from the results of the excavation and the post-excavation assessment will be additional to the work specified below, and will be covered by a supplementary specification.

1.3 This specification has been prepared by the curatorial branch of the West Yorkshire Archaeology Advisory Service (WYAAS), the holders of the West Yorkshire Sites and Monuments Record.

NOTE: The requirements detailed in paragraphs 6.1, 6.2, 6.3, 6.4, 6.5, 7.6, 7.7 and 9.1 are to be met by the archaeological contractor **prior** to the commencement of fieldwork by completing and returning the attached form to the WY Archaeology Advisory Service.

2. Site Location & Description (Fig.1)

Grid Reference: SE 421700 420600

2.1 The development site lies to the north and west of Cravendale Road, Ravensthorpe on the site of the former Dark Lane Colliery. Holroyd Park lies to the south of the site while the ground to the north was formerly Spring Place Mills. The latter is now a housing development the expansion of which will destroy all remains within the site.

The main colliery buildings lay to the north-east of the site and have been levelled and partly built over while a railway line, part of the West Riding Union Railway, forms the north-western boundary of the site, historically passing between Spring Place Mills and the colliery. The site comprises rough vegetation over the area of the coke ovens. These have been truncated by a turning head on Cravendale Road and are masked by dumps of builders rubble.

The site comprises an area of c. 2200m².

3. Planning Background

3.1 In response to an application to build 27 dwellings to Kirklees District Council by Orion Homes Ltd. (ref. 2010/91763/E1) the Planning Authority were advised by WYAAS that important archaeological remains would be affected. This advice was based on an archaeological survey and limited archaeological evaluation carried out in 2006 which revealed that three banks of coke ovens and a number of other colliery features survived within the site (Archaeological Service WYAS 2006 Dark Lane Colliery and Coke Ovens, North Road, Mirfield West Yorkshire: Archaeological Desk-Based Assessment and Structural Survey Report No. 1535). Although the remains were considered to be of regional significance and a Class II Area of Archaeological Interest they were not granted statutory protection by English Heritage. Planning consent for the development of the site was subsequently granted with an archaeological recording condition (Condition 19).

3.2 This specification has been prepared by WYAAS, at the request of Linda Bradley of Orion Homes Ltd., to detail what is required and to allow an archaeological contractor to provide a quotation.

4. Archaeological Interest

Dark Lane Colliery was established in 1871 by the Mirfield Coal Company. In addition to the name Dark Lane it was also known as Nevan's Pit and Mirfield No. 1. As noted above the main colliery buildings and shaft lay to the north-east of the coke ovens and have been largely redeveloped. The earliest bank of coke ovens date from after 1890 but before 1907. The colliery closed in the 1940s.

By baking certain low sulphur bituminous coal in an airless or reducing environment volatile constituents such as water, ammonia, coal gas and tar are driven off leaving a fuel which was used primarily in blast furnaces to produce iron. The Dark Lane ovens are brick built of the "beehive" type comprising a number of symmetrically paired ovens served by a common flue and chimney. The oven banks are flanked by raised platforms with retaining walls which provide space and access for charging and discharging the ovens. Cartographic sources show a system of tramways served the ovens.

Whilst the Mirfield beehive coke ovens would have been regarded as an archaic form in the 20th century they represent an established technology, that was relatively cheap to build and operate and accepted a wide variety of different types of coal as a charge. Whilst more advanced forms of coke ovens allowed the volatile components to be collected for reuse rather than burnt some branches of the metal industry continued to prefer coke derived from beehive type ovens. The reasons for this technological conservatism are not currently well understood.

A survey and assessment backed by limited archaeological evaluation was carried out in 2006 (Archaeological Service WYAS 2006 Dark Lane Colliery and Coke Ovens, North Road, Mirfield West Yorkshire: Archaeological Desk-Based Assessment and Structural Survey Report No. 1535). This established that Bank 3 was the earliest and best preserved structure and was in service by 1907. Banks 1 and 2 were in use by 1922. A conveyor carrying spoil to a pit heap in what is now Holroyd Park crossed Bank 2 where it meets Bank 3. A brick pillar, assumed to support this conveyor, was noted during survey work in 2006. Other colliery structures were also noted to survive to the north of Cravendale Road, however, this

area has subsequently been developed removing evidence of the colliery's internal railway, weighing machines and a stationary engine base.

Although coking coal was once a common industrial process associated with collieries, iron works, the chemical industries and gasworks the Dark Lane coke ovens are rare and anachronistic examples of this process surviving in West Yorkshire and are therefore considered to be of regional significance

5. Aims of the Excavations

5.1 The objective of the project is to fully record, analyse and report all archaeological remains within the areas of interest ('preservation by record') prior to their destruction during the development of the site, and to place the results of this work in the public domain by depositing it with the WY Historic Environment Record (Registry of Deeds, Newstead Road, Wakefield WF1 2DE).

5.2 The specific aims are to:

- Record the internal structure of each coke oven battery by means of a transverse section.
- Record evidence of the charging/discharging platforms and transport arrangements associated with the coke ovens.

6. General Instructions

6.1 Health and Safety

6.1.1 The archaeologist on site will naturally operate with due regard for Health and Safety regulations. Regard should also be taken of any reasonable additional constraints that the developer or other contractors may impose. The excavation may require the preparation of a Risk Assessment of the site in accordance with the Health and Safety at Work Regulations. WYAAS and its officers cannot be held responsible for any accidents or injuries that may occur to outside contractors while attempting to conform to this specification. Any Health and Safety issues which may hinder compliance with this specification should be discussed with WYAAS at the earliest possible opportunity (see section 13.2).

6.2 Confirmation of Adherence to Specification

6.2.1 Prior to the commencement of *any work*, the archaeological contractor must confirm adherence to this specification in writing to WYAAS, or state (with reasons) any proposals to vary the specification. Should the contractor wish to vary the specification, then written confirmation of the agreement of WYAAS to any variations is required prior to work commencing. Unauthorised variations are made at the sole risk of the contractor. **Modifications presented in the form of a re-written specification/project design will not be considered by WYAAS.** Any technical queries arising from the specification detailed below should be addressed to WYAAS without delay.

6.3 Confirmation of Timetable and Contractors' Qualifications

6.3.1 Prior to the commencement of *any work*, the archaeological contractor **must** provide WYAAS **in writing** with:

- a projected timetable for the site work;
- details of the staff structure and numbers;
- names and CVs of key project members (the project manager, site supervisor, any proposed specialists, sub-contractors *etc.*).

6.3.2 All project staff provided by the archaeological contractor must be suitably qualified and experienced for their roles. The timetable should be adequate to allow the work to be undertaken to the appropriate professional standard, subject to the ultimate judgement of WYAAS.

6.4 Notification

6.4.1 The excavations will be monitored as necessary and practicable by WYAAS in its role as curator of the county's archaeology. WYAAS should be provided with **as much notice as possible in writing** (and certainly not less than one week) of the intention to start work. A copy of the archaeological contractor's risk assessment of the site should accompany the notification.

6.4.2 The museums officer named in paragraph 9.1 should be notified in writing of the commencement of fieldwork at the same time as WYAAS.

6.4.3 As a courtesy, English Heritage's Regional Science Adviser, Andy Hammond should also be notified of the intention to commence fieldwork. (Tel.: 01904 601983; email: andy.hammond@english-heritage.org.uk).

6.5 Documentary Research

6.5.1 Prior to the commencement of fieldwork, the West Yorkshire Historic Environment Record should be visited, by either the project manager or the site supervisor, in order to gain an overview of the archaeological/historical background of the site and environs and to familiarise themselves with the results of the evaluation of the site and the industrial processes to be studied. In addition to providing a knowledge base for the work in hand, the results of this assessment may be incorporated into the contractor's report where they are considered to contribute to that report, but any extraneous material should be omitted. A formal desk-based report is not required and the results of this exercise should be used to inform the whole project. Please note that the HER makes a charge for consultations of a commercial nature.

6.6 Location of Services, etc.

6.6.1 The archaeological contractor will be responsible for locating any drainage pipes, service pipes, cables etc which may cross any of the trench lines, and for taking the necessary measures to avoid disturbing such services.

7. Fieldwork Methodology

7.1 Trench Size and Location (Fig. 2)

7.1.1 The work will involve the excavation and recording of three trenches of approximately 20m length and 5m wide through each of the banks of coke ovens, charging / discharging platforms and tramways. A total of 300m². The substructure, footings and drainage of the coke ovens should also be excavated and recorded. The contractor should also make provision for a contingency area of up to another

100m² should additional recording be required. The use of the contingency will depend upon the results obtained during the initial excavation and will be implemented at the discretion of WYAAS. The decision to invoke all or part of the contingency area will be issued in writing, in retrospect after site discussions if necessary.

7.1.2 The excavation trenches should be located to cross perpendicular to the coke ovens and may use the same locations as employed during the 2006 survey work when a profile was drawn of ovens 5 and 6 of Bank 1, 23 and 24 of Bank 2 and 33 and 34 of Bank 3 (See attached figure showing Dark Lane Colliery Coke Ovens Trench Positions from ASWYAS' report).

	Area (m ²)	Rationale
Area A	100	To record the structure of Bank 1
Area B	100	To record the structure of Bank 2
Area C	100	To record the structure of Bank 3

Total excavation area: **300m²**
Contingency allowance: **up to 100m²**

7.2 Method of Excavation

7.2.1 The excavation areas may be opened using an appropriate machine fitted with a wide toothless ditching bucket. The topsoil and recent overburden should be removed down to the first significant archaeological horizon in successive level spits of maximum 0.2m thickness. **Under no circumstances should the machine be used to cut arbitrary trenches down to natural deposits.** All machine work must be carried out under direct archaeological supervision and the machine halted if significant archaeological deposits are encountered. The top of the first significant archaeological horizon may be exposed by the machine, but must then be cleaned by hand and inspected for features.

7.2.2 It is in the nature of late-19th and 20th century industrial deposits that they are likely to contain large-scale symmetrical and/or repetitive structure therefore it is possible to adopt a policy of sample excavation and recording followed by machine removal under archaeological conditions. Employment of a sampling strategy of this type will be decided on a case-by case basis subject to the ultimate judgement of the WY Archaeology Advisory Service.

7.2.3 As a general rule, however, the following excavation strategy will be employed, and the archaeological contractor should tender accordingly: All archaeological remains will be hand excavated in an archaeologically controlled and stratigraphic manner sufficient to meet the aims and objectives of the project. The excavation will record the **complete** stratigraphic sequence, down to naturally occurring deposits and will investigate and record **all** inter-relationships between features. The following excavation strategy will be employed:

- Deposits will be planned both at their first visible and their fullest extent. All stratigraphic relationships will be fully explored and documented, if necessary by means of half-sections or quadrants.
- Linear and discrete features: all stake-holes, post-holes, pits, hearth bases, and other structural/industrial features will be 50% excavated in

the first instance, recorded in section, and then fully excavated. All intersections will be fully investigated to determine the relationship(s) between the component features.

- Built structures: walls, floors, machine- and crane bases etc will be excavated sufficient to establish their form, phasing, and construction techniques. The feature(s) will then be fully excavated. All intersections will be investigated to determine the relationship(s) between the component features. With regard to the necessary level of investigation and recording, a distinction may be drawn between substantive component features or modifications, and historic repairs which are clearly minor in nature; if any doubt exists about the nature of an intervention, it should be investigated and recorded in detail (subject to the judgement of the specialist subcontractor specialising in the coke industry).

If features are encountered which the archaeological contractor considers to be too massive to be excavated by hand using the appropriate tools (mattock, crowbar, etc.), this should be drawn to the attention of the WY Archaeology Advisory Service immediately. The controlled use of a mechanical excavator may in principle be used to excavate/partially remove/test the following types of deposit once appropriate records have been made, but machining must be done in 0.20m spits under direct archaeological supervision, and the written agreement of the WYAAS (which may be issued in retrospect after discussions on site) must be sought in each instance in advance of work commencing:

- extensive deposits of made ground or levelling layers
- extensive deposits of less sensitive material, such as fuel ash waste
- compacted deposits which can not be removed by hand or with suitable hand tools
- any deposits identified as contaminated
- Areas of homogenous deposits which do not appear to have particular archaeological sensitivity (e.g. brick rubble, made ground)
- concrete or other substantial intrusions (e.g. machine bases etc)

However, this method must not be used on brick walls where careful dismantling is likely to reveal further features or archaeological information (e.g. concealed flues or rebuilding).

7.2.4 All artefacts are to be retained for processing and analysis except for unstratified later 20th-century material, which may be noted and discarded.

7.2.5 Samples for environmental analysis and scientific dating should be taken if suitable material is encountered during the excavation. Provision should also be made for specialist sampling if appropriate (soil profiles, archaeomagnetic dating, dendrochronology etc.) (Also see paragraph 7.5.)

7.3 Method of Recording

7.3.1 The trenches are to be recorded according to the normal principles of stratigraphic excavation. The stratigraphy of each area is to be recorded, even when no archaeological deposits have been identified.

7.3.2 Section drawings (at a minimum scale of 1:20) must include heights A.O.D. Plans (at a minimum scale of 1:50) must include O.D. spot heights for all principal strata and any features. At least one section of each trench edge, showing a representative and complete sequence of deposits from the modern ground surface to the natural geology, will be drawn.

7.3.3 The actual areas of excavation and all archaeological (and possibly archaeological) features should be accurately located on a site plan and recorded by photographs, scale drawings and written descriptions sufficient to permit the preparation of a detailed archive and report on the material. The trench locations, as excavated, will be accurately surveyed, tied into the O.S. National Grid and located on an up-to-date 1:1250 O.S. map base.

7.3.4 As an alternative to colour slide photography, good quality digital photography may be supplied as an alternative, using cameras with a minimum resolution of 4 megapixels. Note that conventional black and white print photography is still required and constitutes the permanent record. Digital images will only be acceptable as an alternative to colour slide photography if each image is supplied in three file formats (as a RAW data file, a DNG file and as a JPEG file). The contractor must include metadata embedded in the DNG file. The metadata must include the following: the commonly used name for the site being photographed, the relevant centred OS grid coordinates for the site to at least six figures, the relevant township name (Mirfield), the date of photograph, the subject of the photograph, the direction of shot and the name of the organisation taking the photograph. Images are to be supplied to WYAAS on gold CDs by the archaeological contractor accompanying the hard copy of the report.

7.4 Use of Metal Detectors

7.4.1 In principle, spoil heaps are to be scanned for non-ferrous metal artefacts using a metal detector capable of making this discrimination, operated by an experienced metal detector user (if necessary, operating under the supervision of the contracting archaeologist). In practice, the suitability of this technique for scanning all spoil heaps should be tested in the field. It is likely that some deposits will contain a high proportion of ferrous material, rendering the technique incapable of discriminating individual artefacts from general iron-working waste. In these instances, a sampling programme will be employed to retrieve archaeologically relevant artefacts. Suitable deposits will be scanned with the metal detector at intervals; objects retrieved by this method will be recorded as unstratified.

7.4.2 If a non-professional archaeologist is to be used to carry out the metal-detecting, a formal agreement of their position as a sub-contractor working under direction must be agreed in advance of their use on site. This formal agreement will apply whether they are paid or not. To avoid financial claims under the Treasure Act a suggested wording for this formal agreement with the metal detectorist is: "In the process of working on the archaeological investigation at [location of site] between the dates of [insert dates], [name of person contributing to project] is working under

direction or permission of [name of archaeological organisation] and hereby waives all rights to rewards for objects discovered that could otherwise be payable under the Treasure Act 1996."

7.6 Conservation Strategy

7.6.1 A conservation strategy must be developed in collaboration with a recognised laboratory. All finds must be assessed in order to recover information that will contribute to an understanding of their deterioration and hence preservation potential, as well as identifying potential for further investigation. Furthermore, all finds must be stabilised and packaged in accordance with the requirements of the receiving museum. As a guiding principle, only artefacts of a "displayable" quality would warrant full conservation, but metalwork and coinage from stratified contexts would be expected to be x-rayed if necessary, and conservation costs should also be included as a contingency.

7.7 Human Remains

7.7.1 Any human remains that are discovered must initially be left *in-situ*, covered and protected. WYAAS will be notified at the earliest opportunity. If removal is necessary the remains must be excavated archaeologically in accordance with the *Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England* published by English Heritage (2005), a valid Ministry of Justice licence, if appropriate, and any local environmental health regulations.

7.8 Treasure Act

7.8.1 The terms of the Treasure Act 1996 must be followed with regard to any finds that might fall within its purview. Any finds must be removed to a safe place and reported to the local coroner as required by the procedures as laid down in the "Code of Practice". Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.

7.9 Unexpectedly Significant or Complex Discoveries

7.9.1 Should there be unexpectedly significant or complex discoveries made that warrant, in the professional judgement of the archaeologist on site, more detailed recording than is appropriate within the terms of this specification, then the archaeological contractor should urgently contact WYAAS with the relevant information to enable them to resolve the matter with the developer.

8. Monitoring

8.1 The project will be monitored as necessary and practicable by WYAAS, in its role as curator of the county's archaeology and advisor to the local Planning Authority. WYAAS's representative will be afforded access to the site at any reasonable time. It is usual practice that the visit is arranged in advance, but this is not always feasible.

8.2 WYAAS's representative will be provided with a site tour and an overview of the site by the senior archaeologist present and should be afforded the opportunity to view all trenches, any finds made that are still on site, and any records not in immediate use. It is anticipated that the records of an exemplar context that has previously been fully recorded will be examined. Any observed deficiencies during

the site visit are to be made good to the satisfaction of WYAAS's representative, by the next agreed site meeting. Access is also to be afforded at any reasonable time to English Heritage's Regional Archaeological Scientific Advisor.

8.3 Please note that WYAAS now make a charge for site monitoring visits. An invoice will be raised on the archaeological contractor. One monitoring visit will be charged for this project. Please contact us for the current charge.

9. Archive Deposition

9.1 Before commencing any fieldwork, the archaeological contractor must contact the relevant District museum archaeological curator to determine the museum's requirements for the deposition of an excavation archive. In this case the contact is Kaithryn White, Tolson Museum, Ravensknowle Park, Wakefield Road, Huddersfield, HD5 8DJ, Tel: 01484 223830, agreement for the deposition of the archive should be confirmed in writing by the archaeological contractor and copied to WYAAS.

9.2 It is the policy of Tolson Museum to accept complete excavation archives, including primary site records and research archives and finds, from all excavations carried out in the District that it serves.

9.3 It is the responsibility of the archaeological contractor to endeavour to obtain consent of the landowner, in writing, to the deposition of finds with Tolson Museum.

9.4 It is the responsibility of the archaeological contractor to meet the Tolson Museums' requirements with regard to the preparation of excavation archives for deposition.

10. Post-excavation Assessment and Analysis

10.1 Initial Treatment of Artefacts and Samples

Upon completion of fieldwork all finds will be cleaned, identified, marked (if appropriate) and properly packed and stored in accordance with the requirements of national guidelines. Metalwork will be x-rayed (as per paragraph 7.6) and assessed by a conservator. Any samples taken shall be processed appropriately.

10.2 Archive Consolidation

10.2.1 The site archive will be checked, cross-referenced and made internally consistent. A fully indexed archive shall be compiled consisting of all primary written documents, plans, sections, photographic negatives and a complete set of labelled photographic prints/slides.

10.2.2 Standards for archive compilation and transfer should conform to those outlined in *Archaeological Archives – a guide to best practice in creation, compilation, transfer and curation* (Archaeological Archives Forum, 2007). The contractor should also take account of any additional requirements imposed by the recipient museum (see section 9 above).

10.2.3 The original archive is to accompany the deposition of any finds, providing the landowner agrees to the deposition of finds in a publicly accessible archive (see paragraph 9.3 above). In the absence of this agreement the field archive (less finds) is to be deposited with the West Yorkshire Archaeology Advisory Service.

10.3 Assessment - Artefacts

All artefacts must be assessed by a qualified and experienced specialist. Assessment should be generally based on MAP2 but should include:

- preparation of a descriptive catalogue;
- dating (where possible);
- an assessment of the significance of the assemblage;
- an assessment of the potential for further analysis to contribute to the interpretation of the archaeology of this site;
- an assessment of the potential for further analysis to contribute to artefact studies;
- recommendations for additional artefact illustration/photography;
- an assessment of the condition of the assemblage and recommendations for conservation, retention/discard and archiving.

10.4 Assessment - Samples

Any environmental material or industrial residues must be assessed by a qualified and experienced specialist. Assessment should be generally based on MAP2 but should include:

- preparation of a descriptive table/catalogue;
- identification of material suitable for scientific dating;
- an assessment of the significance of the assemblage;
- an assessment of the potential for further analysis to contribute to the interpretation of the archaeology of this site;
- an assessment of the potential for further analysis to contribute to environmental studies;
- an assessment of the condition of the assemblage and recommendations for retention/discard and archiving.

10.5 Dating

Scientific dating should be undertaken at this stage if it is required to fulfil the aims of the project.

11 Reporting (Stage 1) – Interim Assessment of Potential

11.1 Following the return of the specialist reports to the archaeological contractor, but prior to the commencement of preparation of the detailed site report, the contractor should arrange a meeting with the WY Archaeology Advisory Service and (at his discretion) English Heritage's Regional Science Adviser (Andy Hammon, English Heritage, 37 Tanner Row, York YO1 6WP). The purpose of this meeting is to discuss the results of the initial stratigraphic synthesis and initial scientific analyses, and to determine

- the ability of the available data to fulfil the stated aims and objectives of the project

- any requirement for further scientific analyses prior to the formulation of the full report on the site.

The meeting may take the form of a telephone discussion, at the discretion of the WY Archaeology Advisory Service.

11.2 Prior to the meeting, documentation sufficient to enable the Advisory Service and English Heritage's Regional Science Adviser to evaluate any proposals for further analysis should be made available to WYAAS and EH. This documentation should consist of the following as a minimum, but should not include a detailed site narrative or constitute a draft of the final report:

11.2.1 Text

- A brief narrative outline of the results of the excavation (**N.B.** this is not intended to be a detailed description of the stratigraphic sequence, but should provide sufficient detail to permit the form and development of the site to be understood by a third party who has not visited the excavation);
- Detailed description of any features/feature groups, the interpretation of which may be affected by the results of further scientific analysis;
- A re-evaluation of the aims and objectives of the project in the light of the initial specialist analysis;
- A descriptive context catalogue;
- Unedited copies of specialist reports;
- Detailed and specific recommendations for further artefact and environmental analysis;
- Detailed and specific recommendations for any additional scientific dating;
- Detailed and specific recommendations for further documentary research;
- Costings for any recommended further research, scientific analysis or dating;
- Recommendations for general publication in monograph form or in an appropriate journal, if warranted by the results of the excavation.

11.2.2 Illustrations

Illustrations should be sufficient to permit the summary discussion to be understood by a third party, and should include:

- Location plan;
- Trench locations (as excavated), overlaid on an up-to-date 1:1250 O.S. map base;
- Draft phase plans (these should be at a scale sufficient to illustrate major context and feature groups important to an understanding of the site narrative)
- Plans, sections and photographs sufficient to permit the narrative outline to be understood, and to support recommendations for further specialist analysis. Draft drawings and marked-up digital photographs are acceptable as long as these are legible.

12. Reporting (Stage 2) – Full Report

12.1 If further specialist analysis is judged by the WY Archaeology Advisory Service to be necessary and appropriate, this work should be commissioned and the results

incorporated into a full report. If no further specialist analysis is required, then a full report will be produced.

12.2 Details of the style and format of the full report are to be determined by the archaeological contractor. However, it should be produced with sufficient care and attention to detail to be of academic use to future researchers. The report should be fully illustrated and include:

- background information;
- a description of the methodology;
- a full description of the results;
- an interpretation of the results in a local/regional/national context as appropriate;
- a full bibliography.

Appendices to the report should include:

- Unedited copies of final specialist reports;
- a quantified index to the site archive
- written confirmation from the relevant museum or other repository that the archive has been accepted for long-term storage, with full location details of the archive
- a copy of this specification.

12.3 Location plans should be produced at a scale which enables easy site identification and which depict the full extent of the site. A scale of 1:50,000 is not regarded as appropriate unless accompanied by more detailed plan(s). The location of the trenches (as excavated) should be overlaid on an up-to-date 1:1250 O.S. map base.

12.4 All illustrations should be executed to publication standard. Site plans should be at an appropriate, measurable scale showing the trenches as excavated and all identified (and, if possible, predicted) archaeological features/deposits. Trench and feature plans must include O.D. spot heights for all principal strata and any features. Section drawings must include O.D. heights and be cross-referenced to an appropriate plan.

12.5 Finds that are critical for dating and interpretation should be illustrated.

12.6 Discrete features crucial to the interpretation of the site should be illustrated photographically.

12.7 In addition to the full report to be deposited with the WY Historic Environment Record, the results of this excavation may merit publication in monograph form or in a suitable archaeological journal (subject to the judgement of the WY Archaeology Advisory Service). If further publication is considered to be necessary, the archaeological contractor will be expected to approach the editor of the appropriate publication (after discussions with WYAAS) to confirm the journal's requirements and views with regard to the suitability of the proffered material.

12.8 The full report will be submitted directly to the WY Archaeology Advisory Service within a timescale agreed by both parties. The report will then be assessed by WYAAS to establish whether or not it is suitable for accession into the WY Historic Environment Record. Any comments made by WYAAS in response to the submission of an unsatisfactory report will be taken into account and will result in the reissue of a suitably edited report to all parties, within a timescale which has been agreed with WYAAS. Completion of this project and a recommendation from WYAAS for the full discharge of the archaeological condition is dependant upon receipt by WYAAS of i) a satisfactory full report and, should publication be warranted, ii) a copy of a letter from an appropriate journal editor or publisher confirming acceptance of the article.

12.9 The full report, once accepted by WYAAS, will be supplied on the understanding that it will be added to the West Yorkshire Historic Environment Record and will become a public document after an appropriate period of time (generally not exceeding six months).

12.10 Copyright - Please note that by depositing this report, the contractor gives permission for the material presented within the document to be used by the WYAAS, in perpetuity, although The Contractor retains the right to be identified as the author of all project documentation and reports as specified in the *Copyright, Designs and Patents Act 1988* (chapter IV, section 79). The permission will allow the WYAAS to reproduce material, including for non-commercial use by third parties, with the copyright owner suitably acknowledged.

12.11 The West Yorkshire HER supports the Online Access to Index of Archaeological Investigations (OASIS) project. The overall aim of the OASIS project is to provide an online index to the mass of archaeological grey literature that has been produced as a result of the advent of large-scale developer funded fieldwork. The archaeological contractor must therefore complete the online OASIS form at <http://ads.ahds.ac.uk/project/oasis/>. Contractors are advised to contact the West Yorkshire HER officer prior to completing the form. Once a report has become a public document by submission to or incorporation into the HER, the West Yorkshire HER may place the information on a web-site. Please ensure that you and your client agree to this procedure in writing as part of the process of submitting the report to the case officer at the West Yorkshire HER.

12.12 The attached summary sheet should be completed and submitted to the West Yorkshire Archaeology Advisory Service for inclusion on WYAAS's website.

13. General Considerations

13.1 Authorised Alterations to Specification by Contractor

13.1.1 It should be noted that this specification is based upon records available in the West Yorkshire Historic Environment Record. It is recommended that archaeological contractors should carry out a site inspection prior to submitting a tender. If, upon visiting the site or at any time during the course of the recording exercise, it appears in the archaeologist's professional judgement that:

- i) a part or the whole of the site is not amenable to recording as detailed above, and/or
- ii) an alternative approach may be more appropriate or likely to produce more informative results,

then it is expected that the archaeologist will contact WYAAS as a matter of urgency. If contractors have not yet been appointed, any variations which WYAAS considers to be justifiable on archaeological grounds will be incorporated into a revised specification, which will then be re-issued to the developer for redistribution to the tendering contractors. If an appointment has already been made and site work is ongoing, WYAAS will resolve the matter in liaison with the developer and the Local Planning Authority.

13.2 Unauthorised Alterations to Specification by Contractor

13.2.1 It is the archaeological contractor's responsibility to ensure that they have obtained WYAAS's consent in writing to any variation of the specification prior to the commencement of on-site work or (where applicable) prior to the finalisation of the tender. Unauthorised variations may result in WYAAS being unable to recommend determination of the planning application to the Local Planning Authority based on the archaeological information available and are therefore made solely at the risk of the contractor.

13.3 Technical Queries

13.3.1 Any technical queries arising from the specification detailed above, should be addressed to WYAAS without delay.

13.4 Publicity

13.4.1 If the project is to be publicised in any way (including media releases, publications etc.), then it is expected that WYAAS will be given the opportunity to consider whether its collaborative role should be acknowledged, and if so, the form of words used will be at WYAAS's discretion.

13.5 Valid Period of Specification

13.5.1 This specification is valid for a period of one year from date of issue. After that time it may need to be revised to take into account new discoveries, changes in policy or the introduction of new working practices or techniques.

David Hunter
West Yorkshire Archaeology Advisory Service

September 2011

West Yorkshire Archaeology Advisory Service
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WF1 2DE

Telephone: 01924 306798
Fax: 01924 306810
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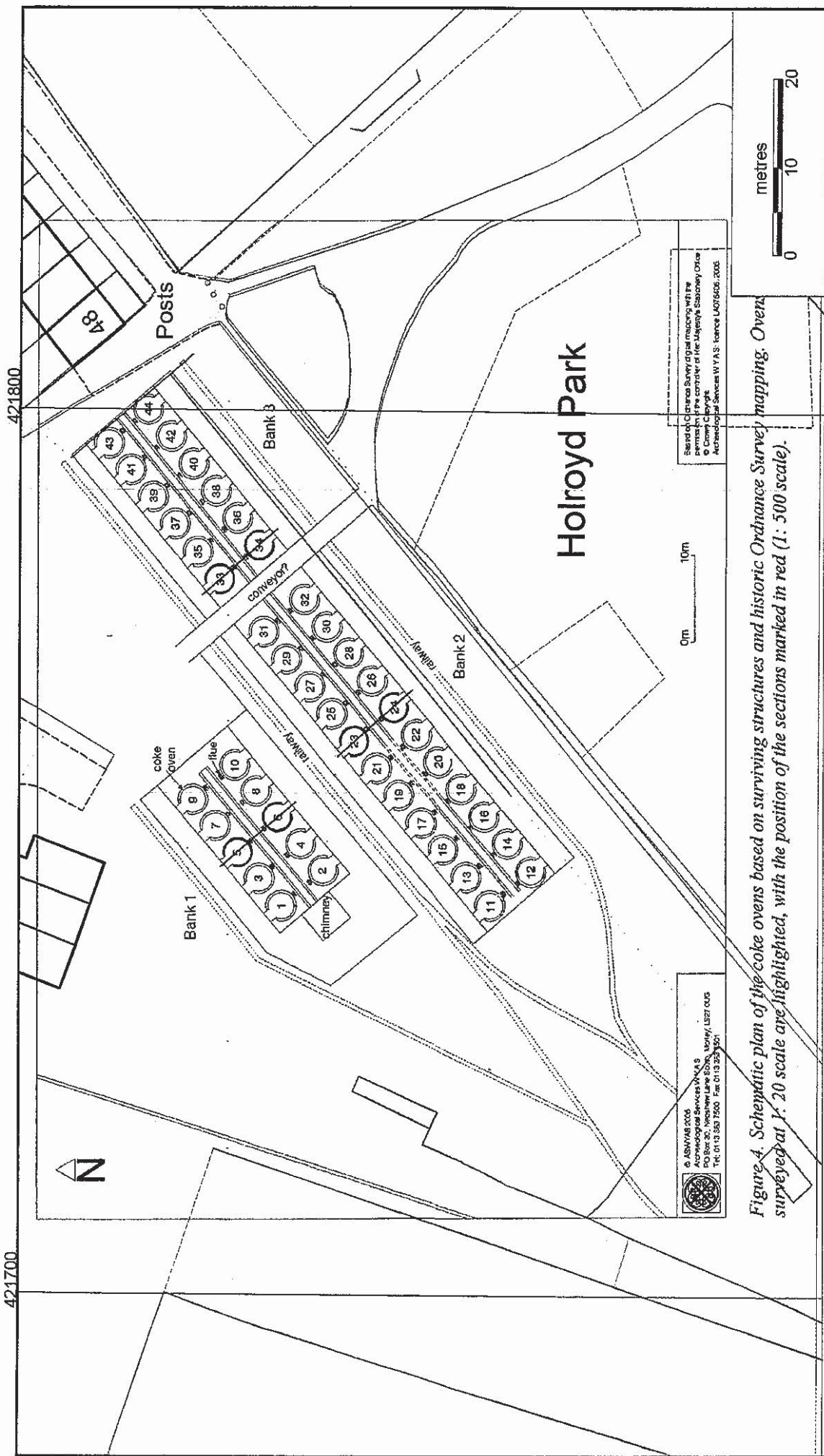


Figure 4. Schematic plan of the coke ovens based on surviving structures and historic Ordnance Survey mapping. Ovens surveyed at 1:20 scale are highlighted, with the position of the sections marked in red (1:500 scale).

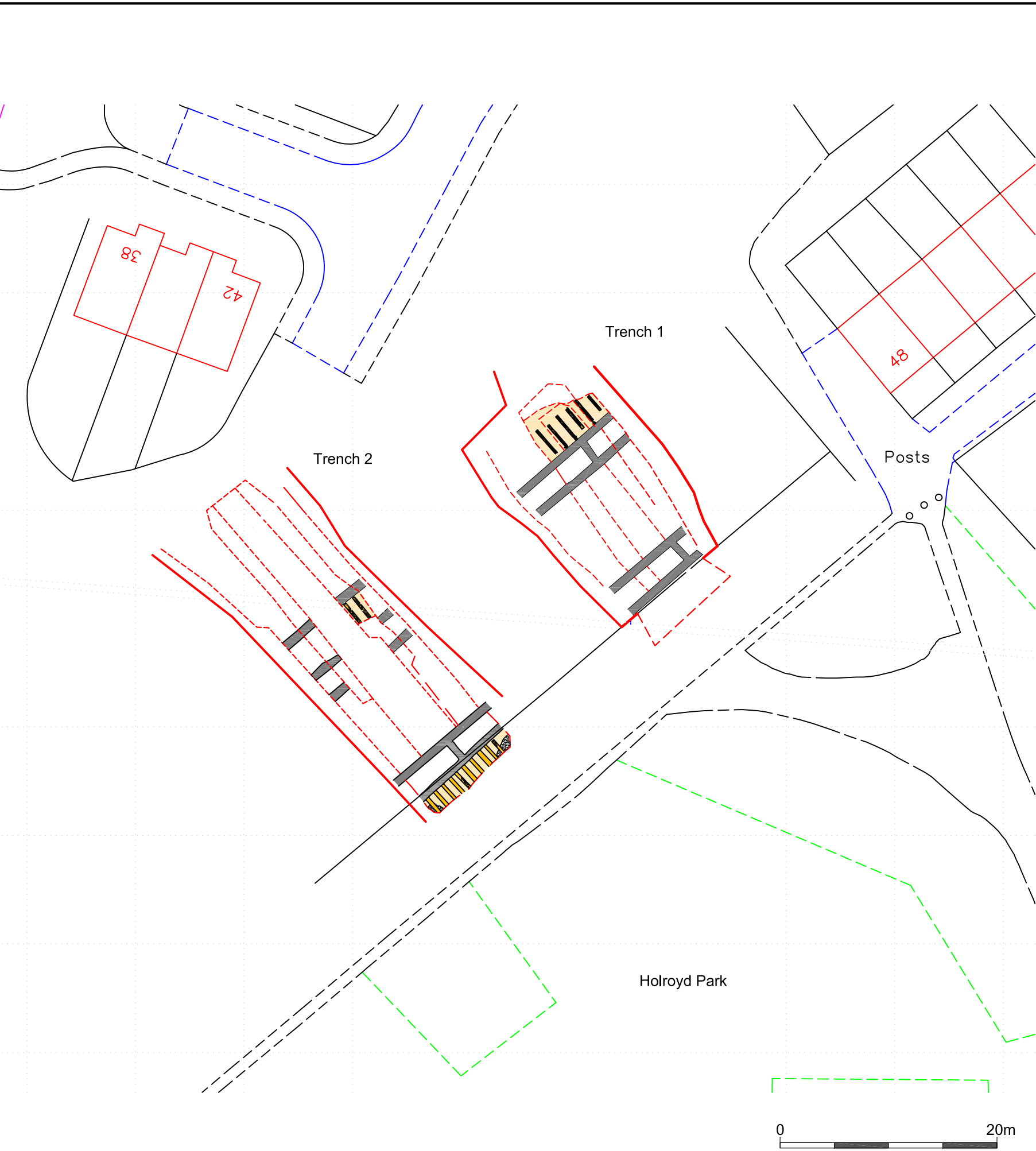
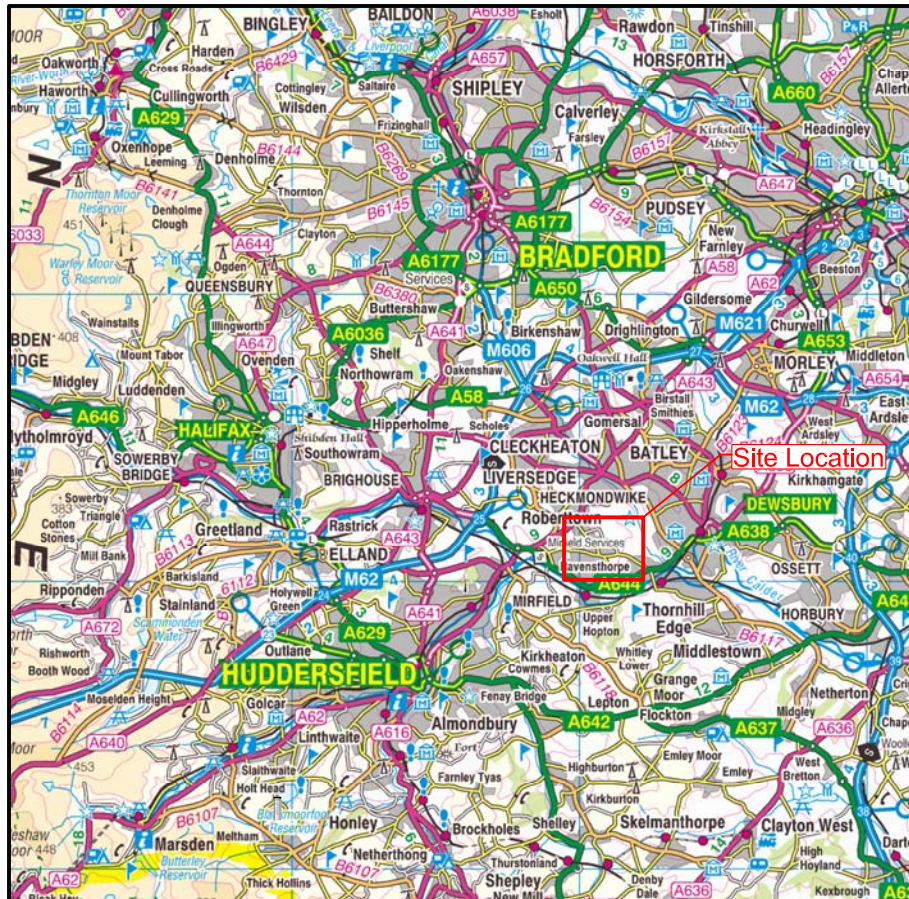
Date Plotted: 30/09/2011
 Sheet No.: SE2120NE
 Scale 1: 600



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Dark Lane Trenches
 David Hunter


 WYAS Advisory Service
 County Sites and Monuments Record
 Registry of Deeds, Newstead Road
 Wakefield WF1 2DE
 Tel. 01924 306797 Fax. 01924 306810



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Fig. No: 1 Revision: A

Title:
Site and Trench Locations

Project:
Dark Lane Colliery, Mirfield,
West Yorkshire.
Archaeological Works

Client:
Orion Homes

Scale at A3:
1:400

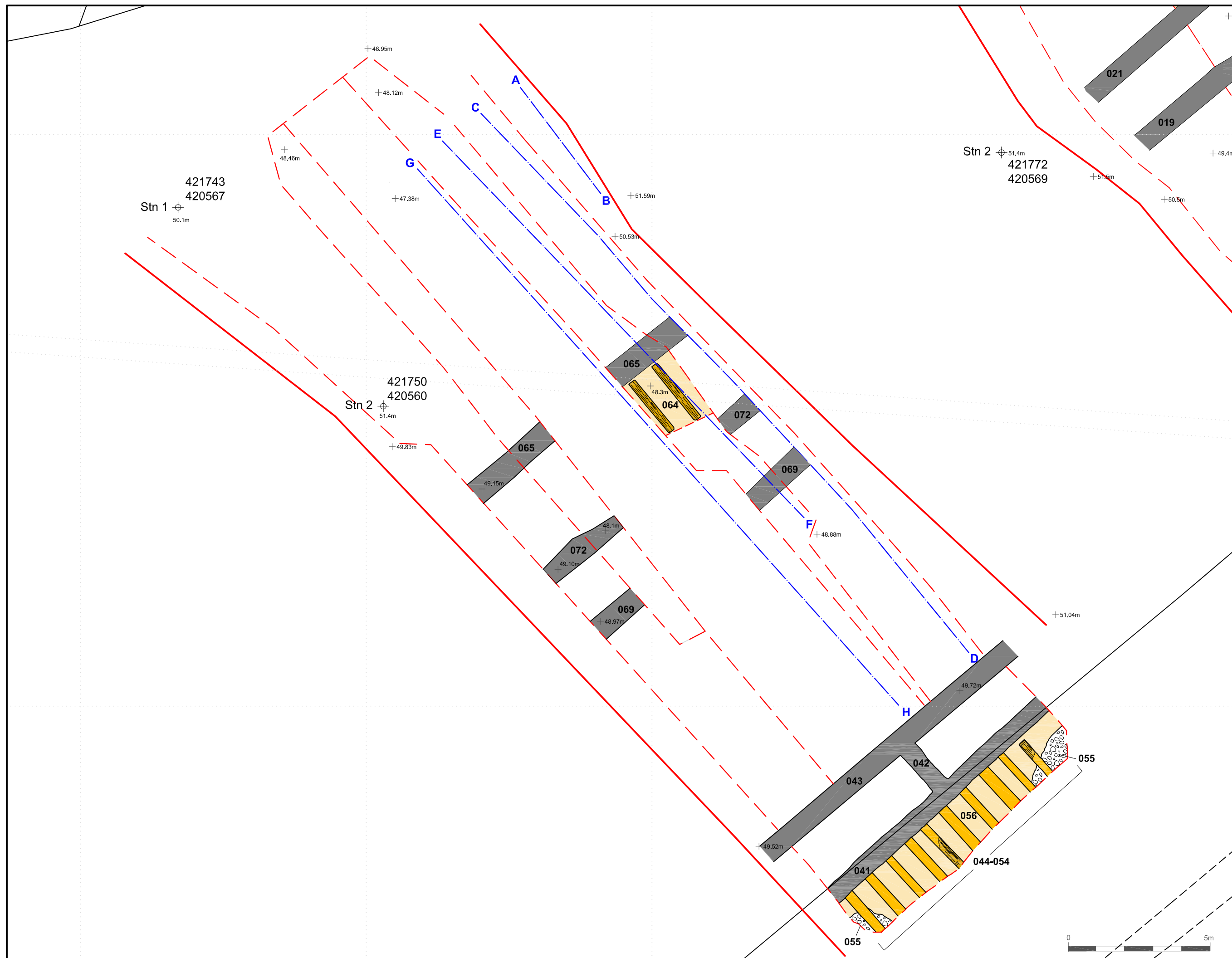
Drawn by: LW Checked: LW Report No: 2053

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Key:

- Trench edge —
- Masonry
- Section line —
- Trench step - - -
- Wood/sleepers
- Surface
- Spot heights + 50.1m
- Stone



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Fig. No: 3 Revision: A

Title:
Plan of Trench 2

Project:
Dark Lane Colliery, Mirfield,
West Yorkshire.
Archaeological Works

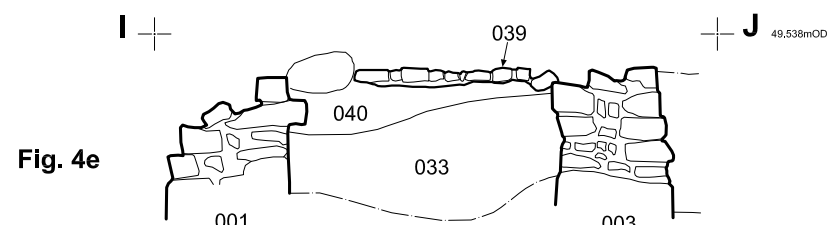
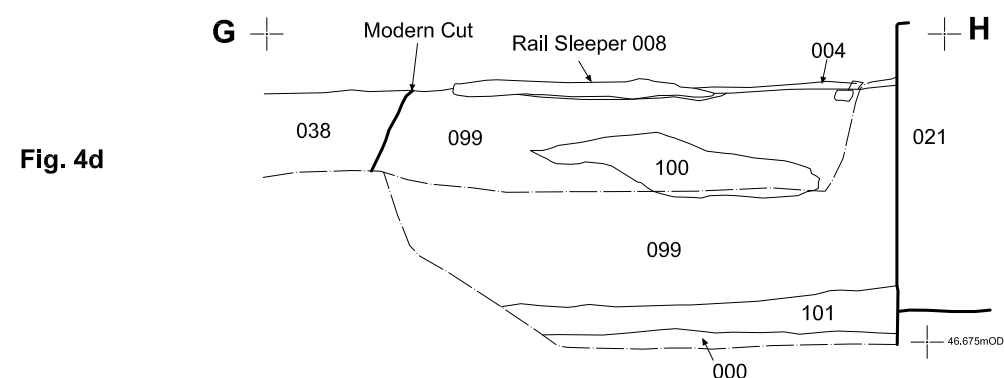
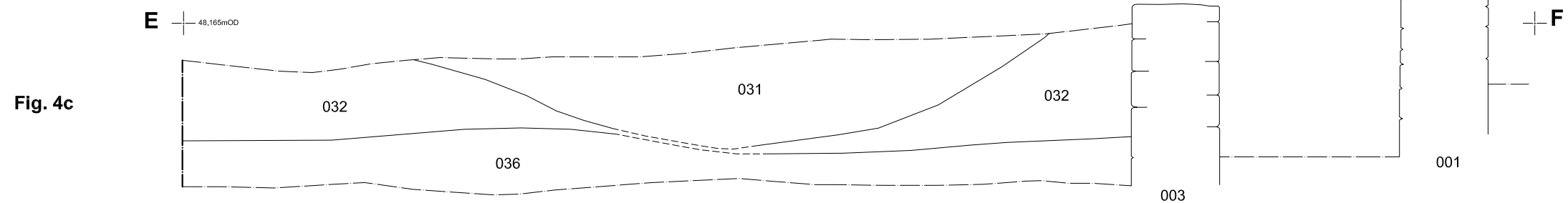
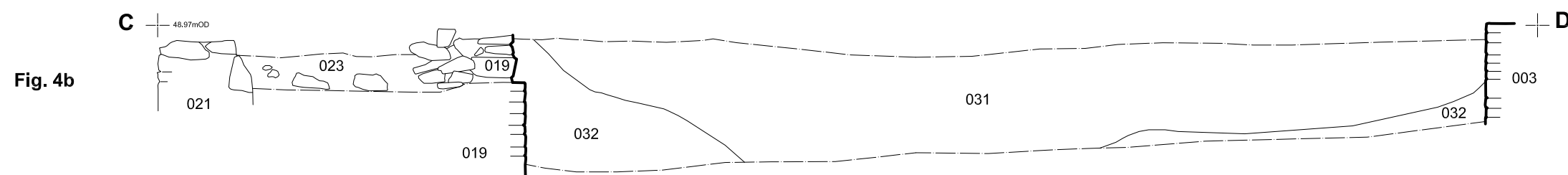
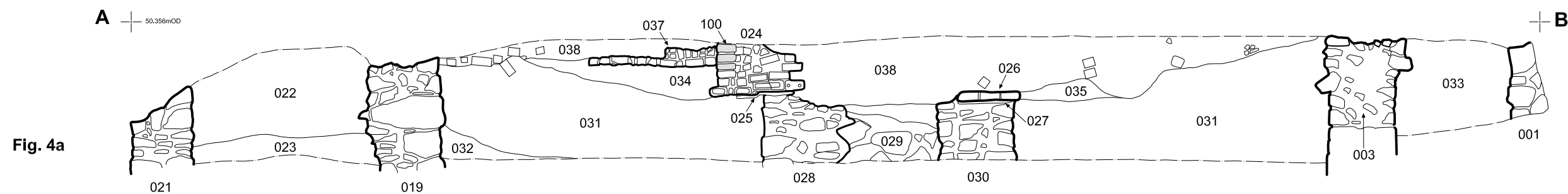
Client:
Orion Homes

Scale at A3:
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Drawn by: LW Checked: ML Report No: 2053

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Fig. No: 4a-e Revision: A

Title:
Trench 1 sections (A-J)

Project:
Dark Lane Colliery, Mirfield,
West Yorkshire.
Archaeological Works

Client:
Orion Homes

Scale at A3:
1:50

Drawn by: LW Checked: LW Report No: 2053

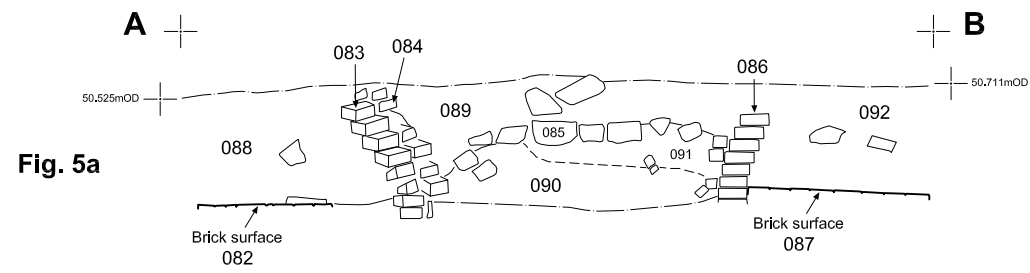


Fig. 5b continued

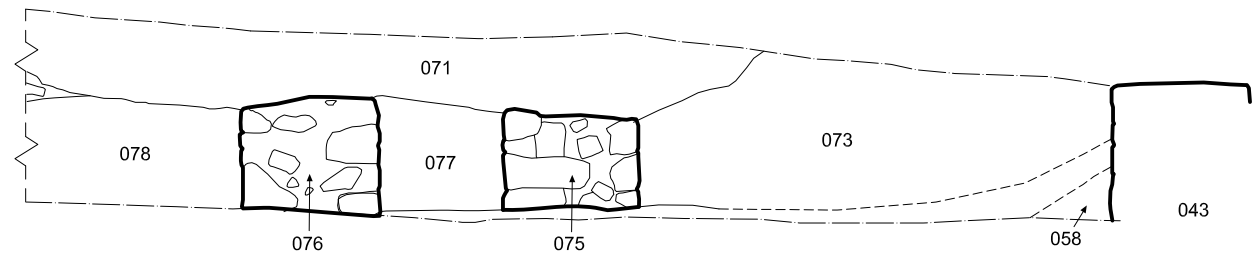


Fig. 5b

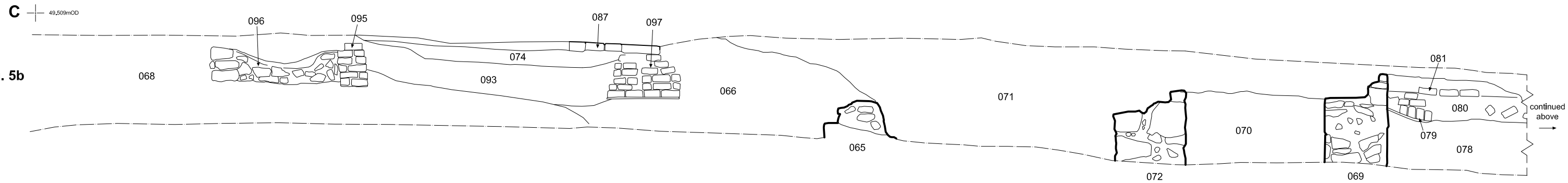


Fig. 5c

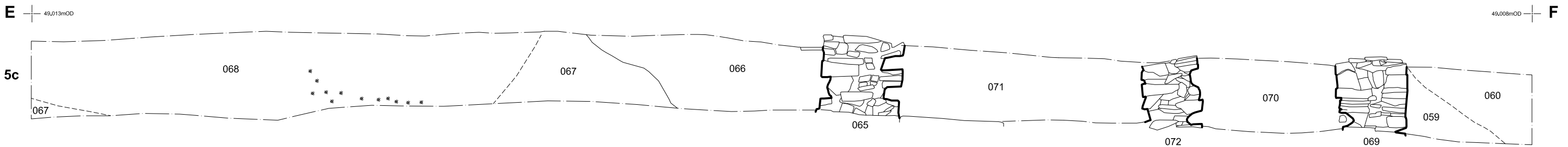


Fig. 5d

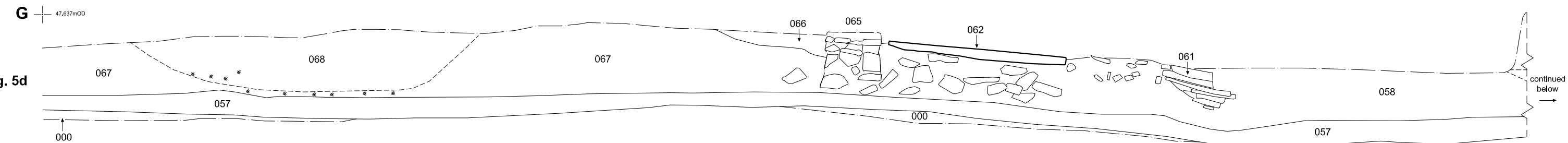


Fig. 5d continued

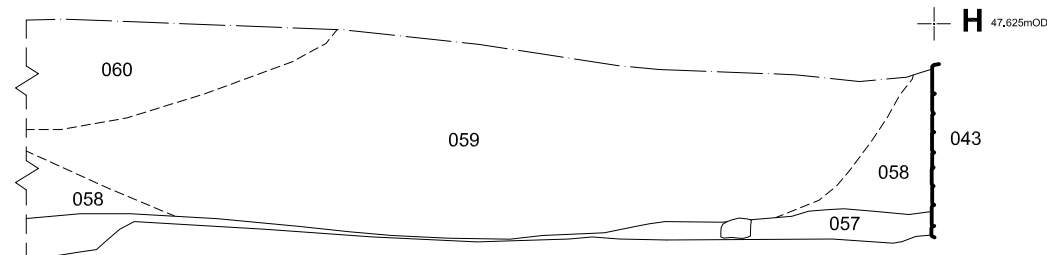




Fig. No: 5	Revision: A	Checked: LW	Report No: 2053	Drawn by: LW	Scale at A3: 1:50	Key:	 <p>CFA ARCHAEOLOGY LTD The Old Engine House Eskmills Park Musselburgh East Lothian, EH21 7PQ t: 0131 273 4380 f: 0131 273 4381 e: info@cfa-archaeology.co.uk w: www.cfa-archaeology.co.uk</p> 	<p>The copyright in this document (including its electronic form) shall remain vested in CFA Archaeology Ltd (CFA) but the Client shall have a licence to copy and use the document for the purpose for which it was provided. CFA shall not be liable for the use by any person of this document for any purpose other than that for which the same was provided by CFA. This document shall not be reproduced in whole or in part or relied upon by third parties for any use whatsoever without the express written authority of CFA.</p>
Title: Trench 2 sections (A-H)		Project: Dark Lane Colliery, Mirfield, West Yorkshire. Archaeological Works		Client: Orion Homes				



Fig. 7 - General oblique shot of Trench 1 with railway in foreground





Fig. 8 - General shot of walls 001, 002, 003: Trench 1



Fig. 9 - Shot of north-west-facing elevation of wall 001



Fig. 10 - Shot of flue and coke oven remains: Trench 1

Fig. No: 7-10	Revision: A	Project: Dark Lane Colliery, Mirfield, West Yorkshire: Archaeological Works			CFA ARCHAEOLOGY LTD Unit 22 Moorland's Business Centre Balme Road, Cleckheaton West Yorkshire, BD19 4EZ
Drawn by: SW	Checked: PM	Report No: 2053			Client: Orion Homes

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Fig. 11 - Shot of remains of railway and walls 041 and 043: Trench 2



Fig. 12 - General oblique shot of Trench 2



Fig. 13 - Shot of flue remains in Bank 2: Trench 2



Fig. 14 - Shot of remains of oven and wall 072 and 069: Trench 2

Fig. No: 11-14	Revision: A	Project: Dark Lane Colliery, Mirfield, West Yorkshire: Archaeological Works		
Drawn by: SW	Checked: PM	Report No: 2053		
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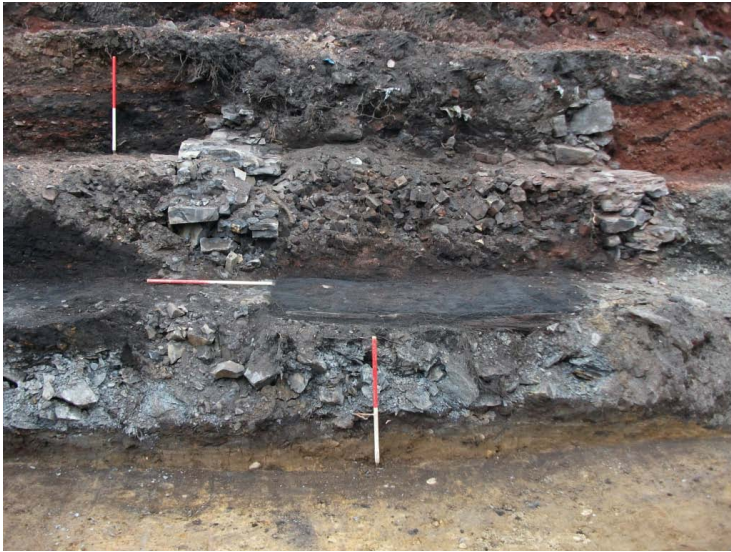


Fig. 15 - Shot of railway between walls 065 and 072:
Trench 2

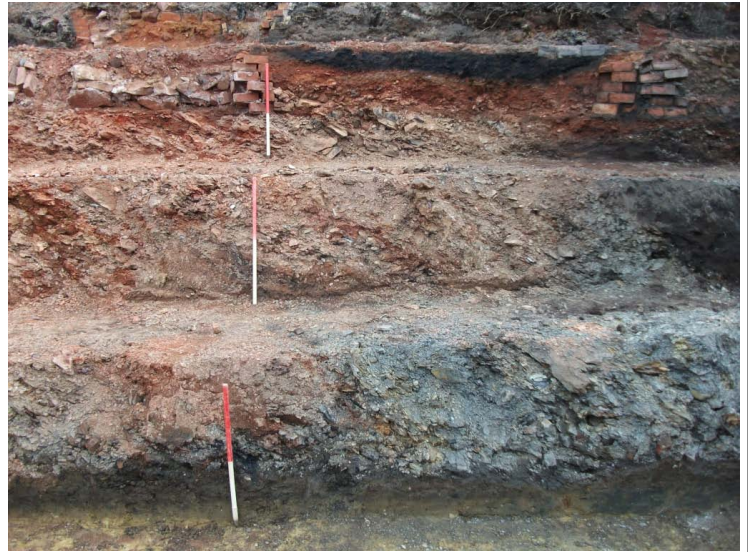




Fig. 16 - Shot of remains of coke ovens in banks and made ground deposits 067 and 068



Fig. 17 - Shot of coke oven remains in bank 1



Fig. 18 - Remains of coke oven surface 082 and oven walls 083

Fig. No: 15-18	Revision: A	Project: Dark Lane Colliery, Mirfield, West Yorkshire: Archaeological Works		
Drawn by: SW	Checked: PM	Report No: 2053		
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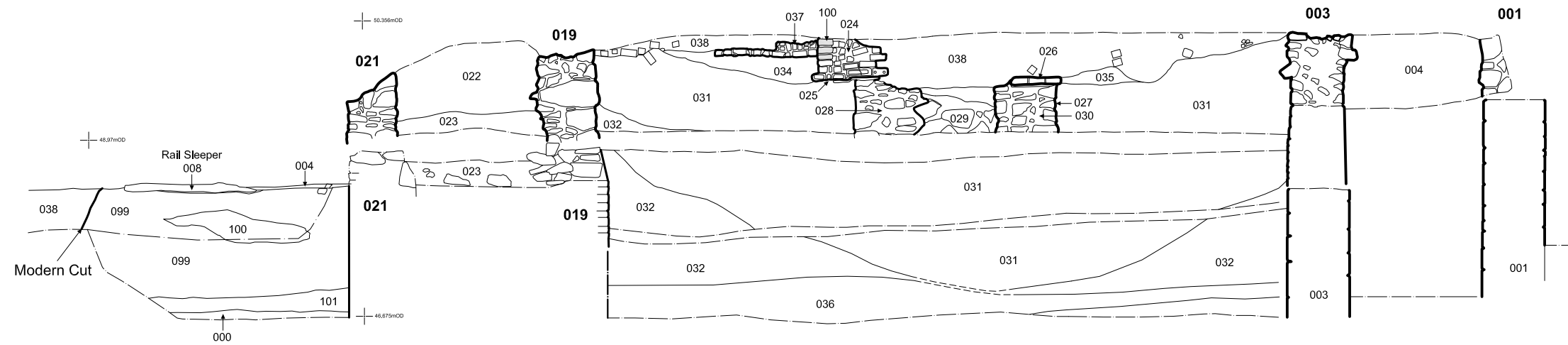


Fig. 6a - Continuous section of trench 1: south-west facing

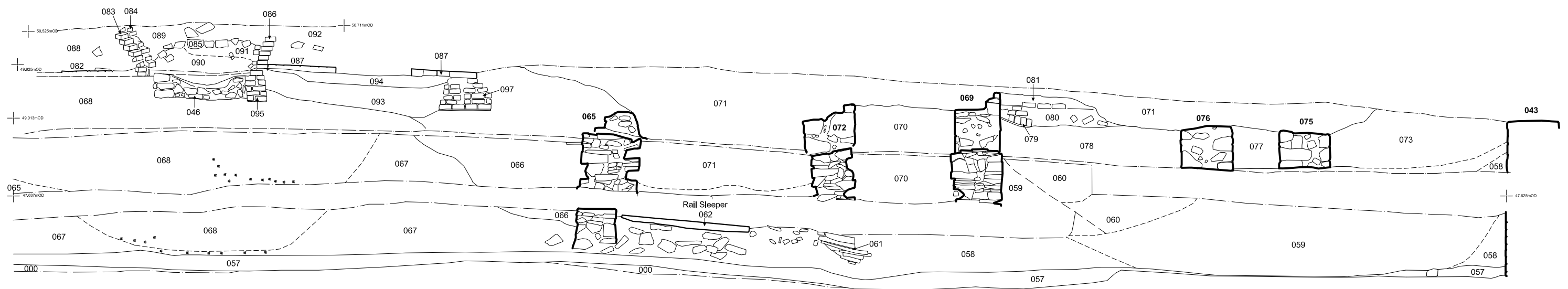


Fig. 6b - Continuous section of Trench 2; south-west facing

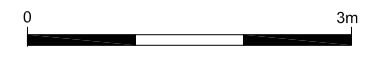




Fig. No: 6a-b	Revision: A	Checked: LW	Report No: 2053	Drawn by: LW	Scale at A3: 1:70	Key:	
Title: Trench 1 and 2 sections		Project: Dark Lane Colliery, Mirfield, West Yorkshire. Archaeological Works		Client: Orion Homes			
 CFA ARCHAEOLOGY LTD The Old Engine House Eskmills Park Musselburgh East Lothian, EH21 7PQ t: 0131 273 4380 f: 0131 273 4381 e: info@cfa-archaeology.co.uk w: www.cfa-archaeology.co.uk							<p>The copyright in this document (including its electronic form) shall remain vested in CFA Archaeology Ltd (CFA) but the Client shall have a licence to copy and use the document for the purpose for which it was provided. CFA shall not be liable for the use by any person of this document for any purpose other than that for which the same was provided by CFA. This document shall not be reproduced in whole or in part or relied upon by third parties for any use whatsoever without the express written authority of CFA.</p>

*WEST YORKSHIRE ARCHAEOLOGY ADVISORY SERVICE SUMMARY SHEET
ARCHAEOLOGICAL FIELDWORK IN WEST YORKSHIRE*

Site name/ Address: Dark Lane Colliery, Mirfield	
Township: Mirfield	District: Kirklees
National Grid Reference: SE 421700 420600	
Contractor: CFA Archaeology	
Date of Work: May 2012	
Title of Report: Dark Lane Colliery, Mirfield, Archaeological Excavation	
Date of Report: 23/07/2012	
SUMMARY OF FIELDWORK RESULTS: An archaeological evaluation at Dark Lane Colliery, Mirfield, West Yorkshire, was carried out by CFA Archaeology Ltd on the remains of three banks of late 19th and early 20th-century coke ovens. Two trenches were excavated through the oven banks; Trench 1 through Bank 3 and Trench 2 through banks 1 and 2. The substructure of the oven banks were recorded, showing the foundations consisted of large parallel walls infilled by shale and made ground. Other features of note were the vestigial remains of railway lines which supplied the site with coal for coking and transported the coke from the site to be used as fuel.	
Author of summary: Philip Moore	Date of summary: 20/07/2012