APPENDIX 1

APPENDIX 1: GAZETTEER OF SITE COMPONENTS

Site number:	Site name:	NYMNPA SMR:
001	Chimney base, south edge of detailed survey area	7843

Historical development:

A detached chimney is shown to the south-west of the engine and boiler house in 1863. The chimney has a square base with a circular section stack, and rose to a height of 180 feet; it features prominently on an undated engraving made after c.1875 [1]. By the time the amended 1853 6" map was published, a north-south railway line passed between the chimney and the engine/boiler house, tipping slag from the blast furnaces into the area to the north [2]. This line is not shown on the 1864 map of the works [3]. The railway is also not shown on the 1893 map, and the engine/boiler house complex had been removed, with only the chimney and an L-shaped range of buildings to the north-west remaining [4]. The L-shaped range had itself been slightly reduced in size by 1913, although the chimney is still present, marked as "Chy" [5]. The chimney in fact remained intact long after the rest of the ironworks had disappeared; the upper 50 feet were taken down in March 1935 for safety reasons, but it still appears on the 1952 6" map [6]. The surviving portion was finally demolished on the 13th March 1957, an operation undertaken by Theaker & Company of Staithes [7].

Site description:

The chimney base lies on the south edge of the survey area and was heavily overgrown at the time of the survey. It is c.7.40m long (north-west/south-east) by 6.60m wide (north-east/south-west), comprising a 1.20m high mound, with large coursed squared stone blocks partly visible along the west and south sides; no traces of the circular chimney shaft could be seen in the surface of the mound. To the east, there is a slight curvilinear west-facing scarp and to the west, a spread curvilinear mound of stone, brick and concrete rubble c.0.70m high. Some c.16m to the west of the chimney base, the remains of a concrete foundation, c.4m long and c.1m high, are visible, with a lower concrete footing curving around its south side; this presumably forms part of the L-shaped range shown here in 1893 and 1913 [8].

References:

[1] Coulthard, H 1863 "Description of the New Iron Works at Grosmont". *Proceedings of the Institution of Mechanical Engineers*, 228; Whitworth, A 2006 *Grosmont: A Brief History*, 72
[2] OS amended 1853 6" to 1 mile map sheet 45
[3] 1864 plan of the Grosmont ironworks
[4] OS 1893 25" to 1 mile map sheet 45/4
[5] OS 1913 25" to 1 mile map sheet 45/4
[6] OS 1952 6" to 1 mile map sheet 45NE
[7] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 53
[8] Shaun Richardson EDAS site visit

Site number:	Site name:	NYMNPA SMR:
002	Hoist/lift base, south-west part of detailed survey area	7843

Historical development:

A "Steam Lift" is shown in this general location in 1863, as a square structure with small circles at each corner and a larger circle in the centre; it was described as being for "the purpose of raising the minerals from the line of the railway to the top of the calcining kilns" [1]. Unfortunately, it cannot be seen on the amended 1853 6" map due to the placement of lettering, but a slightly more rectangular structure is shown on the 1864 plan [2] [3]. An undated engraving, made after c.1875, shows a tall structure, apparently with a pyramidal roof, in this general location, with another structure of similar height to the south [4]. The steam lift appears in the 1891 sale description as "Steam Lift for Gantry, 32" cylinder with feeding Donkey Engine, 2½ " ram. Brake drop with drum", serving a gantry 380 feet long to the calcining kilns [5]. Virtually all of this structure had been demolished by 1893, although a small rectangular structure remained in this general location on the north side of a railway line [6]. By 1913, this structure was once again surrounded by railway lines, laid to facilitate removal of slag from the area to the north, although it may be significant that none of the lines appear to link up to the structure itself; a line of conjoined sub-square structures to the south may have been storage hoppers [7]. Both the structure and the storage hoppers were still present in 1952, although all the railway lines had been taken up by this date [8]. Writing in 2002, Chapman described the structure as "a couple of brick structures which probably formed part of the structure supporting the calcining kilns where the ironstone was roasted before being fed into the furnaces" [9].

Site description:

The hoist/lift base lies in the south-western part of the survey area and was partly overgrown with ivy at the time of the survey. It comprises two substantial brick pillars, rising to a maximum height of 4.40m. The eastern pillar is the smaller of the two, being 3.50m long (north-south) by 1.50m wide (east-west), the north and south faces having a battered profile for approximately two-thirds of their lower height. The pillar has been subject to much repair and patching, but the majority is built of handmade reddish-brown and yellow bricks (average dimensions 230mm by 110mm by 70mm) laid in no particular bonding pattern and set with a lime mortar. There is a single course of large refractory bricks running around the base and the pillar is topped by a course of headers set on edge. The east face preserves much evidence for repair and alteration. Towards the centre of the lower part, there is a large irregularly-shaped area of repair or alteration, crudely carried out in re-used refractory bricks and incorporating two iron bolts which project slightly from the face. On the south side of the repair, a sub-oval "shaft" has been cut down through the body of the pillar. This shaft is c.0.60m deep and open to the east side, sloping downwards at a slight angle from north to south. There appears also to be the remains of a circular shaft in the east face. It is difficult to determine exactly how the shaft was cut into the brickwork; it has the appearance of being worn away in several stages by rubbing or friction, but this is not certain. On both sides of the shaft, there are horizontal bands of shallow scarring to the face of the pillar, four to five courses deep and set at different heights. Above these, there is a wide gap in the centre of the east face, forming a step or recessed area running across the full width of the pillar. This could not be accessed at the time of the current survey but it appears to contain evidence for several phases of brick concrete alteration, as do the parts of the east face which rise above it to either side.

The larger western pillar is c.3.50m square, and built of similar bricks to the eastern pillar, although it incorporates four courses of the much larger refractory bricks (up to 470mm by 19mm by 11mm) and occasionally the brickwork forms a rough header bond. Like the eastern pillar, the pillar has battered north and south faces, although overall it has been subject to less alteration than the eastern pillar. There are four shallow recesses at the south-west corner, spaced at roughly regular centres to c.2m above ground level; these formerly housed metal beams or girders which extended south. The central area of the upper part is slightly recessed and, although it could not be inspected in detail, it appears to retain a substantial base of some kind comprising two parallel timbers pierced by tall bolts.

An examination of the gap between the two pillars shows that it was once crossed by several beams or girders. The two lower beams were set back slightly from the south faces of the pillars; at the same level as the upper of these two beams, angled timbers/girders once sloped upwards from the gap between the pillars. The third and uppermost beam/girder was set flush with the south faces of the pillars. It was the most substantial of the three members once crossing the gap and it appears

to be a later insertion; the cement above its former east end has the date "1927" written into it.

The ground falls away very sharply to the north of the pillars, with the gap between the two forming a footpath at the time of the survey, leading to a flight of steps. A number of features are visible in plan only in the immediate area of the pillars. There is some very decayed concrete at the base of the south-west corner of the western pillar, whilst at the base of the south-east corner of the eastern pillar, there is a rectangular concrete base or bed with a bolt at three of the four corners. A slight north-facing scarp runs c.14m east from the bed, terminating in a 0.30m high concrete edge. A similar scarp runs east from the north-east corner of the eastern pillar for c.11m, terminating in another rectangular concrete base or bed, again with bolts to the corners and remnants to concrete edging to either side.

Some c.13m to the north-east of the eastern pillar, the remains of another structure are set into the top of the steep north-facing slope. The structure is rectangular in plan, c.2.5m long, 0.60m wide and set parallel to the line of the top of the slope. It is built of orange machine-made bricks (average dimensions 235mm by 110mm by 70mm) set with a cement mortar; decaying concrete is visible eroding out of the slope to either side, with further linear concrete footings to the north-east [10].

References:

[1] Coulthard, H 1863 "Description of the New Iron Works at Grosmont". *Proceedings of the Institution of Mechanical Engineers*, 229
[2] OS amended 1853 6" to 1 mile map sheet 45
[3] 1864 plan of the Grosmont ironworks
[4] Whitworth, A 2006 *Grosmont: A Brief History*, 72
[5] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 51-52
[6] OS 1893 25" to 1 mile map sheet 45/4
[7] OS 1913 25" to 1 mile map sheet 45/4
[8] OS 1952 6" to 1 mile map sheet 45NE
[9] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 61
[10] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
003	Earthworks, south part of detailed survey area	7843

Historical development:

A railway line runs through this approximate area on the amended 1853 6" map but no structures are shown [1]. A small single storey structure with a hipped roof and an end ridge stack, and a smaller adjoining building on the west side, may be shown here on a lithograph of c.1874 [2]. A small structure with an irregular plan form may be shown here in 1893 [3] but by 1913 it appears to have been replaced or reduced in size, and to have a small enclosure attached to the west side [4]. It is similarly depicted in 1952 [5].

Site description:

The earthworks lie in the south part of the survey area, adjacent to the curving wall forming the south-eastern boundary to the site, and were heavily overgrown at the time of the survey. The wall stands 1.60m high and is c.0.50m wide at the base. It is built of neatly coursed and squared sandstone set with a lime mortar and is surmounted by semi-circular coping. The main earthwork is a north-south aligned bank, some c.12m long, standing up to 1m high with a bulbous north end. There is a 1.2m high sub-circular mound on its east side, with a smaller similar feature to its north. To the west, there is a very slight north-facing scarp and beyond this a modern dump [6].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 42
[3] OS 1893 25" to 1 mile map sheet 45/4
[4] OS 1913 25" to 1 mile map sheet 45/4
[5] OS 1952 6" to 1 mile map sheet 45NE
[6] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
004	Site of engine house/boiler house, south part of detailed survey area	7843

Historical development:

In 1863, the engine house was described as being built of red brick with mouldings of white brick with a large water tank on the roof supplying water to the tuyeres and the pig-beds; the water was taken from the River Esk by two lift pumps. The engine house contained three direct-acting high pressure engines, the third being provided in case of the failure of one of the other two; these type of engines were preferred to a single large beam engine due to the much higher cost of the foundations and frame for the latter. The engine house was also provided with a travelling crane to allow examination of the engines or replacement of parts. The five boilers were each 73 feet long and of plain egg-ended form, and exhaust gases were taken into an adjacent 180 feet high chimney (see Site 1). There were evidently plans to expand the capacity of the works, as on the accompanying plan, two further engines and two further boilers are indicated by dashed lines [1]. The boiler house is depicted on the amended 1853 6" map, with a detached narrow rectangular building running parallel to the north side which probably represents the engine house [2]. The buildings are similarly shown on the 1864 plan, although the boiler house seems slightly smaller and there is not such a large gap between this and the engine house [3]. An undated engraving, made after c.1875, shows the engine house as a tall building, probably equipped with two storey windows in the long elevations, with the lower parallel structures of the boiler house to the south [4]. Despite the sentiments expressed in 1863, a large vertical blowing engine was eventually installed in the engine house along with the three direct-acting engines, and appears in the 1891 sale notice, as do the pumping engines and boilers [5]. By 1893, apart from the chimney (Site 1), the boiler and engine house had been demolished, although the parallel structure shown to the north on the amended 1853 6" map may have still survived; a small rectangular building had also appeared further to the south [6]. By 1913, the latter had both also gone, the first replaced by three circular features labelled as "Old Shafts"; although it is tempting to see these as the remains of the blast furnaces, they are in the wrong place and they may feasibly represent some of the calcining kilns shown in 1863 [7]. They are still shown in 1952 [8].

Site description:

The site of the engine house/boiler house is located in the south part of the survey area, although little remains visible above ground. The principal feature is a spread, irregularly sub-circular mound, c.10m in diameter and up to 1m high. It has been disturbed relatively recently at the north-east corner, whilst there is a large lump of slag and an area of mossed ground surface to the east, the last perhaps indicative of a rubble spread beneath. Along the east side of the mossed area, an informal footpath has been blocked by placing a very large dressed sandstone block at either end. Some c.24m to the east of the main mound, there is a short right-angled earthwork bank, again with some associated slag and mossed ground surface. This may represent the remains of the small building shown in this approximate location in 1893 [9].

References:

[1] Coulthard, H 1863 "Description of the New Iron Works at Grosmont". *Proceedings of the Institution of Mechanical Engineers*, 227-229
[2] OS amended 1853 6" to 1 mile map sheet 45
[3] 1864 plan of the Grosmont ironworks
[4] Whitworth, A 2006 *Grosmont: A Brief History*, 72
[5] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 51-52
[6] OS 1893 25" to 1 mile map sheet 45/4
[7] OS 1913 25" to 1 mile map sheet 45/4
[8] OS 1952 6" to 1 mile map sheet 45NE
[9] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
005	Earthworks, central part of detailed survey area	7843

Historical development:

A detached narrow rectangular building is shown in approximately this position on the amended 1853 6" map, to the north of the engine/boiler house (see Site 4); it is unclear whether this represents the engine house or another structure [1]. Also depicted on the 1864 plan [2]. There is a detached building shown in this general area in 1893 but had been demolished by 1913 [3] [4].

Site description:

An earthwork lies in the central part of the survey area, formed by a linear mound, aligned approximately east-west and c.18m in length. It rises to a maximum height of 1.0m but the sloping sides generally have an uneven profile. There are further slight earthworks in the surface of the mound but it is unclear if it represents a demolished structure, as indicated by the 1913 map, or simply material which has been dumped here [5].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] 1864 plan of the Grosmont ironworks
[3] OS 1893 25" to 1 mile map sheet 45/4
[4] OS 1913 25" to 1 mile map sheet 45/4
[5] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
006	Blast furnace base, central part of detailed survey area	7843.01

Historical development:

By scaling off the 1863 plan of the works, using the chimney base (Site 1) as a reference point, this furnace matches the western of the original pair shown on the plan. At their base, the furnaces consisted of a hearth, upon which there was a shaft lined with refractory bricks; the shaft had internal and external diameters of c.2.2m and 5.5m respectively at this point. There was a straight-sided tapping hole on one side of the shaft, above which were five equally spaced tuyere openings. Above the tuyere openings, the sides of the shaft splayed out to form the superstructure of the furnace, which was supported on a ring of 10 cast-iron columns [1]. The furnace is shown on the amended OS 6" map and the 1864 plan of the works [2] [3]. This furnace, along with the other two on the site, was demolished between January and December 1892 [4].

Site description:

At the time of the survey, all above ground parts of the furnace base had completely disappeared, leaving only a linear scatter of large lumps of slag, covering an area c.16m long (north-west/south-east). However, it is possible that extensive below-ground remains may still be present, given the substantial nature of the blast furnace foundations [5].

References:

[1] Coulthard, H 1863 "Description of the New Iron Works at Grosmont". *Proceedings of the Institution of Mechanical Engineers*, 226-227
[2] OS amended 1853 6" to 1 mile map sheet 45
[3] 1864 plan of the Grosmont ironworks
[4] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 53
[5] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
007	Blast furnace base, central part of the detailed survey area	7843.01

Historical development:

By scaling off the 1863 plan of the works, using the chimney base (Site 1) as a reference point, this furnace matches the eastern of the original pair shown on the plan. At their base, the furnaces consisted of a hearth, upon which there was a shaft lined with refractory bricks; the shaft had internal and external diameters of c.2.2m and 5.5m respectively at this point. There was a straight-sided tapping hole on one side of the shaft, above which were five equally spaced tuyere openings. Above the tuyere openings, the sides of the shaft splayed out to form the superstructure of the furnace, which was supported on a ring of 10 cast-iron columns [1]. The furnace is shown on the amended OS 6" map and the 1864 plan of the works [2] [3]. This furnace, along with the other two on the site, was demolished between January and December 1892 [4].

Site description:

At the time of the survey, only fragmentary remains of the furnace base could be seen above ground. They comprise an area of uneven ground c.12m across, formed principally by two sub-oval mounds, each rising to a maximum of 1.2m in height. Refractory bricks are visible eroding out of the north side of the north mound, suggesting that at least part of the outer curve of the furnace base survives. The south mound has a 1.40m long straight edge, apparently structural, on its west side. The apparent length of this edge corresponds closely with that shown for the tuyere openings in 1863, and this is most probably what the edge represents; if so, it suggests that there are further remains of the substantial furnace base surviving below ground, perhaps including the tapping hole and hearth. The site is being ridden over by mountain bikes and is suffered quite a bit of erosion and rutting [5].

References:

[1] Coulthard, H 1863 "Description of the New Iron Works at Grosmont". *Proceedings of the Institution of Mechanical Engineers*, 226-227
[2] OS amended 1853 6" to 1 mile map sheet 45
[3] 1864 plan of the Grosmont ironworks
[4] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 53
[5] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
008	Blast furnace base, central part of detailed survey area	7843.01

Historical development:

This is the remains of the third furnace, built in 1875 and blown in in July 1876. The furnace, along with the other two on the site, was demolished between January and December 1892 [1].

Site description:

The remains of the furnace comprise a section of the base of the shaft, standing to a maximum height of 1.60m, and stepping inwards from the base to the upper part. The surviving part of the base is not perfectly circular but is slightly flattened in plan, measuring a maximum of c.5.6m north-south by c.6.0m east-west. It is built of segmental refractory bricks (average dimensions 360mm by 160mm by (160mm?)); no remains of either tuyere openings or the tapping hole were visible. In section, the walls of the shaft appear to be at least four bricks deep, suggesting that they were slightly thicker than those of the original furnaces. This furnace is the only one of the three (see Sites 6 and 7) to retain any substantial remains above ground, and it is therefore likely that further remains of the base survive just beneath the ground surface [2].

References:

[1] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 53

[2] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
009	Railway cutting, north-east and central part of detailed survey area	7843

Historical development:

A railway line is shown on this general alignment on the amended 1853 OS 6" map. At the point where it left the main W&P line, it was formed by two parallel tracks. These both curved around south-west for a short distance, before the north track turned directly west (see Site 11). It had a number of sub-branches, eventually passing beneath another line and terminating at a long rectangular building near the east side of the complex. The south track continued to the south-west, apparently to the site of the steam lift (Site 2), before crossing the road to Grosmont Bridge and eventually joining the NYC line [1]. By 1893 the north track had been taken up, and only the south track remained, apparently following a similar route to that shown on the earlier map [2]. The south track was still present in 1913, although it appears to have been slightly re-aligned and recut since 1893; it ran along the north edge of an earthwork cutting, the first time such a feature is shown [3]. By 1952, only the northern section of the south track, situated within the cutting, remained [4]. It was finally taken up in 1954 [5].

Site description:

The cutting survives as an earthwork in the north-east and central part of the survey area. At its north-east end, where it leaves the restored W&P line, the cutting is represented by a linear depression, c.12m wide at the base. The south side comprises a 0.50m high scarp, which has been somewhat disturbed by modern metalling of the former track bed to make it suitable for use by vehicles. This has had the effect of raising the base of the cutting; the actual former ground surface may be represented by a steep-sided gully, up to 1.2m deep, running along the bottom of the north side beyond a post and wire fence. As the cutting runs south-west, it becomes better defined; the south side stands up to 1.60m in height, whilst the north side is slightly higher at 1.80m, and the base of cutting is c.5m wide. Both sides are steeply sloping and appear to contain a high proportion of stone rubble/slag. Approximately mid-way along the cutting, earthworks probably representing the former north track shown on the amended 1853 map are visible (see Site 11). The fact that these are set substantially higher than the base of the cutting, combined with the cutting first being shown in 1913, suggests that it does not represent the parallel tracks on the early map but that it was re-cut in the early 20th century as part of the slag processing on site. The sides of the cutting become less prominent towards its south-west end, eventually fading out altogether and disturbed by a track, although part of the alignment of the south branch may be visible near to the former hoist (Site 2) [6].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] OS 1893 25" to 1 mile map sheet 45/4
[3] OS 1913 25" to 1 mile map sheet 45/4
[4] OS 1952 6" to 1 mile map sheet 45NE
[5] Rounthwaite, T E 1997 *The Ironstone Mines and Railways of Cleveland and Rosedale*, 31
[6] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
010	Earthworks, north-east part of detailed survey area	7843

Historical development:

A railway track is shown leaving the main W&P line in this general position on the amended 1853 OS 6" map, curving south-west to join another track and then following the line of the southern boundary wall of the ironworks site, eventually terminating south of the boiler house complex [1]. No track is shown on the 1864 plan [2]. By 1893 the alignment of the track appears to have changed slightly [3]. By 1913 it had largely been taken up, only a short section of the north end remaining. Its former course is partly indicated by a dashed line adjacent to the ironworks' boundary wall, whilst a further sub-rectangular area is indicated by dashed lines to the north, although it is not clear what these represent [4].

Site description:

The most-prominent earthwork within this area is a steep east-facing scarp, up 1.60m high and perhaps representing part of a cutting for the railway track shown here on historic maps. Between the scarp and the main cutting (Site 9) running through the site, there is a linear bank, only 0.70m wide and 0.30m high, containing a high proportion of stone rubble. The bank has a shallow linear depression running parallel to the north side. The feature may represent a former boundary line, perhaps a collapsed field wall, or it may be associated with the dashed lines marked in this approximate area in 1913. The curving stone wall forming the eastern boundary of the ironworks site is partly obscured by dumping from the adjacent railway line in this area [5].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] 1864 plan of the Grosmont ironworks
[3] OS 1893 25" to 1 mile map sheet 45/4
[4] OS 1913 25" to 1 mile map sheet 45/4
[5] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
011	Former railway track, north part of detailed survey area	7843

Historical development:

A railway line is shown on this general alignment on the amended 1853 OS 6" map. At the point where it left the main W&P line, it was formed by two parallel tracks. These both curved around south-west for a short distance, before the north track turned westward (see Site 11). It had a number of sub-branches, eventually passing beneath another line and terminating at a long rectangular building on the west side of the site. The south track continued south-west, apparently to the site of the steam hoist (see Site 9). By 1893 the north track had been taken up, and appears not to have been subsequently re-instated [2].

Site description:

The remains of the railway track lie on the north side of the cutting (Site 9) crossing the north part of the survey area. They first become visible to the south of a footpath, where a relatively well-defined curvilinear south-facing scarp, standing 0.50m high, can be traced running to the east. It eventually merges with a spread bank positioned along the east side of a sub-rectangular area, partly enclosed by banks of similar form [3].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] OS 1893 25" to 1 mile map sheet 45/4
[3] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
012	Possible ruined structure, north edge of detailed survey area	7843

Historical development:

A small isolated structure is shown in this approximate area in 1893 [1] but it had gone by 1913 [2].

Site description:

The possible ruined structure is represented by a spread of low earthworks (up to 0.80m in height) covering a sub-rectangular area measuring some 14m long (north-south) by 8m wide (east-west); the bank forming the east side of the spread is relatively sharply defined. The south end of the earthworks has been truncated by a steep south-west facing scarp, standing up to 1.20m in height. This scarp runs south across a footpath and then angles sharply to the south-west, passing a c.1m high sub-circular mound before fading from view. It is difficult to see whether these earthworks represent the remain of a building – more likely earthworks lie just to the north (see Site 13) [3].

References:

[1] OS 1893 25" to 1 mile map sheet 45/4
[2] OS 1913 25" to 1 mile map sheet 45/4
[3] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
013	Possible ruined structure, north edge of detailed survey area	7843

Historical development:

A small isolated structure is shown in this approximate area in 1893 [1] but it had gone by 1913 [2].

Site description:

The possible ruined structure is represented by a spread of low earthworks (up to 0.50m in height) covering a sub-oval area c.9m across; all contain a high proportion of brick rubble. Within the general spread, there are several better defined earthworks that might represent former wall lines or returns. The presence of the brick rubble suggests that these earthworks are more likely to be the site of the building shown in 1893 rather than others (Site 12) slightly further to the south-west [3].

References:

[1] OS 1893 25" to 1 mile map sheet 45/4
[2] OS 1913 25" to 1 mile map sheet 45/4
[3] Shaun Richardson EDAS site visit, 13/3/07

Site number:	Site name:	NYMNPA SMR:
014	Hollow/disturbance, south-west corner of walkover area	

Historical development:

Nothing is shown in this area on the amended 1853 OS 6" map or the 1864 plan [1] [2]. By 1893, it was partly occupied by an L-shaped range of buildings, built to the north of the former boiler/engine house complex (see Site 3) and apparently shown on an undated engraving made after c.1875 [3]. The west end of the range projected south, towards a scarp with a trackway running along the base, giving access to the Grosmont bridge road; a railway line also terminated in this approximate area (see Site 10) [4]. The railway line had been taken up by 1913, but otherwise the area remained much the same as shown in 1893 [5]. By 1952, the building forming the west end of the L-shaped range had been demolished [6].

Site description:

This part of the complex is now formed by a large sub-rectangular depression adjacent to the Grosmont Bridge road, with near vertical scarps to two sides. A tarmaced footpath still leaves the main road in the approximate position of the trackway shown in 1893 but the scarp beneath which the latter ran has been massively enlarged since 1913, covering an area some 50m long (east-west) by 25m wide (north-south). The scarp on the northern side is near vertical and stands c.2m high. There is much brick (including some refractory material) and stone debris eroding out of the scarp, with the remains of timber posts in one place, driven into the ground to retain the scarp behind. The scarp on the south-east side is also near vertical, and formed of blast furnace slag tipped from north-west to south-east, some of it whilst apparently still quite hot; it may have been either tipped from the railway shown here in 1893, or perhaps tipped to form its base. The only trace of the L-shaped range to survive appears to be a small concrete and brick base adjacent to the former boiler/engine house chimney (see Site 1) [7].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] 1864 plan of the Grosmont ironworks
[3] Whitworth, A 2006 *Grosmont: A Brief History*, 72
[4] OS 1893 25" to 1 mile map sheet 45/4
[5] OS 1913 25" to 1 mile map sheet 45/4
[6] OS 1952 6" to 1 mile map sheet 45NE
[7] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
015	Railway line and bridge, south-west corner of walkover area	

Historical development:

A railway line is shown on the amended 1853 OS 6" map, leaving the W&P line and curving around to the south-west, north of the ironworks (see Site 6). To the west of a steam lift (see Site 2), a number of tracks appear to merge into a singe line, and continue south-west, crossing over the road to Grosmont Bridge and then joining the NYC line [1]. The lines are not shown on the 1864 plan, although "siding to works" is depicted [2]. By 1893, the system described above had been reduced to a single line and a small building had appeared close to the east side of the road bridge [3]. The road bridge may have been reduced in width by 1913, whilst the building previously shown in 1893 had been demolished [4]. The bridge remained in situ in 1961-62 and was equipped with NER rails [5].

Site description:

The former route of the track can be seen as a flattened area running along the top of the steep north-facing scarp adjacent to the steam hoist (Site 2). It is then disturbed by the modern vehicular access in the upper car park but recommences as a similar feature to the south-west, running through a wooded area. No trace of any associated structures survives above ground, although a 0.30m deep covering of tarmac is eroding out of the south side of this area into a steep-sided hollow (Site 14). Little remains of the former bridge over the Grosmont Bridge road. The east abutment has disappeared completely, although part of the west abutment still survives. It is 6m wide, stands a maximum of 2.15m high and is built of coursed squared large sandstone blocks with prominent herringbone tooling; a partly collapsed brick and stone roadside wall runs south-east from the abutment, whilst the former track line follows the top of a substantial north-facing scarp above the pavilion of Grosmont Cricket Club [6].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] 1864 plan of the Grosmont ironworks
[3] OS 1893 25" to 1 mile map sheet 45/4
[4] OS 1913 25" to 1 mile map sheet 45/4
[5] Rounthwaite, T E 1997 *The Ironstone Mines and Railways of Cleveland and Rosedale*, 31
[6] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
016	Possible ruined structure, east side of walkover area	

Historical development:

A structure may be shown in this approximate position on the amended 1853 6" map but this is not clear [1]; a similar situation occurs on the 1893 25" map [2]. By 1913, the site fell within an irregularly shaped area denoted by a dashed line, itself set within an enclosed area with a stone marked at the north-west corner [3].

Site description:

The site is represented by a sub-rectangular earthwork, located close to the north-west corner of a fenced allotment area. The earthwork is formed by low spread banks, standing up to c.1m high and apparently containing a high proportion of red handmade brick rubble, perhaps the remains of a structure some 4m long (north-south) by 3m wide (east-west). The earthwork stands on a north-facing scarp and there is further disturbed ground to the north. A low north-facing scarp, c.1m high, runs west from the earthwork; it appears to have either a high slag content or to be built from slag blocks. It may be aligned on a gap in the major north-west facing scarp which separates the lower and upper car park areas [4].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] OS 1893 25" to 1 mile map sheet 45/4
[3] OS 1913 25" to 1 mile map sheet 45/4
[4] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
017	Linear depressions, east part of walkover area	

Historical development:

Nothing is shown in this area on the amended 1853 6" map and it seems to lie just east of the main area of slag tipping in 1895 [1] [2]. A dashed line curves through this area, following an irregular course, in 1913 [3].

Site description:

The feature is represented by two conjoined linear depressions, each up to c.5m wide and c.1.20m deep, situated to the immediate west of a footpath; both have much slag in their steeply sloping sides. The southern depression has a spread bank containing a high proportion of ash running parallel to its east side. To the east of the footpath, there is large sub-circular depression, with an uneven base and poorly defined banks and mounds incorporated into its edge. Together, these features cover an area at least c.50m square [4].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] OS 1893 25" to 1 mile map sheet 45/4
[3] OS 1913 25" to 1 mile map sheet 45/4
[4] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
018	Ruined buildings, north-east corner of walkover area	

Historical development:

No buildings appear to be present here on the amended 1853 6" map [1]. Chapman notes that after Messrs Bagnall of Grosmont Ironworks had purchased Mrs Mary Clark's land east of the railway in 1863, they must have erected the "prominent girder bridge" here; mining tubs filled with ironstone from the adjacent mine appear to have tipped into railway wagons in a siding, which then took the ironstone into the ironworks. Waste shale from the mine was taken across the bridge and tipped in the area to the north; the bridge is thought to have been in use between c.1870 and 1890 [2]. A lithograph of c.1874 clearly shows the bridge and also what is described as the "east" building below; this appears to have a hipped roof, with a number of smaller structures attached to the east side [3].

By 1893, the ironstone mines on the east side of the W&P line were disused, and there was no longer a railway crossing the bridge over the main line. To the west of the bridge, there was a wide embankment running westward towards two bridges over the river Esk (Sites 19 and 20). A rectangular building stood on the top of the east end of the embankment, with a short section of railway leaving the north side and running onto the large mine waste spoil heap. To the south of the embankment, there were two further buildings. Of these, the rectangular west building is slightly the larger and has a number of smaller structures attached to the north end. The east building is also rectangular, and has a smaller building or yard attached to the north end [4].

Some 20 years later, in 1913, the railway bridge over the W&P line was still present, as was the adjacent embankment, but the building shown at the last's east end in 1893 had gone. A wall or boundary ran across the top of the embankment as far as the river, suggesting that the area to the north where mine waste had been tipped was now under separate ownership. The two buildings to the south of the embankment remained and, with minor alterations, were much as shown in 1893 [5]. There were still present in 1952, the eastern building having been widened [6].

Site description:

Of the two buildings shown to the south of the embankment in 1893, 1913 and 1952, slightly more remains of the east than the west, although both have largely disappeared above ground. The first comprises an isolated and substantial mass concrete base surviving within the undergrowth. The base is 3.13m long (north-south) by 2.12m wide (east-west) and stands 2.20m in height; it is built of roughly cast concrete with a high percentage of crushed slag and has shuttering marks to all four sides. The base is overgrown with ivy and the upper surface could not be examined. Some 10m to the north, there is another concrete base of a similar form and composition but covering a slightly larger area. This has the remains of a ruined brick wall on its north side, presumably that formerly enclosing the yard area shown here in 1893 and 1913. There is a pit, reminiscent of a vehicle inspection pit, to the east of the former yard area. The pit is 2.92m long (north-south) by 0.90m wide (east-west) and is c.1m deep, although the base is partly backfilled. The sides of the pit are built of machine-made red bricks (average dimensions 240mm by 110mm by 80mm) with a shallow frog to the upper surface and set with a cement mortar. To the west of the former yard area, a low south-facing scarp with a high slag content is visible running westwards for some distance into the woods.

The above ground remains of the west building comprise a single concrete base; it is difficult, on current evidence, to determine whether the base fell within the main building or the small associated structure shown at its north end in 1893. The base is 2.95m long (east-west) by 2.50m wide (north-south), and stands 1.20m in height. It is set on a bed of machine made bricks, and, like the other bases described above, is built of concrete containing a very high proportion of crushed slag. There are original central openings in both short walls. That to the west is wider, and leads into the interior of the base; a pair of substantial iron bolts are set into the sides of the interior a short distance in from the opening. The interior walls then curve inwards, so that the opening in the east end is quite narrow to the exterior [7].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 28, 42 & 61

[3] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 61
[4] OS 1893 25" to 1 mile map sheet 45/4
[5] OS 1913 25" to 1 mile map sheet 45/4
[6] OS 1952 6" to 1 mile map sheet 45NE
[7] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
019	Bridge abutments, embankment and bridge pier, north end of walkover area	

Historical development:

A field boundary is shown on this approximate line on the amended 1853 6" map [1]. Chapman notes that after Messrs Bagnall of Grosmont Ironworks had purchased Mrs Mary Clark's land east of the railway in 1863, they must have erected the "prominent girder bridge" (hereafter referred to as the W&P bridge) here over the W&P line; mining tubs filled with ironstone from the adjacent mine appear to have tipped at staiths on the west side of the W&P line, running down wooden chutes into standard gauge railway wagons in a siding which then took the ironstone into the ironworks. Waste shale from the mine was taken across the bridge and tipped in the area to the north; the bridge is believed to have been in use between c.1870 and 1890, and is clearly visible on a lithograph of c.1874 [2]. Rounthwaite, writing in 1961-62, produced a plan titled "Grosmont in 1880" which shows two bridges crossing the river Esk at a point west of the W&P bridge, with "industrial lines" leading to an area of slag tipping on the west side of the river [3].

By 1893, the ironstone mines on the east side of the W&P line were disused, and there was no longer a railway crossing the bridge over the main line, although the bridge itself remained. To the west of the W&P bridge, there was a wide embankment running westward towards two bridges over the river Esk (see also Site 20). A rectangular building stood on the top of the east end of the embankment, with a short section of railway leaving the north side and running onto the large mine waste spoil heap. To the south of the embankment, there were two further buildings (see Site 18). At the west end of the embankment, the northern of the two bridges over the Esk crossed the river at an angle, although it carried neither a railway nor a tramway by this date. The bridge lead to the north part of the large area of slag tipping on the north side of the Esk; the position of revetment walls at the west end of the embankment suggest that a railway line ran out from the ironworks, curved around to the north-west, ascended a slope between the revetments and then crossed the bridge to tip slag over the river [4]. The Esk bridge had gone by 1913, and the slag banks to the north of the Esk were being re-worked using the southern bridge. However the embankment and W&P bridge remained, although a wall line had been built along the top for its entire length, suggesting the land to the north was now in separate ownership [5]. The site is similarly depicted in 1952 [6]. There were plans to re-used the W&P bridge over the main railway line when ironstone mining re-commenced in the area between c.1906 and 1905, although this does not appear to have happened. It was described as being due for demolition in 2002 [7] and this has subsequently taken place. The concrete pier surviving today on the site of the Esk bridge (see below) was described by Chapman in 2002 as "another remnant apparently of the slag removal days" [8].

Site description:

The features are described from east to west. The bridge shown crossing the W&P line from the brick and tile works in 1893 and 1913 was demolished after 2002 ; however, the coursed squared sandstone abutments still survive. Similarly, the building depicted at the east end of the embankment (i.e. at the west end of the bridge) in 1893 has also left little trace, although the embankment itself survives as a prominent if densely overgrown earthwork. It is curvilinear in plan, c.80m long (east-west) and stands up to 3m in height. Towards the west end, the flat top is only c.1m wide, whilst the sides slope very steeply downwards, especially to the north, and contain a high proportion of shaley waste; the overall form of the embankment is similar to that of a spoil heap. A short distance to the north-west of the west end of the embankment, there is a large sub-circular steep-sided hollow, c.3m deep in the centre, with a bank of spoil or upcast above the eastern side. It is possible that the hollow was created by the grubbing out or demolition of a large stone or concrete pier, similar to those which survive within the adjacent river. The east bank of the river retains the remains of a stone and concrete abutment, some 4m high, whilst in the centre of the river, there is a c.10m tall concrete bridge pier. The pier is approximately hexagonal in plan, with sides tapering gently inwards towards the top; wrought-iron or steel strapwork survives around the upper part. The height of the pier suggests that it may once have carried a tramway/railway line leading the west end of the embankment and being carried across the river on a number of similar structures, of which this is the sole survivor [9].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45

[2] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 28, 42 & 61
[3] Rounthwaite, T E 1997 *The Ironstone Mines and Railways of Cleveland and Rosedale*, 31
[4] OS 1893 25" to 1 mile map sheet 45/4
[5] OS 1913 25" to 1 mile map sheet 45/4
[6] OS 1952 6" to 1 mile map sheet 45NE
[7] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 59, 61
[8] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 61
[9] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
020	Tramway and bridge, north part of walkover area	

Historical development:

Nothing is shown here on the amended 1853 6" map [1]. In c.1864, Messrs Bagnall of Grosmont Ironworks acquired land from a Mr Wilkinson on the north side of the river Esk, sinking three new ironstone mines (Grosmont Haggs or New Mine) in the vicinity of Priory Farm. Ironstone was carried from the mines south-eastwards down an inclined tramway on an embankment, crossing the Esk on a bridge and then rising again in a southern curve to reach the ironworks [2]. Rounthwaite, originally writing in 1961-62, produced a plan titled "Grosmont in 1880" which shows two bridges crossing the river Esk here, with "industrial lines" leading to an area of slag tipping on the west side of the river [3]. In 1893, two bridges are also marked crossing the river here (see also Site 19). The inclined tramway formerly leading to the south bridge can be seen to the north of the Esk, running down from the mines at Priory Farm. However, it appears to have been largely covered over by later slag tipping from the ironworks and so presumably the bridge was also disused at this date; there is no indication on the map that the two were linked by a tunnel. East of the bridge, two parallel walls project from beneath revetment walls almost certainly formerly supporting a railway leading to the north Esk bridge (Site 19), although again, there is no indication of a tunnel here [4]. In the early 1900s, Rounthwaite suggests that a standard gauge track was laid down across the bridge to allow extraction of slag from the waste tip on the west side of the river [5]. By 1913, a double tramway line is marked crossing the south bridge from the west bank, where it was indeed being used to mine the sag tipping and then running south-eastward towards a two small conjoined buildings adjacent to the railway line [6]. By 1952, the bridge is marked as a footbridge and although "Tramway" is shown, it appears to have been taken up [7].

Site description:

The bridge across the Esk is supported on stone abutments and two stone piers. The piers stand c.5m tall and are built of rock-faced ashlar. They rise from substantial cut-waters surmounted by chamfered stonework; the chamfers act as plinths for the upper parts of the pier, which taper inwards as they rise. The upper c.0.50m of each pier is raised in machine-made red brick. Rolled steel I-section girders run between the piers and the abutments, supporting the sleepers forming the trackbed; all the rails have been taken up.

All traces of the spoil heaps shown on historic maps on the north and west bank of the river have been removed. However, the former tramway cutting becomes visible a short distance to the east of the bridge, and can be traced south-east for c.40m, sloping gently upwards from west to east. It survives as a linear depression, 2.5m wide at the top, with a 1.60m wide flat base and near vertical sides rising to 1.80m in height. At the west end, the sides are revetted with drystone walls incorporating river cobbles, but to the east, they comprise slag blocks laid to a slightly battered profile. Beyond the cutting, it may be possible to trace former line of the tramway shown in 1913 as a very low north-east facing scarp containing a high proportion of slag [8].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] Chapman, S 2002 Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont, 29
[3] Rounthwaite, T E 1997 *The Ironstone Mines and Railways of Cleveland and Rosedale*, 46
[4] OS 1893 25" to 1 mile map sheet 45/4
[5] Rounthwaite, T E 1997 *The Ironstone Mines and Railways of Cleveland and Rosedale*, 31
[6] OS 1913 25" to 1 mile map sheet 45/4
[7] OS 1952 6" to 1 mile map sheet 45NE
[8] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
021	Ruined structure, north part of walkover area	

Historical development:

In 1895, a rock outcrop forming the east bank of the river Esk is marked in this location, although no structures appear to be shown [1]. By 1913, a boundary had been built around the south end of the outcrop, whilst a structure appears to have been built at its base on the river bank (see Site 22); an angled boundary is shown to the east of the outcrop, above its northern end [2]. It is similarly shown in 1952 [3].

Site description:

The angled boundary shown in 1913 appears to survive as a largely collapsed angle-iron and railing fence. Where the fence returns to the south, its former line is marked by a 0.30m high slag block revetment wall, which can be followed southwards from the return for c.10m to 12m. To the west of the wall, between it and the rock outcrop, there are a series of small ruined structures, or perhaps more likely a single structure with internal divisions. There appears to have been a set of steps leading up from an adjacent footpath at the north end, with the entrance to the building presumably located at this end; the internal walls are built from a mixture of slag blocks and red handmade bricks set with a lime mortar, surviving up to 1m in height. The remnants of box hedging survives along one edge of the steps, whilst there are conifers to the west of the ruined structure and a line of hawthorns to the east. Some distance to the south, the curving boundary marked around the south end of the rock outcrop in 1913 also survives as a ruined angle-iron and railing fence; a cast-iron post with a ball finial adjacent to the river suggest that the railing fence may be a later replacement of an earlier boundary [4].

References:

[1] OS 1895 6” to 1 mile map sheet 45
[2] OS 1913 25” to 1 mile map sheet 45/4
[3] OS 1952 6” to 1 mile map sheet 45NE
[4] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
022	Wharf structure, east bank of river Esk	

Historical development:

A structure is marked here in 1913, below a rock outcrop [1]. The wharf location has the name Salmon's Leap and is apparently a favoured spot for private fishing [2].

Site description:

The wharf is accessed via a flight of concrete steps leading down from a footpath above at the north end. The wharf structure itself is built of concrete throughout, and is c.50m long, 2m wide and 1.2m in height; it was in use by a private fishing club at the time of the survey. At the northern end, a second flight of steps leads down to a narrow landing platform. Approximately half way along the wharf, the shaley rock outcrop above has been revetted with concrete, and has a crude angle-iron canopy over a low concrete bench. To the south of the canopy, a crude recess c.2m deep has been cut into the shaley rock; it may have a small alcove hollowed into the rear (east) face. The opening into the recess is covered by a crude but substantial concrete and brick frame once fitted with a door. To the south of the wharf, the river bank angles sharply to the south-west and is revetted with sandbanks [3].

References:

[1] OS 1913 25" to 1 mile map sheet 45/4
[2] Chapman, S 2002 *Grosmont and its Mines: a Short History of Ironstone Mining around Grosmont*, 5
[3] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
023	Area of spoil tipping, north of trackway leading to sewage treatment plant	

Historical development:

Spoil tipping from the ironworks had commenced in this area by the time that the amended 1853 6" map was published, with a single tip served by a railway line being marked; the railway line appears to have been carried over another line on a bridge [1]. By 1893, an extensive area of spoil heaps is shown, comprising three long lobes or fingers to the west, with a curving linear depression (probably a former railway/tramway cutting) to the north-east, leading to another spoil heap; no railway or tramway lines are marked in the spoil tipping area at this date [2]. By 1913, a railway line had been relaid, perhaps partly re-using the cutting shown in 1893. Re-working of the slag from the spoil heaps had evidently been underway for some time, as the pattern of tipping had changed markedly over 20 years, particularly in the central and eastern parts of the area [3]. By 1952, virtually all of the spoil heaps shown in 1893 had gone [4].

Site description:

In the intervening period since the last historic map was published, the spoil heaps in this area have been almost completely worked out. A steeply sloping bank, c.3m high and containing a high proportion of slag, has been left in place adjacent to the river, presumably to act partly as a flood defence. Away from the river, in the vicinity of the sewage treatment plant, the area is densely wooded but there appear to no significant surviving earthworks. A north-west facing scarp, standing some 2m to 3m high and containing a high proportion of shale, crosses the east end of the area [5].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] OS 1893 25" to 1 mile map sheet 45/4
[3] OS 1913 25" to 1 mile map sheet 45/4
[4] OS 1952 6" to 1 mile map sheet 45NE
[5] Shaun Richardson EDAS site visit, 21/5/07

Site number:	Site name:	NYMNPA SMR:
024	Area of spoil tipping, south of trackway leading to sewage treatment plant	

Historical development:

Spoil tipping from the ironworks had commenced in this area by the time that the amended 1853 6" map was published, with a single tip served by a railway line being marked; the railway line appears to have been carried over another line on a bridge. A long rectangular structure is also depicted at the west end of a railway track, close to the Grosmont Bridge road [1]. This structure is also shown on the 1864 plan [2]. By 1893, an extensive area of spoil heaps is shown, comprising three long lobes or fingers to the west, with a curving linear depression (probably a former railway/tramway cutting) to the north-east, leading to another spoil heap; no railway or tramway lines are marked in the spoil tipping area at this date and the structures noted above have been demolished [3]. By 1913, a railway line had been relaid, perhaps partly re-using the cutting shown in 1893. Re-working of the slag from the spoil heaps had evidently been underway for some time, as the pattern of tipping had changed markedly over 20 years, particularly in the central and eastern parts of the area [4]. By 1952, virtually all of the spoil heaps shown in 1893 had gone [5].

Site description:

In the intervening period since the last historic map was published, the spoil heaps in this area have been almost completely worked out and much of it is now occupied by the lower NYMNPA car park. The southern boundary of the area is formed by the steep 5m high north-west facing scarp upon which the upper car park and other remains of the ironworks complex stand. A number of linear earthworks survive in the densely wooded area to the west of the lower car park. They are conjoined, and aligned either east-west or north-south. The longest of the north-south aligned earthworks is formed by an c.2.5m wide bank, standing c.1.4m high and with near vertical sides revetted with slag blocks. Its form is reminiscent of a raised tramway bed, and it may represent one of the last phases of re-working to be undertaken in this area [6].

References:

[1] OS amended 1853 6" to 1 mile map sheet 45
[2] 1864 plan of the Grosmont ironworks
[3] OS 1893 25" to 1 mile map sheet 45/4
[4] OS 1913 25" to 1 mile map sheet 45/4
[5] OS 1952 6" to 1 mile map sheet 45NE
[6] Shaun Richardson EDAS site visit, 21/5/07

APPENDIX 2

DESCRIPTION OF THE NEW IRON WORKS AT GROSMONT.

By Mr. HIRAM C. COULTHARD, of Blackburn.

In the Cleveland iron district, where the Grosmont Iron Works forming the subject of this paper are situated, there are at present 63 blast furnaces in full operation, 17 furnaces not in operation, standing for repairs or other causes, and 11 furnaces in various stages of progress. The Grosmont furnaces have been erected by Messrs. Bagnall, and the general working arrangements for them were made by the manager, Mr. Barnes, and the writer of the present paper; and upon the latter devolved the arrangement of engines and boilers, &c.

Grosmont near the coast of Yorkshire is situated about 7 miles from the port of Whitby, 20 miles from the Durham coalfield, and about the same distance from the lime district of Pickering, whence the supply of lime is derived. Fig. 1, Plate 61, is a general plan of the entire works, which are adjacent to the main line of railway from Whitby to Castleton, joining the North Yorkshire and Cleveland Railway, and thus in connexion with the Newcastle and Durham coal and coke districts. A siding from the main line runs into the works.

These blast furnaces are believed to be constructed on a very efficient and economical plan for the purposes intended. Each furnace is capable of producing 250 tons of pig iron per week, allowing for stoppages on Sunday. Fig. 2, Plate 62, is a vertical section of one furnace, and Fig. 3, Plate 63, shows an enlarged vertical section of the top and bottom of the furnace. Figs. 4 to 8, Plate 64, are transverse sections of the furnace at the tuyeres, tapping hole, and hearth, and through the body of the furnace.

Each furnace measures 18 feet diameter at the boshes, and a total height of 63 feet from ground line to level of charging floor. The foundations were dug out to a depth of about 9 feet, to rock on one side and hard blue clay on the other, the ground sloping in the direction of the dip of the rock. The stone foundations both for the hearth and casing of the furnace are shown in the vertical sections, Figs. 2 and 3, Plates 62 and 63, and consist of ring courses of masonry built on concrete, about 26 feet diameter, each course being bound by a wrought iron ring, 5 inches wide and $\frac{7}{8}$ inch thick, Fig. 3. In the interior of the uppermost ring course is built the firebrick hearth A, Fig. 3; the blocks of which this is formed are shown in plan and vertical section in Figs. 6 and 7, Plate 64. These blocks are set in ground fireclay in a moist state, special care being taken to secure a perfectly homogeneous mass, as the whole of the superstructure of the furnace and its contents when in working order, weighing about 1200 tons, rest upon this foundation. On the top course of masonry the foundation plates of cast iron, 3 feet 6 inches square and 4 inches thick, are bedded in fireclay, to which are bolted the cast iron columns B B, Fig. 3, 17 inches diameter, for carrying the superstructure. These columns are united at the top by a cast iron ring or cornice C in segments, $3\frac{1}{2}$ inches thick, each segment having a semicircular snug cast on its under side, which when the work is joined together fits into the top of the column B, thus binding the whole of the segments into one ring.

The entire lining of the furnace inside is of refractory firebrick D, Fig. 3, Plate 63; the furnace is cylindrical on the outside and entirely cased with wrought iron plates E, $\frac{3}{8}$ inch thick at the bottom of the furnace, and towards the top of the furnace diminished in thickness to $\frac{5}{16}$ inch. This casing weighs about 30 tons and costs about £400, and is now being generally used in place of the massive stack of masonry formerly used. There are ten cast iron pillars B for carrying the super-structure, placed at a distance of 7 feet apart, except where the tapping hole is situated, where the distance is increased to 10 feet, as seen in Fig. 4, Plate 64. Brackets are cast on these pillars, Fig. 3, for the

purpose of carrying the circular pipes that convey the blast and water round the furnaces for distribution to the various tuyeres. There are five tuyeres to each furnace, one of which is shown in longitudinal section in Fig. 9, Plate 64.

At the top of the furnace a wrought iron plate cornice F is fixed, Fig. 3, Plate 63, forming the charging floor; and the two furnaces are connected by means of two longitudinal wrought iron girders 4 feet and 3 feet deep respectively, the larger one prepared to receive the wrought iron beams that form the roadway of the incline up which the materials for smelting are drawn by means of a pair of fixed horizontal engines. These girders are united by nine intermediate cross girders of wrought iron, and when covered with plates form the roadway of the charging floor, having a screen 3 feet 6 inches high running round for protection.

The throat of the furnace, Fig. 3, Plate 63, is adapted for taking off the waste gas, which is collected in a wrought iron tube G, 5 feet diameter, which extends down the throat of the furnace about 5 feet and is lined inside and cased outside with refractory firebrick 6 inches in thickness. This tube is fixed to and supported by a crown or dome built in the throat of the furnace, of specially moulded lumps of fireclay, supported by six buttresses built of the same material. The crown has six openings formed at the sides for charging purposes, and one opening in the centre, through which the gas passes into the tube G. There is the usual brick chimney at the top of the furnace, with wrought iron swing doors corresponding with the openings in the crown. The gas is conveyed from the furnace top to the boilers, hot-blast stoves, &c., by a wrought iron tube 5 feet 6 inches diameter, large enough to take off the gas from two additional furnaces; and square boxes H, Fig. 1, Plate 61, are fixed at intervals along the tube to allow for expansion. A flap valve I, Fig. 3, Plate 63, opening outwards for cleaning purposes is fixed at the end of the tube over the furnace.

Figs. 10 and 11, Plate 65, show a vertical section and sectional plan of one of the hot-blast stoves. Three of these are built to each furnace, of common brick made on the estate, lined with

refractory firebrick, and externally bound firmly together by wrought iron hoops 4 inches wide and $\frac{5}{8}$ inch thick, placed at intervals of 3 feet. The stoves are heated by the gas being admitted at the top J, and a small fire is kept on the grate at the bottom for the purpose of ensuring that the gas is always ignited. Four flues K K, Fig. 11, pass away from the bottom of the stove to the main chimney flue L, Fig. 10, which is in connexion with the chimney stack, Fig. 1, of 180 feet height. A simple disc valve J is fixed at the top of the stove where the gas enters, to cut off the supply of gas from the stove at any time. The pipes M, through which the blast passes, consist of ten pairs to each stove, 12 inches diameter, each pair being arched at the top and united at the bottom by connecting foot-boxes, thus forming one continuous course of pipes for the blast to pass along. The blast enters on one side of the oven, and after circulating through the pipes M passes out at the other side into the main pipe N for the service of the tuyeres, as shown by the arrows. A stop valve O serves to cut off the communication of each stove with the blast main, which is 5 feet 6 inches diameter and thus forms also the blast reservoir. The temperature of the blast is from 600° to 700° Fahr., and the quantity blown by each engine is 6000 cubic feet per minute at a pressure of 3 lbs. per square inch. These hot-blast stoves have been found most effective; from the enlarged capacity of the pipes, the blast is much longer in passing through them, and consequently they are not required to be kept at such a destructive heat. The writer understands that these stoves are extensively used in Staffordshire and with the best results.

The blast is supplied by three direct-acting high pressure engines, quick moving, having air cylinders 57½ inches diameter with a stroke of 3 feet. Fig. 12, Plate 66, is a transverse section of the boiler and engine house. Two engines P are sufficient for the work of two furnaces, a third one being provided in case of emergency. The reason for separate engines being used is that in the case of an accident to the blowing engine, when only one engine is used, the whole of the furnaces are thrown idle; moreover the cost of machinery for two furnaces is much less in these engines,

taking into consideration the expensive nature of the stonework &c. required for the foundation of one large beam engine. The only foundation required for these engines is about 3 feet depth of brickwork, with a framework of timber on which to bolt the foundation plates.

The engine house is of red brick with mouldings of white brick, and presents a good appearance; the roof is formed by the water tank R, Fig. 12, Plate 66, which contains the water supply for the tuyeres, pig beds, &c. In the engine house is fixed a travelling crane S for the convenience of examining any portion of the engines; this is found a most useful appendage. The water supply is derived from the river Esk by two lift pumps having trunk cylinders $7\frac{1}{4}$ inches diameter. The boilers T, Fig. 12, Plate 66, are five in number, each 73 feet long by 5 feet diameter, of the plain egg-ended form, heated by the waste gas from the blast furnaces. They are suspended by means of cast iron bridges from the top of the boiler seats, and are fed by three donkey engines, all connected to one pipe over the boilers. The steam pressure is 60 lbs. per square inch above the atmosphere.

A steam lift is fixed in the works in the position shown in Fig. 1, Plate 61, for the purpose of raising the minerals from the line of railway to the top of the calcining kilns.

Mr. Sampson Lloyd thought the new ironworks described in the paper were a good illustration of the modern improvements that were now being generally adopted in ironworks. The blast furnaces appeared to be built according to the construction now generally in use; but for taking off the gas from the open top of the furnace a variety of plans had been adopted, and the main peculiarity of the arrangement shown in the drawings appeared to be the use of a wrought iron tube for the purpose, inserted into the top of the furnace and lined inside and outside with firebrick. That plan had

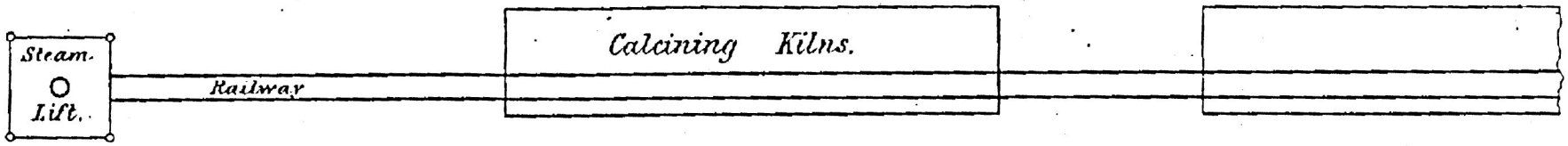
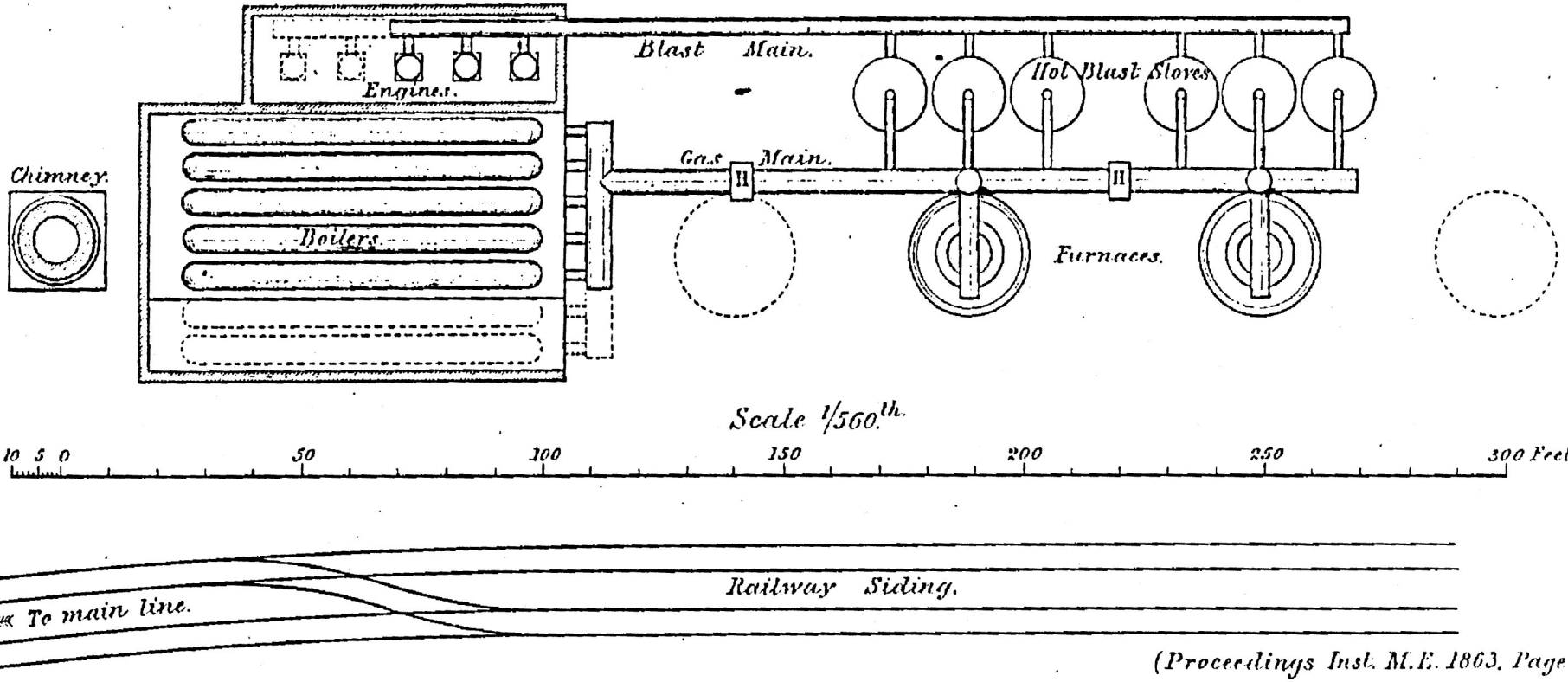


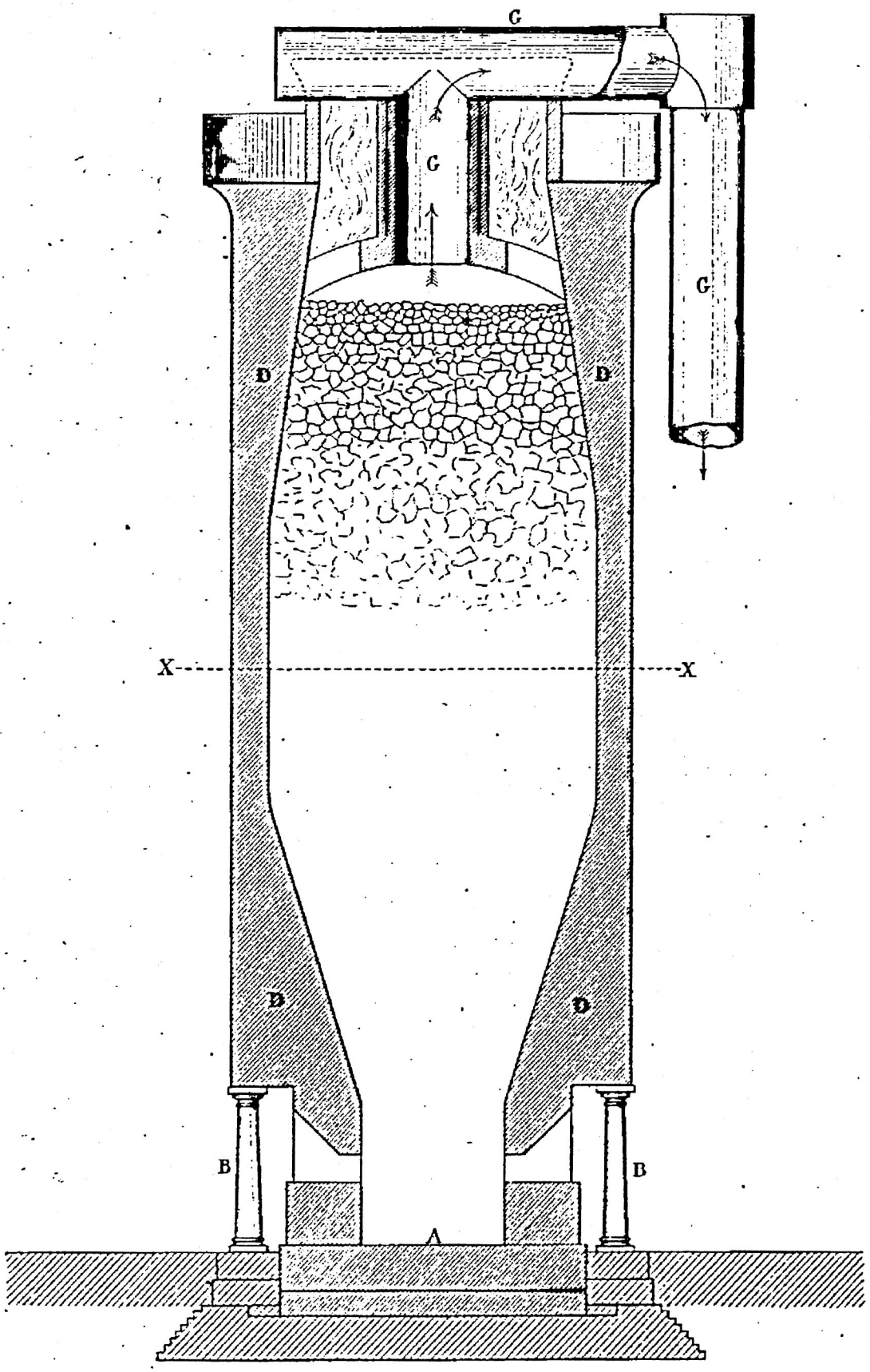
Fig. 1. *General Plan of Works.*



(Proceedings Inst. M.E. 1863. Page 225)

GROSMONT IRON WORKS. *Plate 62.*

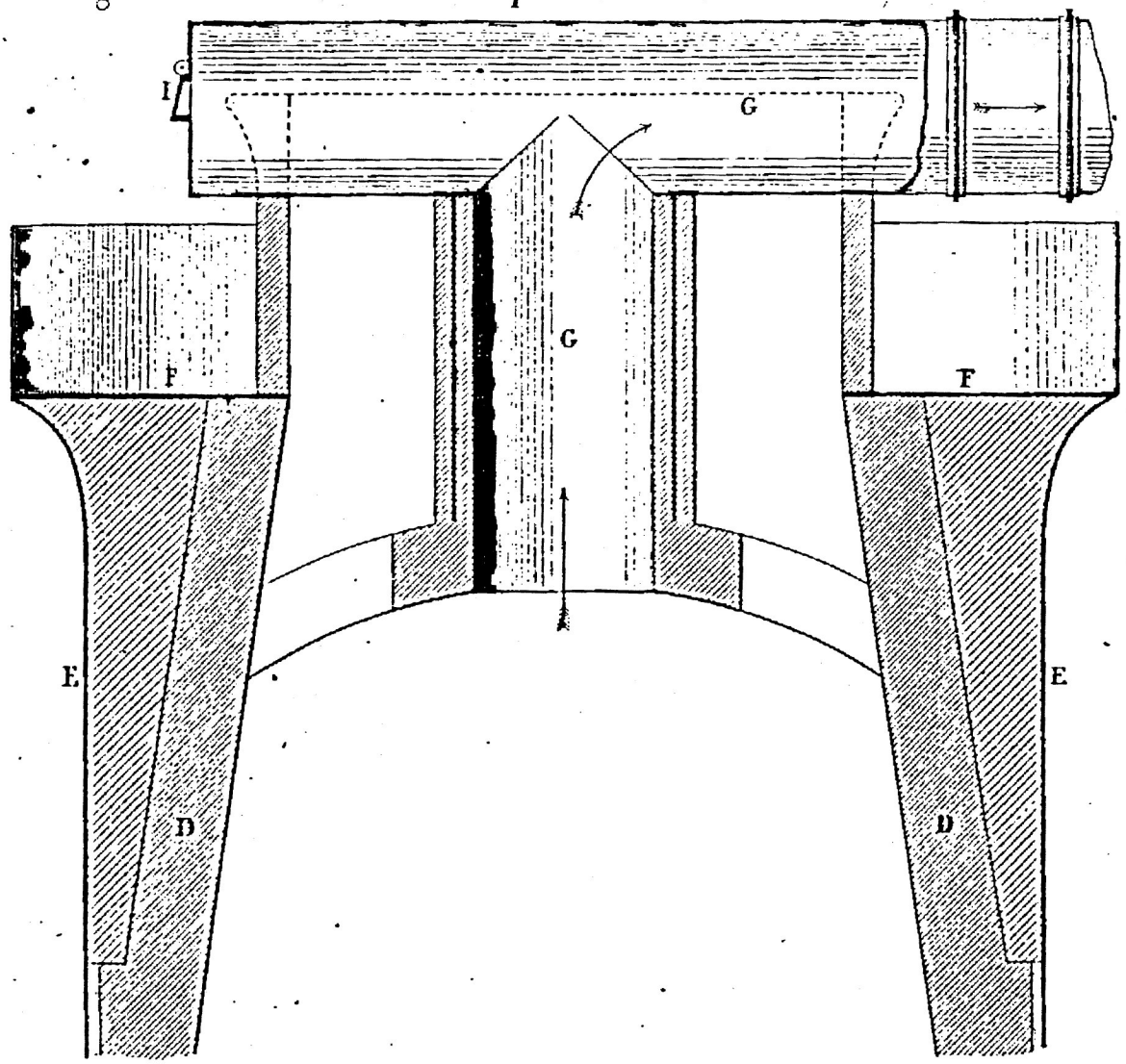
Fig 2. *Vertical Section of Blast Furnace.*

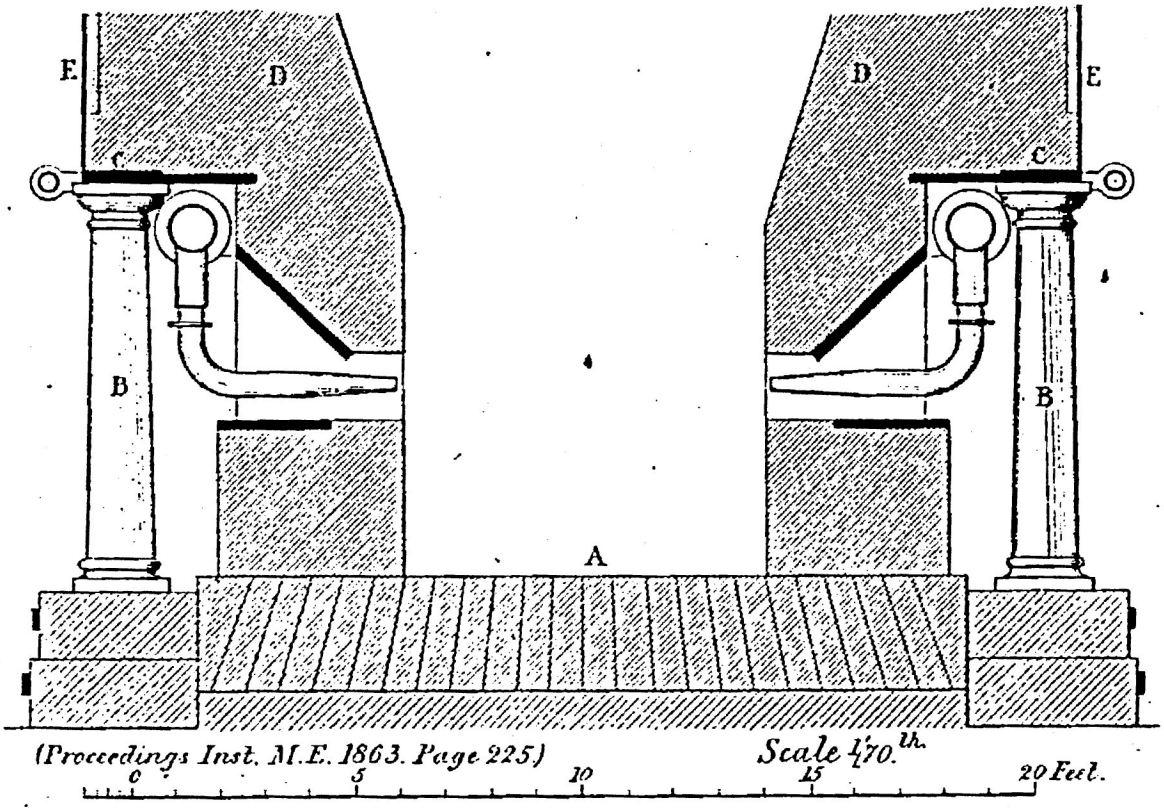


(Proceedings Inst. M.E. 1863. Page 225) *Scale 1/140th.*

0 10 20 30 40 Feet.

Fig. 3. *Vertical Section of top and bottom of Blast Furnace.*





(Proceedings Inst. M.E. 1863. Page 225)

Scale 1/70th.

0 5 10 15 20 Feet.

Transverse Sections of Blast Furnace.

Fig. 4. *At Tuyeres.*

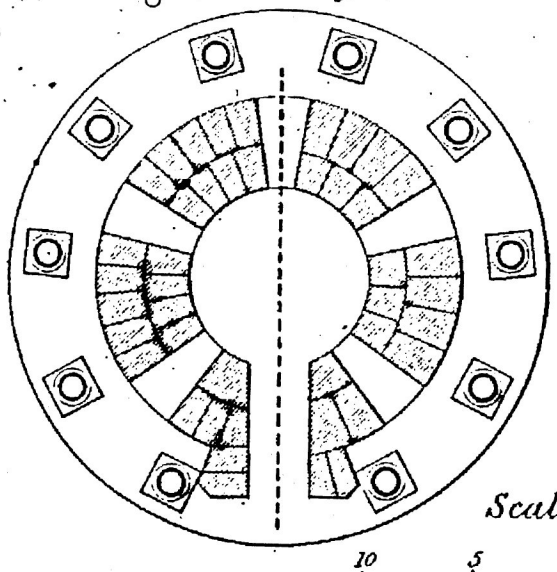
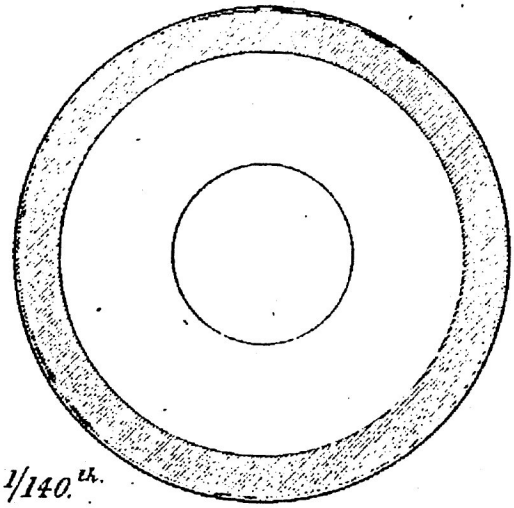


Fig. 8. *At XX (Fig. 2.)*



Scale 1/140th.

10 5 0 10 20 Feet.

Fig. 5. *At Tapping Hole.*

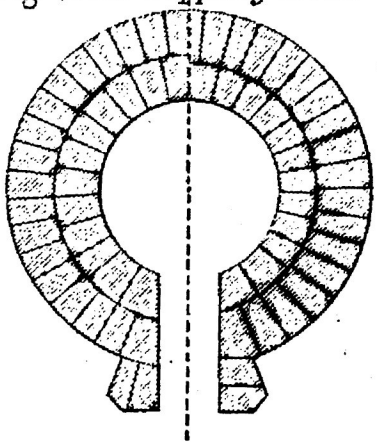


Fig. 9. *Longitudinal Section of Tuyere Pipe.*

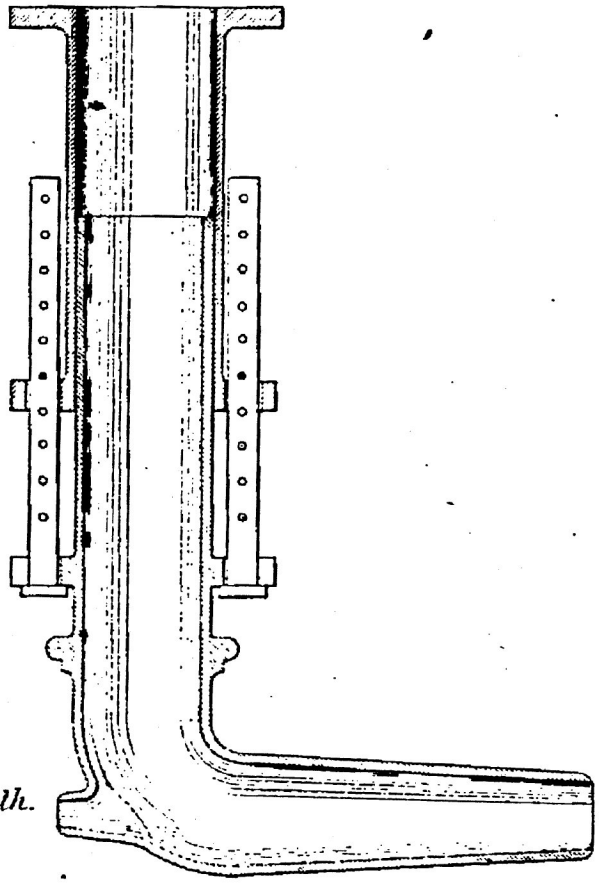


Fig. 6. *At Hearth.*

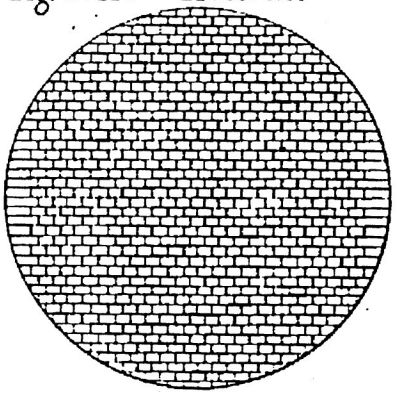
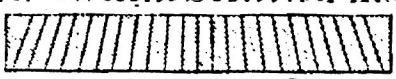


Fig. 7. *Vertical Section of Hearth.*



Scale 1/140th.

Scale 1/12th.

0 10 20 Inches.

(*Proceedings Inst. M.E. 1863. Page 225.*)

GROSMONT IRON WORKS. *Plate 65.*

Hot-Blast Stove.

Fig. 10.
Vertical Section.

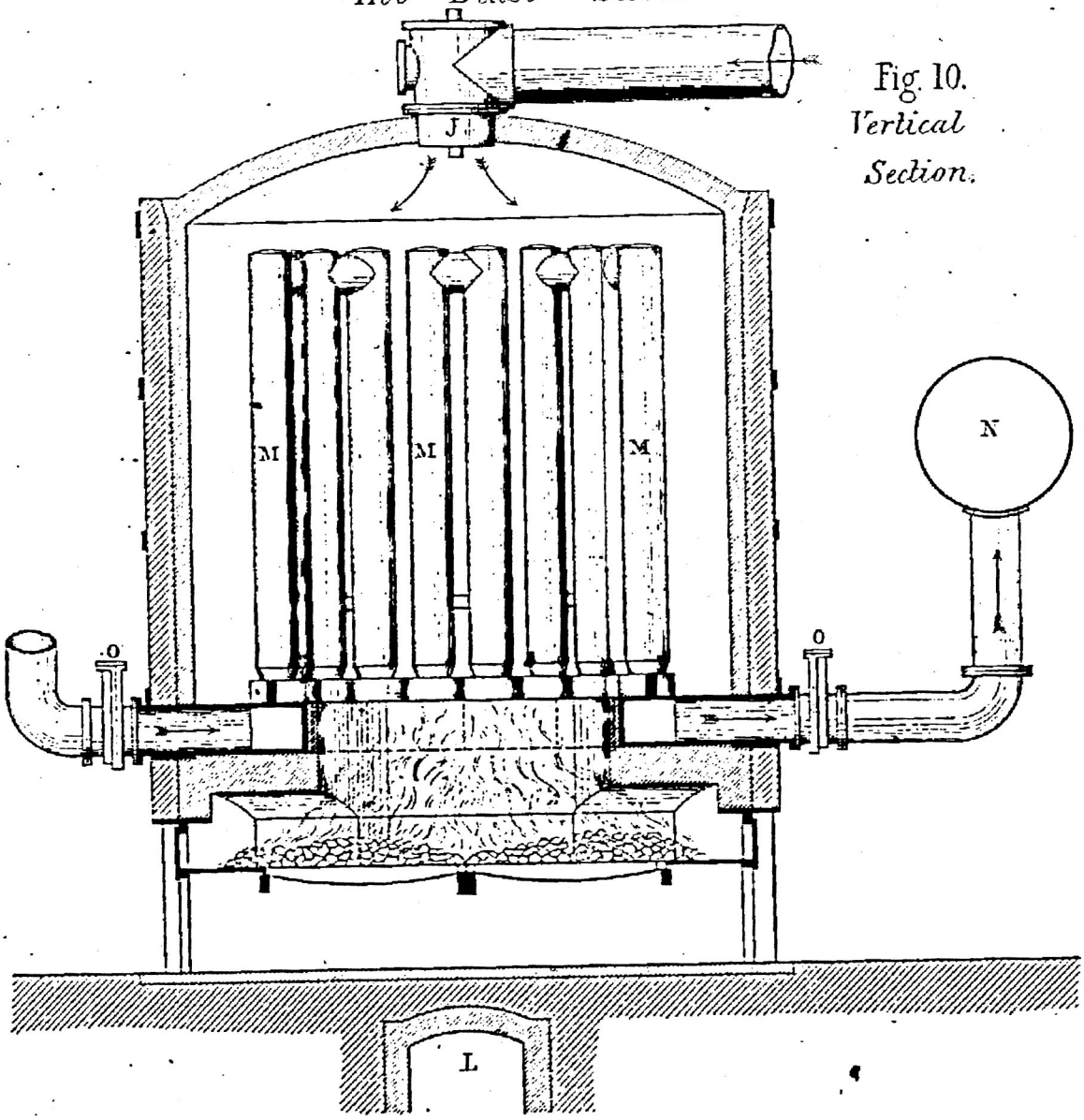
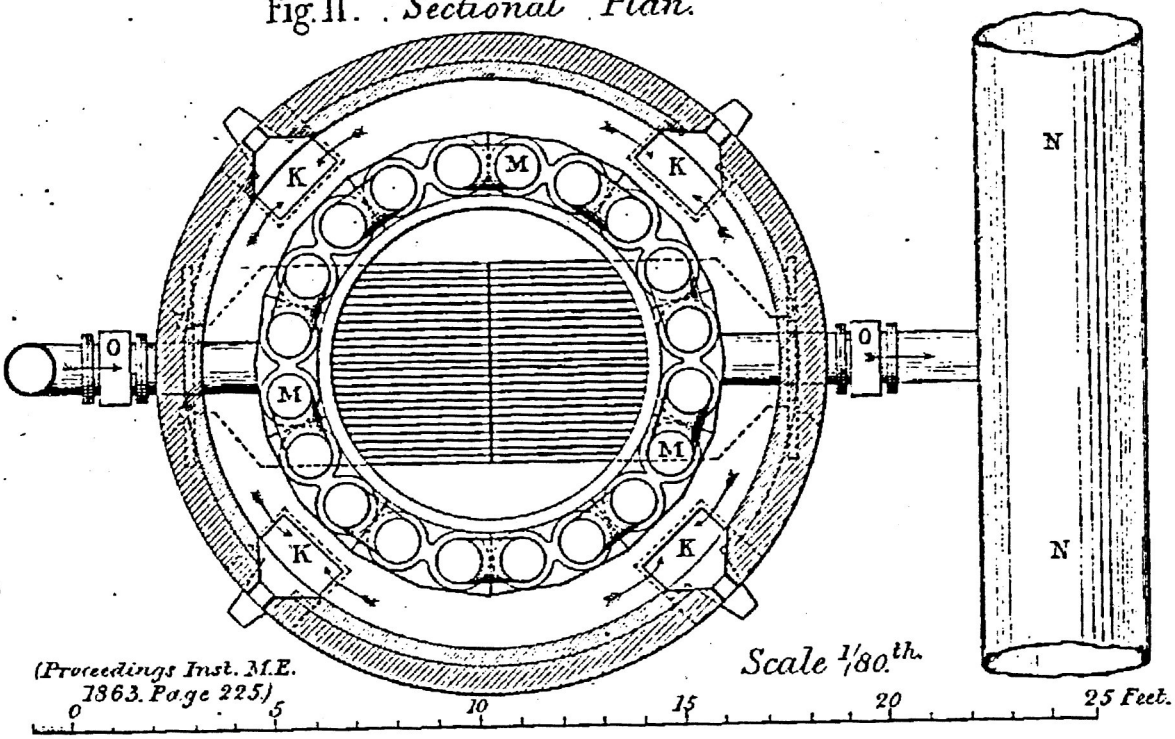


Fig. 11. *Sectional Plan.*

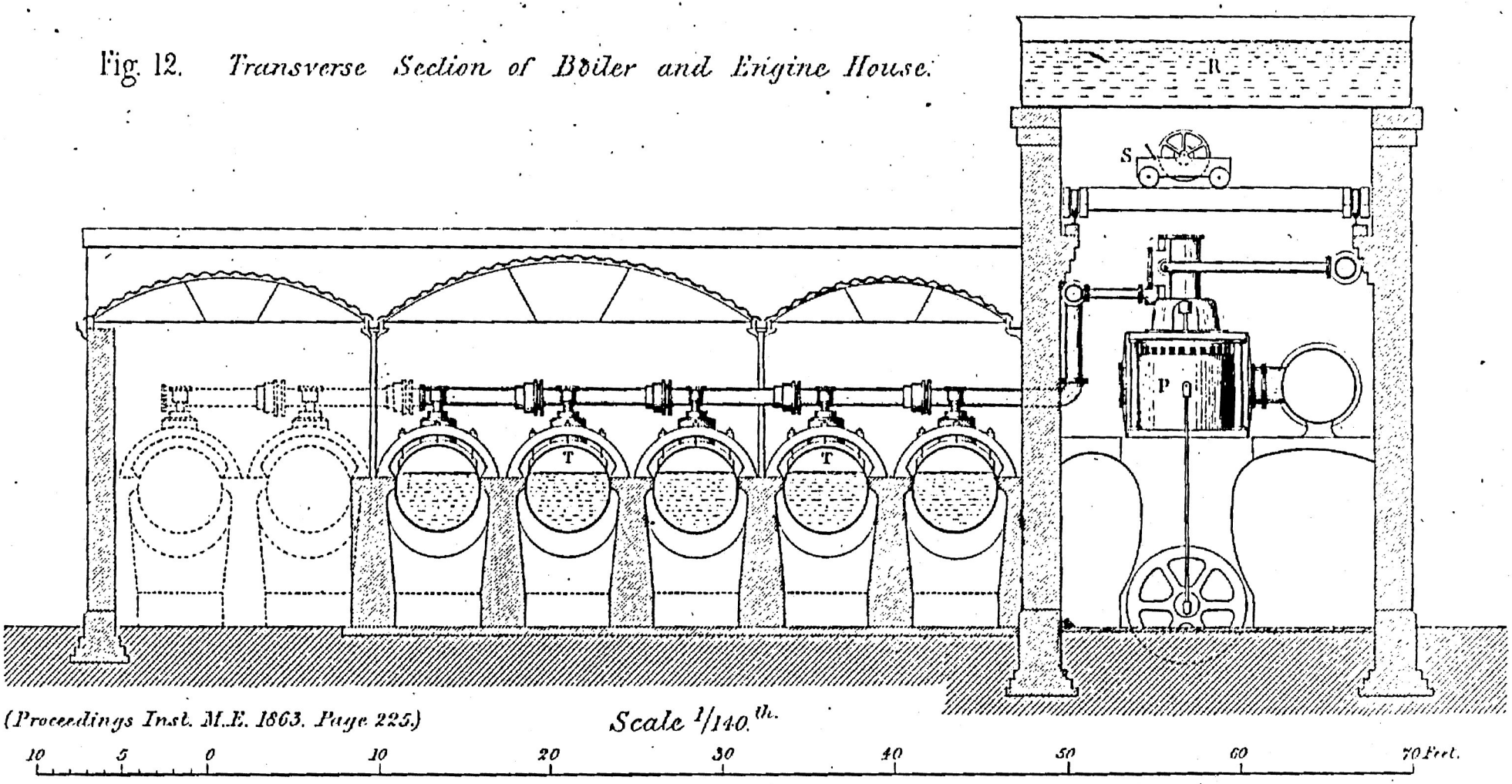


Scale 1/80th.

0 5 10 15 20 25 Feet.

(*Proceedings Inst. M.E. 1863. Page 225*)

Fig. 12. *Transverse Section of Boiler and Engine House.*



(Proceedings Inst. M.E. 1863. Page 225.)

Scale 1/140th.

10 5 0 10 20 30 40 50 60 70 Feet.

APPENDIX 3

APPENDIX 3: 1891 SALE NOTICE FOR GROSMONT IRONWORKS

FOR SALE – GROSMONT IRONWORKS

3rd November 1891. Three Blast Furnaces, Fixed Plant and Machinery, also 67 Cottages, 3 Villa Residences, Workmen's Institute, Offices, Butcher's Shop, etc.
The whole will be offered for sale by Public Auction in one lot, by Messrs Willman and Douglas, instructed by the Mortgagees at an Upset Price of £10,000, at the Board Room, Royal Exchange, Middlesbrough.
The Estate is freehold and comprises an area of 104 acres, 1 rood 4 perches with the mineral rights thererto.
The works are well situated and are supplied with ironstone brought direct from the mines in this and adjoining lands, into the works, the entrance being within 250 yards of the works etc.

FURNACES – There are 3 Blast Furnaces, each 80 feet high, two of which have a capacity of 15,000 cu. Ft and one of 16,300 cu. Ft. with the necessary hot and cold blast and gas mains and brick flues.

STOVES – There are 8 circular Pipe Stoves, 18' – 1" x 17'-6" for Nos 1 and 2 Furnaces and 4 Whitwell Stoves 29'-2" x 22' for no 3 Furnace.

FURNACE LIFT – The lift is worked by a double-acting winding engine, 12" Cylinder by 26" stroke with 9 ft diameter drum.

BLOWING ENGINES – There are 4 blowing engines comprising one Vertical Engine, 32" Steam Cylinder, 48" Stroke, 72" Blowing Cylinder and 3 Vertical Engines, each 21" Steam Cylinders, 36" Stroke, and 60" Blowing Cylinder.

PUMPING ENGINES. There is one 'Cameron' Pumping Engine , 20" Cylinder, 16" Stroke, and one Pumping Engine 7" Cylinder, 12" Stroke, and 2 'Cameron' double action pumps 7" cylinder and 6" stroke.

BOILERS. 5 Horizontal Boilers each 70' x 5' diameter also one 60' x 5' diameter, and one Lancashire Boiler 30' x 7'.

KILNS AND GANTRY. There are 2 Gjer's patent kilns 27' x 23', four brick kilns 33' x 24' square, these are capable of calcining 3,500 tons per week, 2 wooden Coke Hoppers, Gantry 380 feet long with Limestone and Coal Chutes, Steam Lift for Gantry, 32" Cylinder with feeding Donkey Engine, 2 ½ " ram. Brake drop with drum.

WEIGHING MACHINES. There are 2 Pooley's 20 ton Truck Weighing Machines and one Pooley's 2 ton Barrow Weighing Machines.

BUILDINGS. All are brick and slated except those mentioned otherwise and comprise: - Large Chimney Stack 180 feet high x 10 ft internal diameter, Blowing Engine House 67 ft x 20 ft with CI Tank overhead 5 feet deep, 2 Pumping Engine Houses each 13 ft x 12 ft, Pump House 15 ft x 9 ft. Lift Engine House 25 ft x 20ft. Weigh House and General and Oil Stores (under one roof) 52 ft x 12 ft, 2 Weigh Cabins, Locomotive Shed 32 ft x 26 ft, Small Engine House, Smiths Shop 50 ft x 26 ft with 4 hearths. Bolt Store 26 ft x 10 ft, Iron Store 24 ft by 14 ft, Fitting Shop 44 ft x 21 ft with Loft over, Chain, Steel and File Stores, Manager's Office, stone and slated.

RAILWAYS. These railways and sidings are complete in every respect.

OFFICES, COTTAGES, ETC. There is a well built Block of offices 44ft x 33ft with 4 principal rooms, lavatory, etc and 67 Workmen's Cottages, 3 Villa Residences, Workmen's Institute, Butcher's Shop and House and Farm Building.

FIXED PLANT IN MINES. There are about 65 tons of tram rails and turns etc in the mines underlying that part of the Grosmont estate now under cultivation.

(Source: Chapman 2002, 51-52).