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Bellmanpark Limekilns, Clitheroe, Lancashire: Assessment of Significance

Marcus Jecock

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BELLMANPARK LIMEKILNS CLITHEROE LANCASHIRE

Assessment of Signifcance

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SUMMARY

Historic England (then English Heritage) designated the disused limekilns at Bellmanpark Lime, Cement and Macadam Works, Clitheroe, Lancashire, as a scheduled monument in September 2004. The scheduling was in direct consequence of recommendations made by English Heritage's Monuments Protection Programme (MPP) Step reports on the Lime, Cement and Plaster Industries. The original scheduling description described the kilns as 'a rare example of a bank of railside lime kilns which provided access for railway wagons and still retain, surviving *in situ*, direct loading facilities from the kilns into the wagons'. The kilns were already disused and shrub-infested when scheduled, having reportedly been last fired in 1959. Since 2014, volunteers from the Clitheroe Civic Society have worked to clear much of the intervening half-century's invasive growth of trees and scrub with a view to opening the monument to public display. That action, however, highlighted the monument's deteriorating state of repair, leading to it being placed on the Heritage at Risk Register. This report summarises what is known of the history and operation of the kilns and of their structure and layout, and moves on to re-consider significance through a rapid literature and map review aimed at more accurately quantifying how common kiln banks of a similar design (*ie* built directly over railway spurs) once were in England, and how many examples still survive.

CONTRIBUTORS

Marcus Jecock (at the time the report was researched and first drafted in 2016, an Archaeological Investigator in the Assessment Team (North) within what was then Historic England's Research Group) undertook limited fieldwork and site photography; he also carried out all subsequent historical and cartographical research. Alun Bull, Historic England Photographer, conducted a formal photographic record of the site.

ACKNOWLEDGEMENTS

Historic England would like to thank Andrew Collinson and Peter del Strother, both of whom have generously shared the results of their own historical research and commented on earlier versions of this report.

ARCHIVE LOCATION

All photographs have been deposited in the Historic England Archive, The Engine House, Fire Fly Avenue, Swindon, SN2 2EH.

DATE OF ASSESSMENT

Field assessment was carried out on 6 January, 2016

CONTACT DETAILS

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INTRODUCTION

Historic England (then English Heritage) designated the disused limekilns (centred at SD 7586 4342) at the former Bellmanpark Lime, Cement and Macadam Works, Clitheroe, as a scheduled monument in September 2004 (https://historicengland.org.uk/listing/the- list/list-entry/1021105). The scheduling was in direct consequence of recommendations made by English Heritage's Monuments Protection Programme (MPP) Step reports on the Lime, Cement and Plaster Industries (Richardson & Trueman 1997; Trueman 2000; Chitty 2001a; 2001b) which investigated the history of the various industries based on chalk and limestone, identified the principal surviving remains at a sample of 266 sites, and sought to establish which of those were nationally significant and how that significance was best recognised and protected through formal designation. The original scheduling description for the Bellmanpark limekilns described them as 'a *rare* [author's emphasis] example of a bank of railside lime kilns which provided access for railway wagons and still retain, surviving *in situ*, direct loading facilities from the kilns into the wagons'.

The kilns were already disused and shrub-infested when scheduled, having reportedly last been fired in 1959. Since 2014, volunteers from the Clitheroe Civic Society have worked to clear much of the intervening half-century's invasive growth of trees and scrub with a view to opening the monument to public display. That action, however, highlighted the monument's deteriorating state of repair, leading to it being placed on the Heritage at Risk Register (English Heritage 2014, 65). In order first to assess and then to monitor the kilns' condition, early in 2015 Historic England commissioned a structural condition survey, comprising a 3D laser scan of the external elevations and written assessment (Curtins 2015). This was followed by a second 3D laser scan in December 2015 carried out by Historic England's in-house Geospatial Imaging Team to check for ongoing movement within the structure.

In addition, a report was researched and compiled in early 2016 by Historic England's Assessment Team North, based in York, at the request of Cathy Tuck, the then Heritage at Risk Project Officer in Historic England's Planning Group in the North-West. The purpose of that report was to deliver a fuller understanding of the historical significance of the limekilns so that informed decisions might be taken about their long-term conservation and possible eventual public display, based on a more detailed and nuanced analysis of importance and rarity than that contained in the earlier MPP reports. That report (Jecock 2016) was intended to inform the incipient discussions around conservation and had limited circulation only. Following detailed discussion, Historic England awarded a Repair Grant for Heritage at Risk in Winter 2018 with match funding from Hanson Cement, the current site owners. Following a period of project development to inform repair needs, a programme of repair and consolidation is now underway. Accordingly, the 2016 report can now be published.

The report summarises what is known of the history and operation of the kilns plus their structure and layout, and moves on to consider how common kiln banks of a similar design (*ie* built directly over railway spurs) once were in England and how many examples still survive. The latter assessment is based entirely on a rapid review of readily available literature and historic Ordnance Survey (OS) map evidence.

In the limited time available in 2016, it was not possible to examine maps of every 19th- and 20th-century commercial lime works that operated in England, merely a selection of those which published sources suggested were likely to have surviving structural remains and/or lie adjacent to rail lines. In addition, no fieldwork was undertaken to check on the present form or degree of survival of identified parallels, although a rapid search of on-line resources (including Google Earth) suggested all direct parallels bar two have either been demolished or are ruinous.

SITE HISTORY

According to Peter del Strother (2008, 30), James Carter and William Rowe opened Bellmanpark Lime Works in 1869. However, documentary evidence suggests the partners already had the lease of nearby Peach Quarry and may have been operating Bellmanpark Quarry as early as 1867. If so, lime at this time was probably burned at Peach because there is no evidence for kilns within the Bellmanpark quarry itself (Andrew Collinson, *in litt*). The latter quarry lay some 0.8km south of the then terminus of the Bolton, Blackburn, Clitheroe and West Yorkshire Railway (BBCWYR) at Chatburn. The BBCWYR had intended the line to extend as far as Long Preston in the West Riding and link with the West Yorkshire Railway (WYR), but due to financial difficulties eastwards progress had halted in 1850 at Chatburn. In 1859, the line was acquired by the Lancashire & Yorkshire Railway who, in 1871, gained fresh parliamentary approval to extend the line to join the WYR, but this time at Hellifield over a slightly altered route. Construction of the extension started in 1876, and the new line opened in 1880 (Holt 1978, 195-9). It may have been in anticipation of the completion of the line that in 1877 Carter and Rowe erected new limekilns at sidings adjacent to the railway and constructed an elevated tramway to convey stone from Bellmanpark down to them (del Strother 2008, 30). Alternatively, and perhaps more likely, the timing of the kilns' construction may be interpreted as a sign that the partners were investing in the business in order to maintain and improve profitability: surviving accounts indicate that Carter and Rowe's customer base lay mostly in Lancashire, not Yorkshire.

The new kilns may well have been intended to replace existing kilns inconveniently situated within Peach Quarry (Andrew Collinson, *in litt*). Field evidence (Figure 1) indicates that initially a block of only three kilns was erected and that the fourth (westernmost) kiln is a later addition; map evidence, however, shows all four existed by 1886 (Ordnance Survey 1886). Carter and Rowe also erected a cement kiln near the limekilns. Their partnership was dissolved a short while afterwards in 1879. Thereafter the firm of Carter & Sons worked the limekilns until 1959, while Rowe worked the cement kiln. Rowe died in 1883 but cement production continued, the works being auctioned as a going concern in 1889 when bought by a Mr Smalley. In 1892 the cement operation was incorporated as The Clitheroe Portland Cement Company. That company was dissolved in 1931/2 (Collinson *in litt*). The layout of the works is probably best appreciated on the OS map edition of 1912 (Figure 2).

Fig 1. Construction join in northern elevation of the Bellmanpark kilns, showing that the western kiln (right of frame) is a later addition. (AF00393027 © Historic England / Marcus Jecock, 6 January 2016)

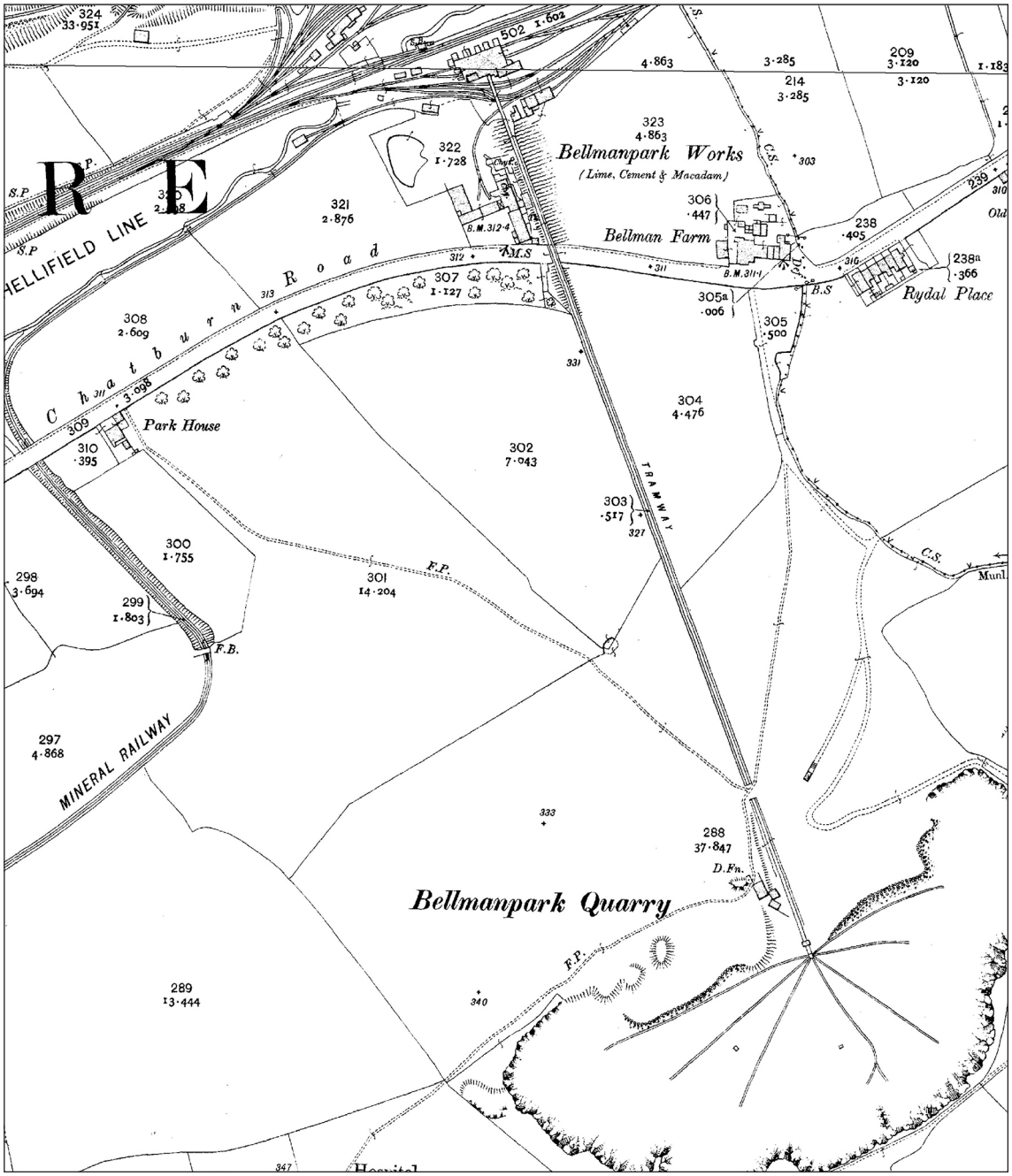

Fig 2. Bellmanpark Lime, Cement & Macadam Works in the early years of the 20th century. The limekiln block is the unnamed building with buttresses against its northern wall at top centre of the map. The depiction of five buttresses on this and indeed the original map edition of 1886 shows that all four kilns existed by that early date. The location of William Rowe's cement kiln is uncertain, but was probably within the complex of buildings shown west of the northern end of the tramway embankment. (Reproduced from the 1912 Ordnance Survey 25-inch map, © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

DESCRIPTION

Although many different designs of industrial limekiln were patented in the later 19th century (*eg* Johnson 2010, 66-87), the most common type built was the simple mixed-feed draw kiln, in which both limestone and fuel (coke or coal) were burned in contact with each other in constant or near-constant production. This made the process more fuel-efficient as the kiln did not have to be heated from cold after each firing. The limestone and fuel were continuously fed (in alternate layers) into the open top of the conical kiln chamber (or pot), and burned lime (quicklime) taken out at the base through one or more draw holes or eyes - the latter often situated below a grate of iron bars at the end of a large arched, recessed opening at the base of the kiln, known as a draw arch. The arch was normally high enough for a man to stand up in or for a horse and cart or rail wagon to access, to provide shelter from the weather during discharging of the kiln. (Quicklime reacts violently with water to produce slaked lime, generating large quantities of heat in the process, and is therefore best protected from rain). There was often a poking hole above the draw hole through which the charge could be agitated if needed to prevent burned lime from clogging in the pot. Separate-feed (also known as flare) kilns, where the fire was external to the pot, produced quicklime free of ash, but could only be fired once before having to be discharged, or in the case of later designs capable of continuous production such as Hoffman kilns, were more expensive to build and maintain. Typical cross-sections through a draw kiln showing and naming the main constituent parts are reproduced in all the principal archaeological publications on lime-burning (*eg* Williams 1989, 18; Johnson 2010, 59).

The Bellmanpark kiln block comprises four pots, arranged in-line roughly east to west, all raised above two parallel rail spurs carried in tunnels that lie beneath and slightly to either side of the pots. The kilns will here be numbered 1 to 4, starting in the east; kiln no. 4 is later than nos. 1-3, but nevertheless dates to within a decade of their construction (see Site History, above). Each tunnel intersects with four draw arches built into the north and south sides of the kiln block, meaning that each pot has two draw holes, one facing into each tunnel (Figure 3). In 2016 when inspected in the field, the southern draw arches were completely (kilns nos. 2-4) or mostly (kiln no. 1) blocked by dumped spoil (cover photo), but the northern arches were open, albeit collapsing; the exception was that serving kiln no. 4 (Figure 1) which was already almost completely obscured by collapse of the pot into it.

The derelict and collapsing state of the tunnels in 2016, in particular the draw arches, meant it was too dangerous to make a detailed inspection or record of the draw-hole furniture. In addition there was at the time no safe means of access to the top of the kiln block. Nevertheless, enough evidence was visible to show that the block comprises four mixed-feed draw kilns, and that much of the discharge apparatus survived *in situ*, comprising iron-framed draw holes and elements of timber chutes for direct loading of the quicklime into rail wagons within the tunnels (Figure 3). A published photograph suggests the chutes survived relatively intact until recently (del Strother 2008, 26 photo upper right) although in 2016 they were deteriorating rapidly. A number of timbers that extend out from close to the top of the eastern end wall of the block (cover photo) are of unknown purpose, but may be to do with the

Fig 3. The collapsing northern draw arch to kiln 1, showing its intersection with the northern rail tunnel and the draw-hole furniture. (Photograph: DP169500 ©Historic England / Alun Bull, 24 February 2016).

raising of coke or coal from rail wagons to load into the kiln pots. Crushed limestone arrived directly from the quarry to the south *via* an embanked tramway (Figure 2), the last 30m or so before the kilns carried on a trestle bridge (*ibid*, 26 photo bottom); the northern abutment for this bridge, capped by a massive limestone bearing block, is visible just off-centre in the south wall (Figure 4). Other ruinous structures built up against the south wall of the block are of unknown purpose, but the historic photographic evidence shows they included a chimney standing immediately east of the trestle bridge. This points to the presence of an engine house, probably to power the tramway which is recorded as driven by an endless chain (*ibid*, 30). However, the existence of at least two cast-iron wall boxes plus other apertures including one, partly brick-lined, with two bolts screwed into its timber base towards the west end of the kiln block (Figure 4), indicate that the engine also powered other machinery, as indeed is suggested by the historic photograph.

Fig 4. Bellmanpark kiln block from the south. Note the bridge abutment with its massive stone bearing block just right of centre of frame, and the various wall boxes and apertures towards the west end of the block (above and right of the off-centre stone projection). (Photograph: DP169492 © Historic England / Alun Bull, 24 February 2016).

PARALLELS

The search for parallels for the Bellmanpark bank of limekilns was pursued on two fronts:

• a trawl of the readily available literature, both published and unpublished, including datasets held by Historic England such as the Monuments Protection Programme volumes on the lime industry and their associated archive, the National Heritage List for England (NHLE), Images of England, *etc*; and

• search of historic OS maps (chiefly pre-1945 'County Series' editions) available online through the Historic England webGIS database, for examples of limekilns the bases of which are depicted as approached directly by rail spurs (*ie* the kilns appear to overlie the tracks).

Use of map evidence in this way is complicated and not without difficulty. The database has incomplete coverage of some map editions, particularly in remote areas. Many quarries are located in upland areas where the basic (*ie* largest) scale of historic OS mapping is only 1:10560; at this small scale, individual buildings and features are generalised or omitted, and if depicted at all are normally unnamed. Upland maps in particular were also not revised on as regular a basis as lowland areas where basic-scale mapping was at scales of 1:2500 and larger. Furthermore, the OS did not always publish the rock type exploited at quarry sites, and even where limeworks were both mapped and named at 1:2500 scale, did not consistently label kilns within them. It can therefore be unclear what the function of a depicted structure or building is, judged purely from the map evidence. Such would be the case at Bellmanpark if we did not have the surviving physical remains, for the kiln block is unnamed on OS maps (Figure 2).

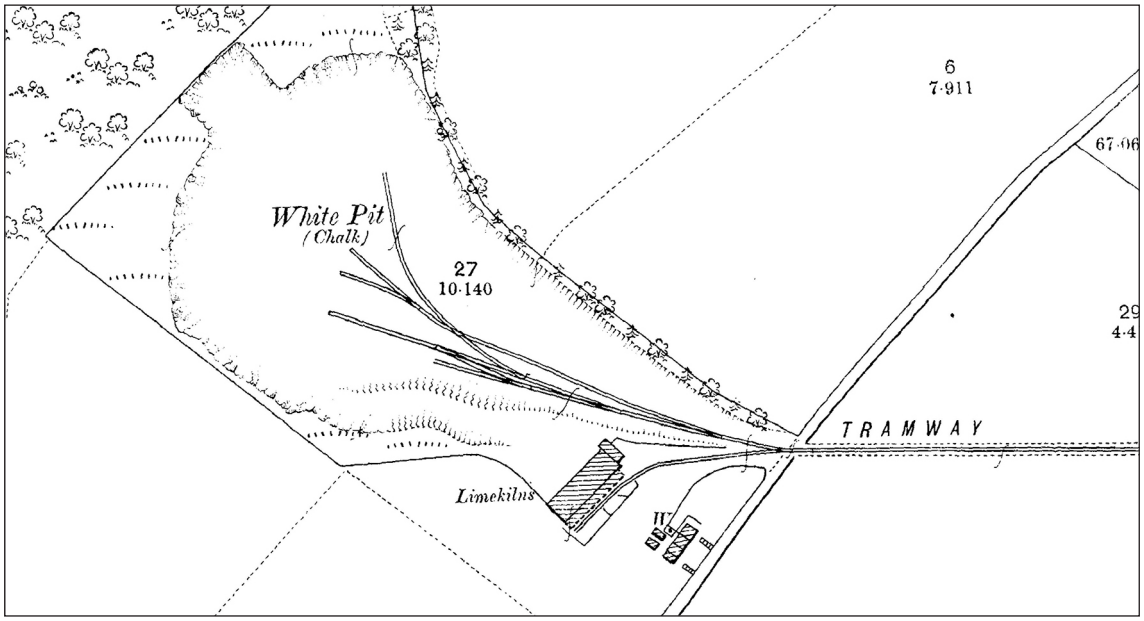

Fig 5. Part of Clinkham Lime Works, Kent, towards the end of the 19th century. Note how the rail spur runs parallel to and in front of the kilns (bottom centre). (Reproduced from the 1896 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

Even where kilns are named or can otherwise be identified with some confidence from their depiction (one or more circles, often inside a square or rectangle, representing in plan form the open tops of draw kilns arranged as singletons or massed together in banks), careful analysis of the topography of the site (as portrayed by hachuring) is essential to determine if the depicted tracks approach the top of the structure (for delivery and loading of raw materials into the kiln) or its base (for taking away quicklime).

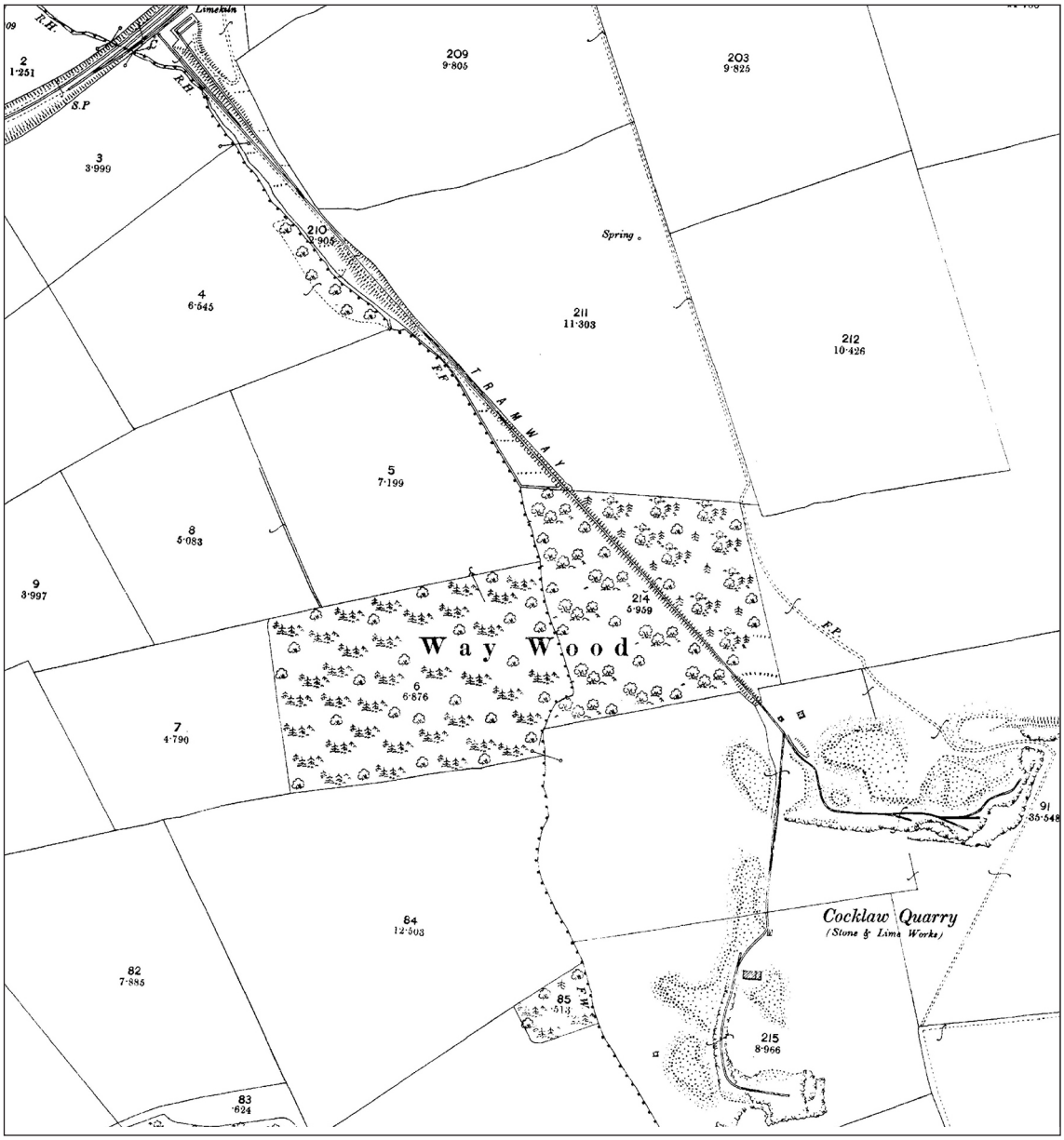

Fig 6. Cocklaw Quarry, Northumberland, as depicted in 1896. The general set-up is very similar to Bellmanpark, with the limekilns located adjacent to the railway (top left) and limestone brought down to them from the quarry above via a tramway. But note, unlike Bellmanpark, the rail spur runs parallel and adjacent to the kilns' draw holes, not beneath. (Reproduced from the 1896 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

The 2016 exercise suggested that although limekilns designed to be unloaded directly in to rail wagons seem to have been constructed quite widely across England in the late 19th and early decades of the 20th century, the most common arrangement was for a rail spur to run parallel to the kilns' draw arches. Sometimes it appears that the lime was unloaded into the wagons in the open air as, apparently, at Clinkam Lime Works, Halling, Kent (Figure 5), Cocklaw Quarry, Wall, Northumberland (Figures 6 and 7) and Cowdale Lime Works, High Peak, Derbyshire (Figure 8), although it is possible that insubstantial and impermanent constructions, such as timber-framed awnings, that do not now survive at these sites were not portrayed on the maps because they did not satisfy the OS's rules of depiction. It is unclear if the Clinkham kilns still stand: they were depicted as disused on the 2016 version of OS MasterMap but were not visible on Google Earth imagery (albeit the quarry is overgrown in trees). At Cocklaw and Cowdale, however, the kilns survive in good condition and are listed at Grade II (Cocklaw: NHLE 1042985) or scheduled (Cowdale: NHLE: 1399726); a number of recent photographs showing the general form and surviving layout of the Cowdale kilns are available online (Kitching 2021a)

Elsewhere rail spurs were definitely provided with roofed cover, as at Bold Venture Lime Works at Chatburn, Lancashire, located immediately opposite Bellmanpark Works, where map evidence shows the spur ran beneath some kind of open-fronted 'shed' (Figure 9), or at Marsden Lime Works, South Tyneside (Figure 10), where the wagons were loaded through holes in a raised concrete platform that extended out in front of the kilns and over the sidings. The Bold Venture kilns

Fig 7. The Grade II-listed Cocklaw limekiln bank from the west. (© Mr Michael Morrison. Source Historic England, IoE No: 240101 Film: 08039 Image: 16).

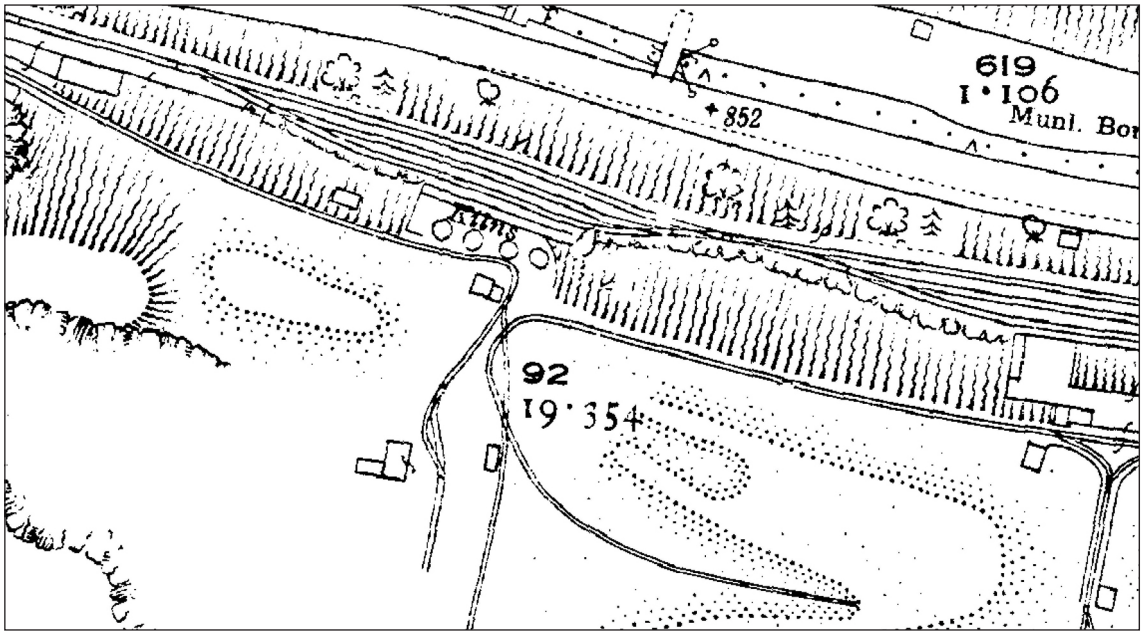

Fig 8. Limekilns at Cowdale Lime Works, Derbyshire, just after the First World War. Note how the rail spur runs parallel to and just in front of the kilns. (Reproduced from the 1922 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

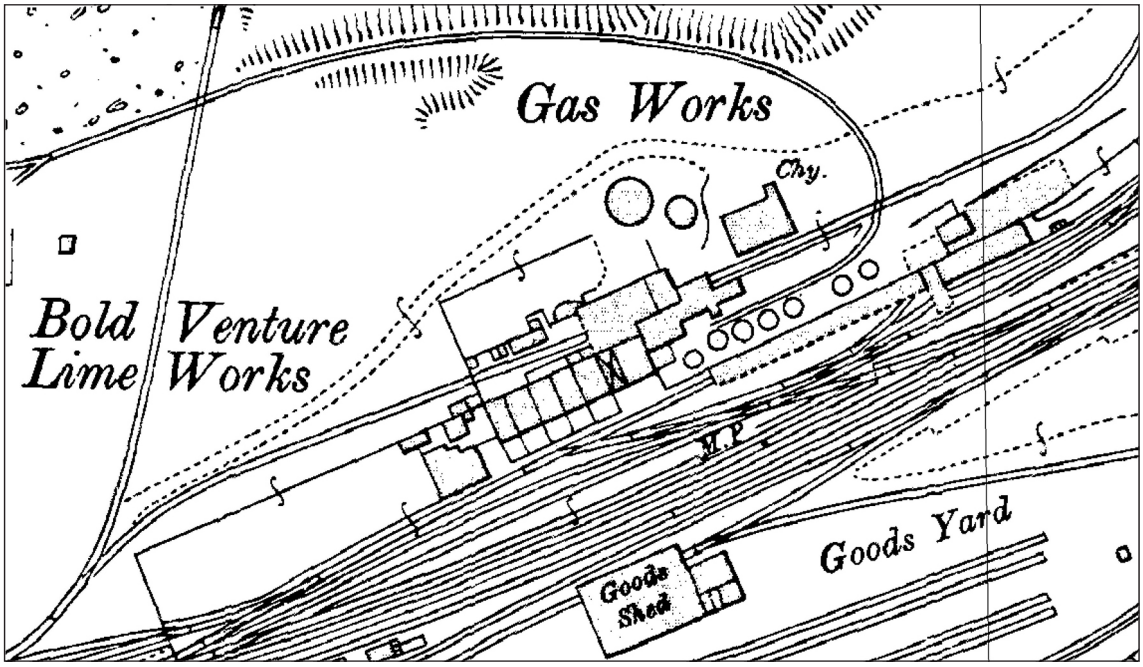

Fig 9. Bold Venture Lime Works, Lancashire, in the early 20th century. Although unnamed, the limekilns are the open circles just right of middle of frame. A rail spur disappears beneath an open-fronted, roofed, structure attached to their southern side. Reproduced from the 1912 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

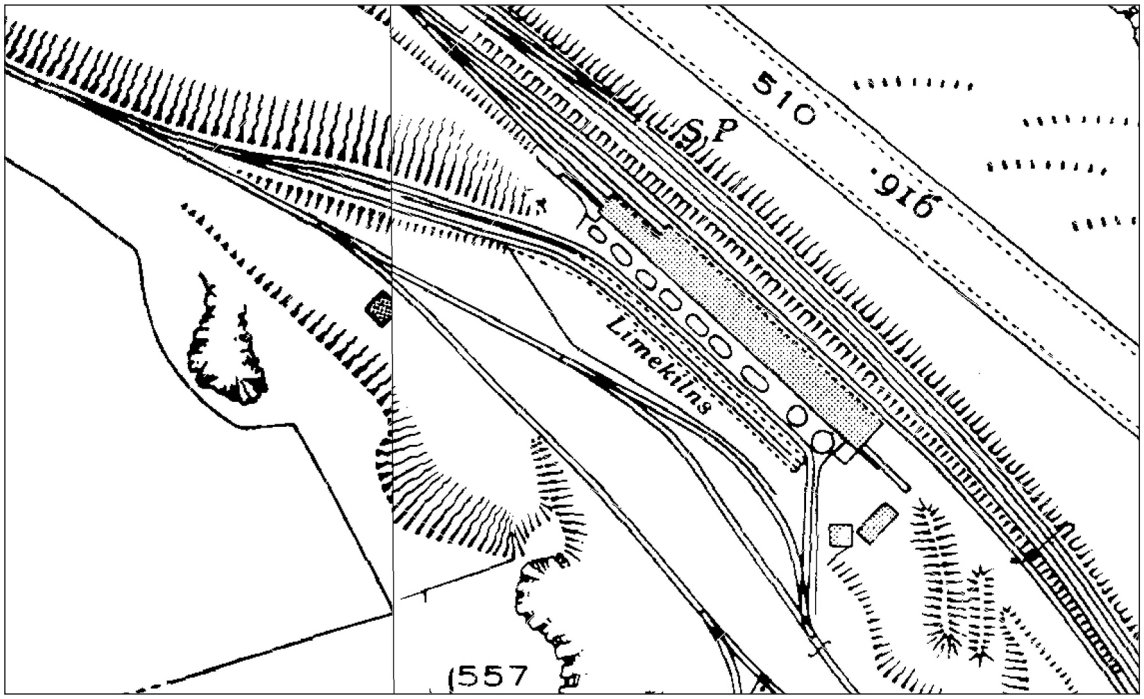

Fig 10. Marsden Limekilns, South Tyneside, in the mid-20th century. The shaded area is a concrete platform built in front of the kilns and out over the rail spur. The rail wagons were loaded through holes in the platform. (Reproduced from the 1942 Ordnance Survey 25-inch map; © and database right 2021. All rights reserved. Ordnance Survey Licence number 100024900).

were demolished before 1973 (Ordnance Survey 1973a); the Marsden kilns were already scheduled when appraised by MPP in the late 1990s (Chitty 2001b, Tyne & Wear no. 3; NHLE 1005911). A project to conserve them has recently been agreed between Historic England and the quarry owners, the Owen Pugh Group (The Northern Echo 2016).

At a smaller number of lime works, however, rail spurs approached the kilns at 90 degrees and terminated under the cover of the draw arch, or inside a short vaulted passage between adjacent kilns which were drawn from either side of the passage. In such cases of 'covered loading', the kilns were often arranged in a single row or array, resulting on the ground in a pattern of short, parallel sidings similar to the fingers of a glove. Just such arrangements are suggested on map evidence at a number of sites including, Astbury Lime Works, Cheshire (Figure 11); Bullbridge Lime Works, Derbyshire (Figure 12); Middlepeak Quarries, Wirksworth, Derbyshire (Figure 13); Perseverance Works and Bold Venture Works, both in Peak Dale, Derbyshire (Figures 14 and 15); and Foresthead Limekilns, Brampton, Cumbria (Figure 16). Of the examples given, most appear no longer to survive or are ruinous: the Astbury kilns were demolished in the 1960s (Kitching 2021b); the Bullbridge kilns were already in poor condition when assessed by MPP in the 1990s (Chitty 2001b, Derbyshire no. 23; see also photographs at Kitching 2021c); nothing of the Middlepeak and Bold Venture kilns is visible on Google Earth imagery, and historic map evidence (Ordnance Survey 1968; 1973b) indicates they

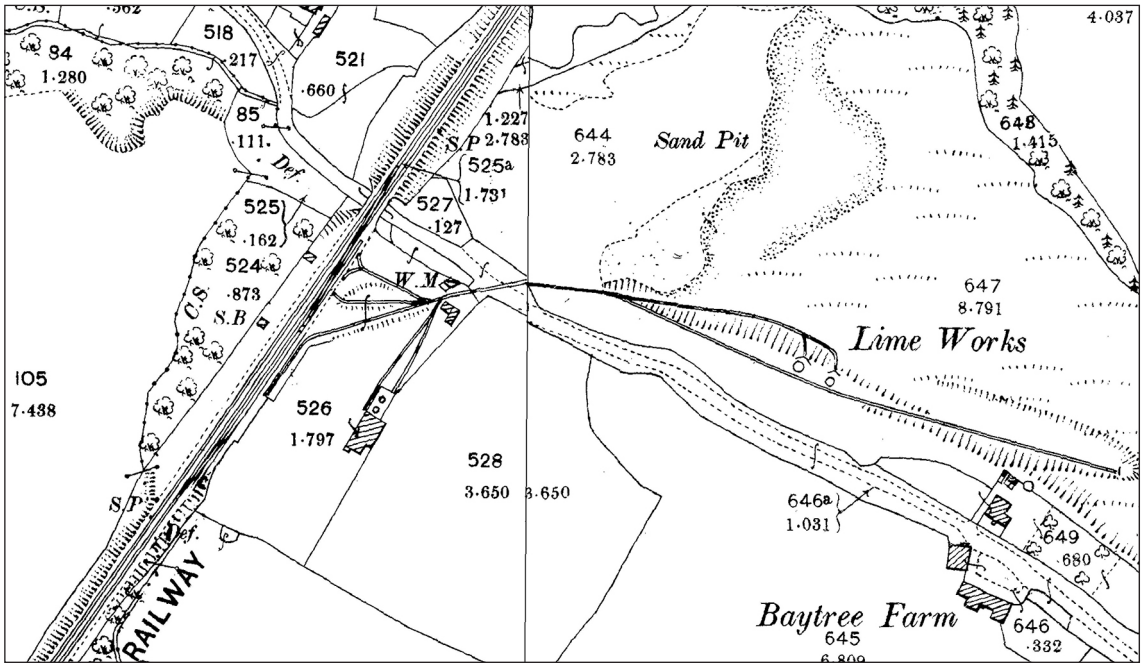

Fig 11. Two unnamed limekilns depicted as open circles (middle right) at Astbury Lime Works, Cheshire, as mapped in the late 19th century. Note the rail spurs are shown leading to their north-eastern (downhill) faces and therefore most probably terminate inside the draw arches. (Reproduced from the 1898 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

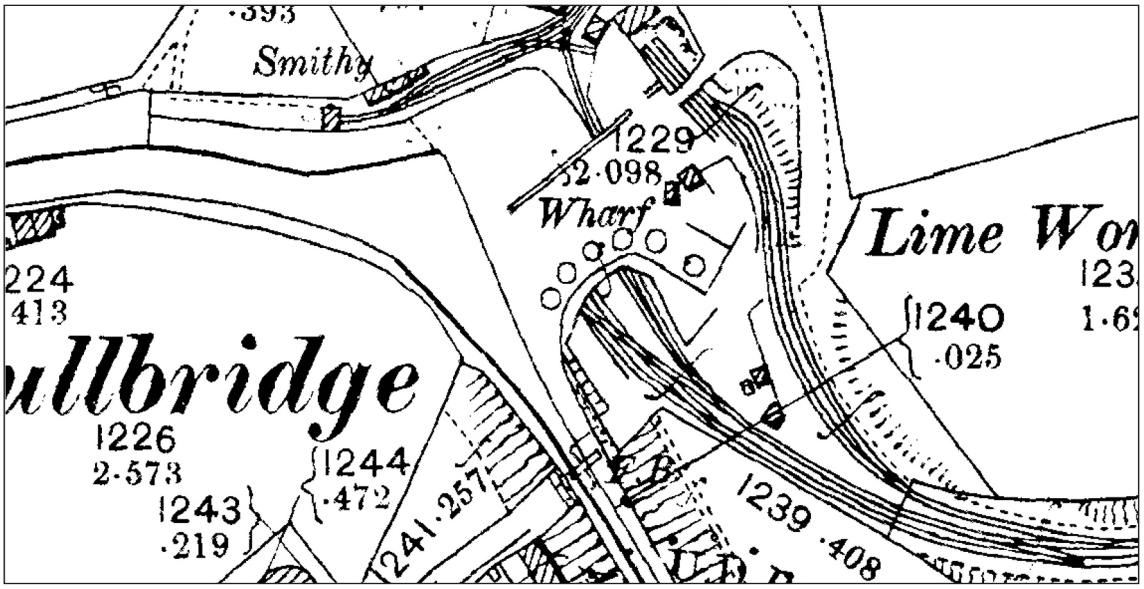

Fig 12. Limekilns at Bullbridge Lime Works, Derbyshire, as depicted at the turn of the 20th century. The exact arrangement for discharging the kilns here is unclear, but it is likely that each rail spur serviced the kilns to either side of it; the sixth (easternmost) kiln seems to have had no direct rail connection. (Reproduced from the 1900 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

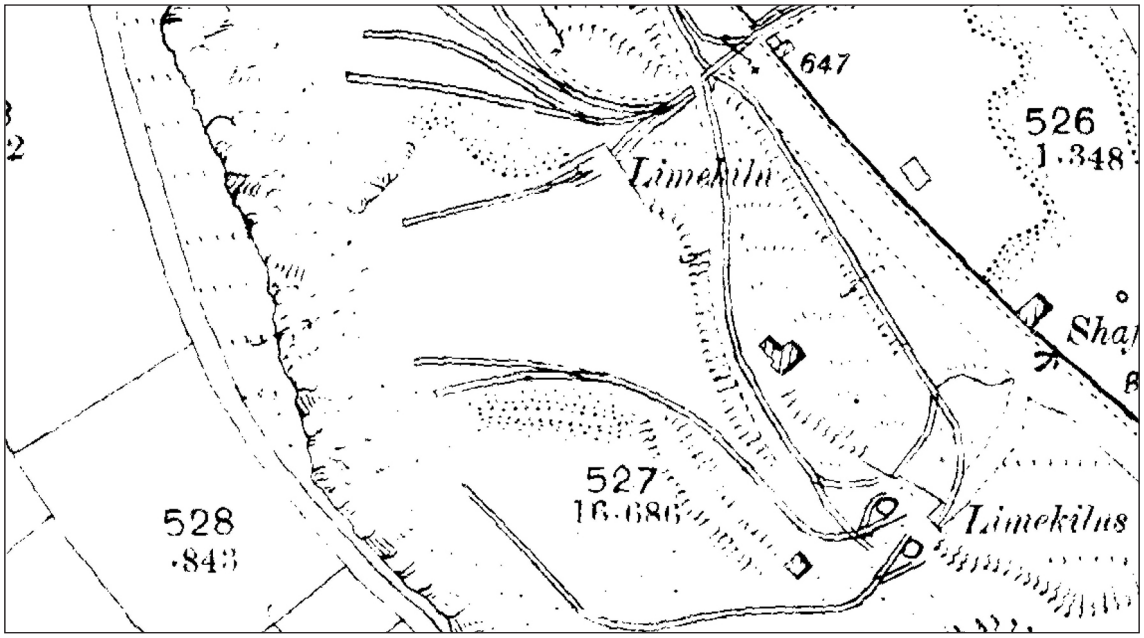

Fig 13. Three limekilns at Middlepeak Quarries, Derbyshire, as mapped towards the end of the 19th century. Rail spurs abut the north-eastern (downhill) face of each, and therefore most probably terminated inside the respective draw arches. (Reproduced from the 1899 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

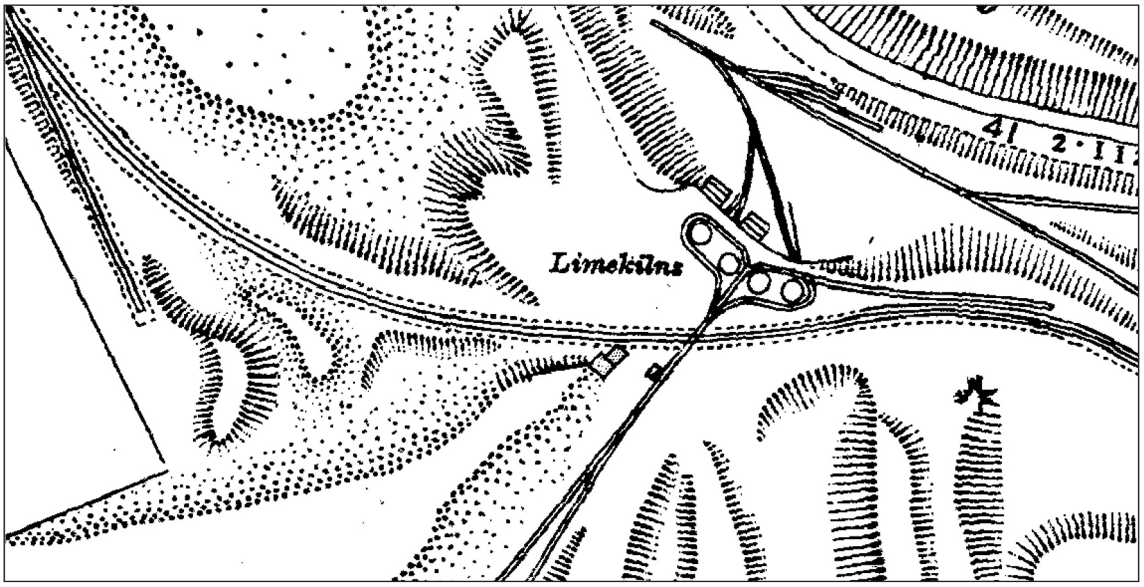

Fig 14. Limekilns at the Perseverance Works, Derbyshire. This map shows the kilns as they were just after the First World War, but they had existed in very much the same form since at least the 1880s. The map suggests the spurs approaching from the north each serviced two kilns, the draw holes of which therefore presumably faced each other across a common passage between the kilns. A separate line brought limestone from the quarry face to be loaded into the kiln tops. (Reproduced from the 1921 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

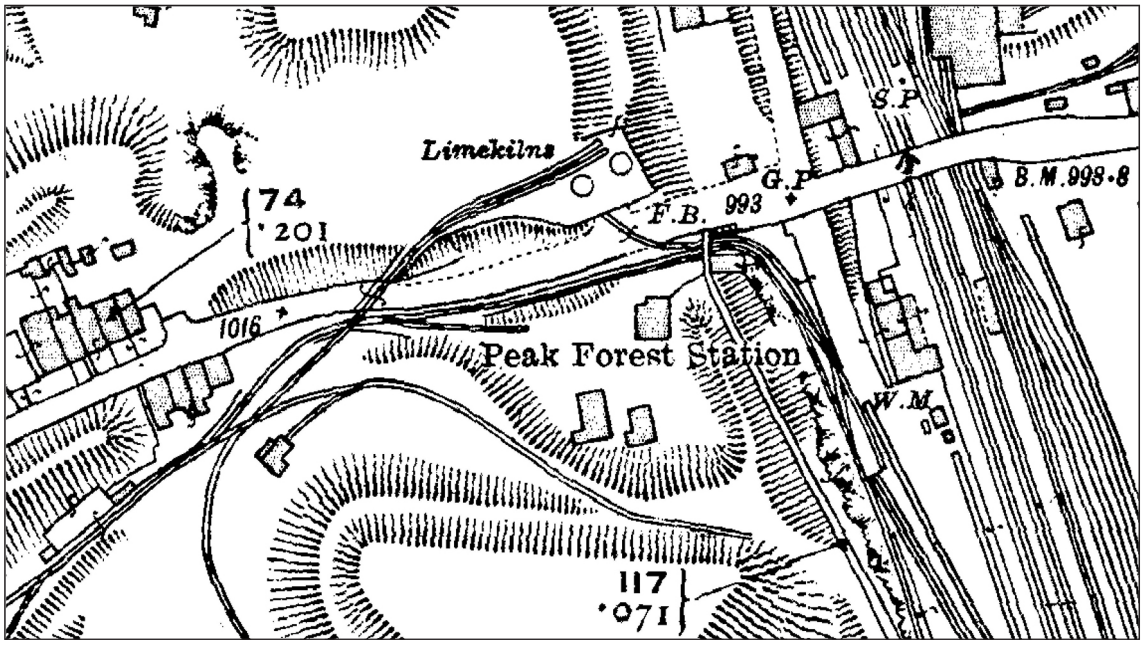

Fig 15. Two limekilns at the Bold Venture Works, Derbyshire, as depicted just after the First World War. They probably emptied directly into rail wagons from draw holes either side of a common passage that passed between the kilns from the south. (Reproduced from the 1921 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024)

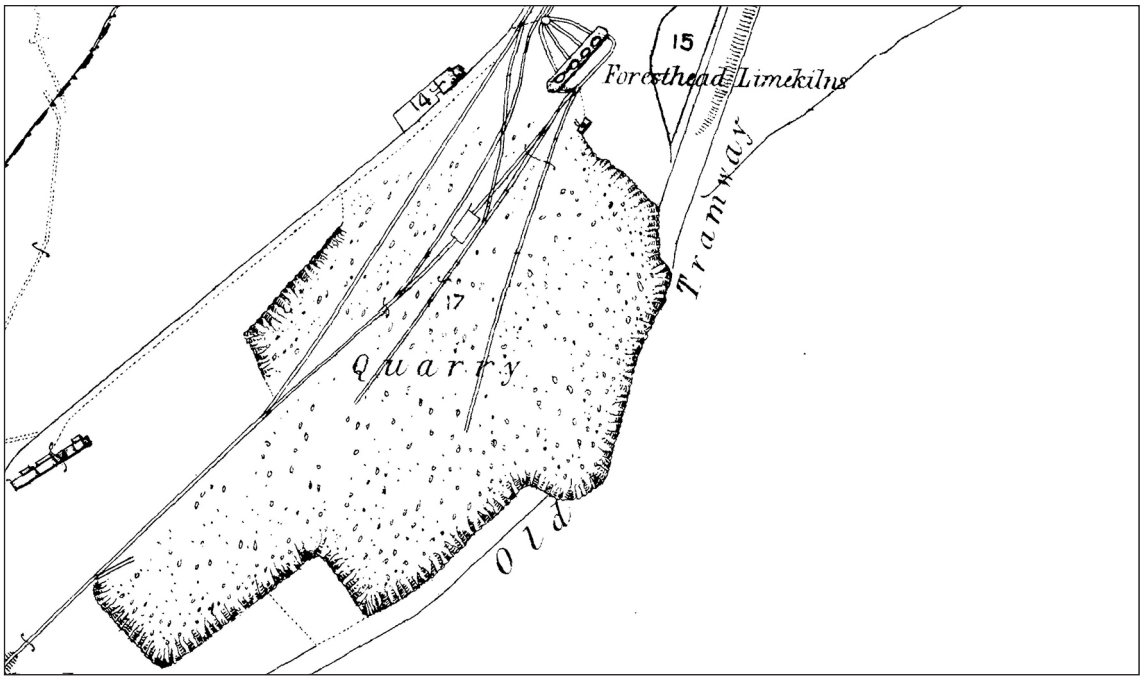

Fig 16. Foresthead limekilns, Cumbria, as mapped around the mid-19th century. Each of the four kilns is shown serviced by its own rail spur, which would have terminated at or inside the draw arch (compare Figure 17 below). (Reproduced from the 1864 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

Fig 17. The scheduled Foresthead limekilns from the north-west. (© Malcolm Jones, https://www.cumbriacountyhistory.org.uk/farlam-1-ny5857-lime-kilns-forest-head-well-preservedjpg under Creative Commons Licence).

were demolished by the 1960s anyway; while those at the Perseverance Works in Derbyshire were photographed before 1939 when still in use but have also since been demolished (Williams 1989, 29 plate and caption). The kilns at Foresthead, Brampton in Cumbria, however, do survive in good condition and accordingly were scheduled in 2003 on the recommendations of MPP (Chitty 2001b, Cumbria no. 2; NHLE 1021017); a recent photograph of them is reproduced here as Figure 17.

Parallels for the Bellmanpark arrangement of covered loading with rail spurs approaching multiple kilns side-on and passing beneath them all in one or more long tunnels seem to have been less common again, but examination of historic maps has pointed up possible or definite examples at the Brierlow Lime Works, Derbyshire (Figure 18); Lane Head Quarry, Crawleyside, Co Durham (Figure 19); and at Littlemill Quarries, Longhoughton (Figures 20 and 21) in Northumberland. Other published sources suggest that the limekilns at Castle Point on Holy Island, Northumberland (Figure 22), were also of this type.

The Brierlow quarry is still active and the mapped kilns do not survive. The Crawleyside Works was disused by the 1970s by which time the kilns seem already to have been demolished (Ordnance Survey 1977): certainly the only kilns at that quarry considered by MPP in the late 1990s were four, older, poorly preserved single-arch draw kilns that then survived to the immediate east (Chitty 2001b, Durham no. 1; the four kilns are probably some of those described as 'Old Limekilns' on Figure 19) and no trace of even these is now visible on Google Earth. However, it is possible that an undated photograph in Robinson 1999, 29, upper plate, preserves a record

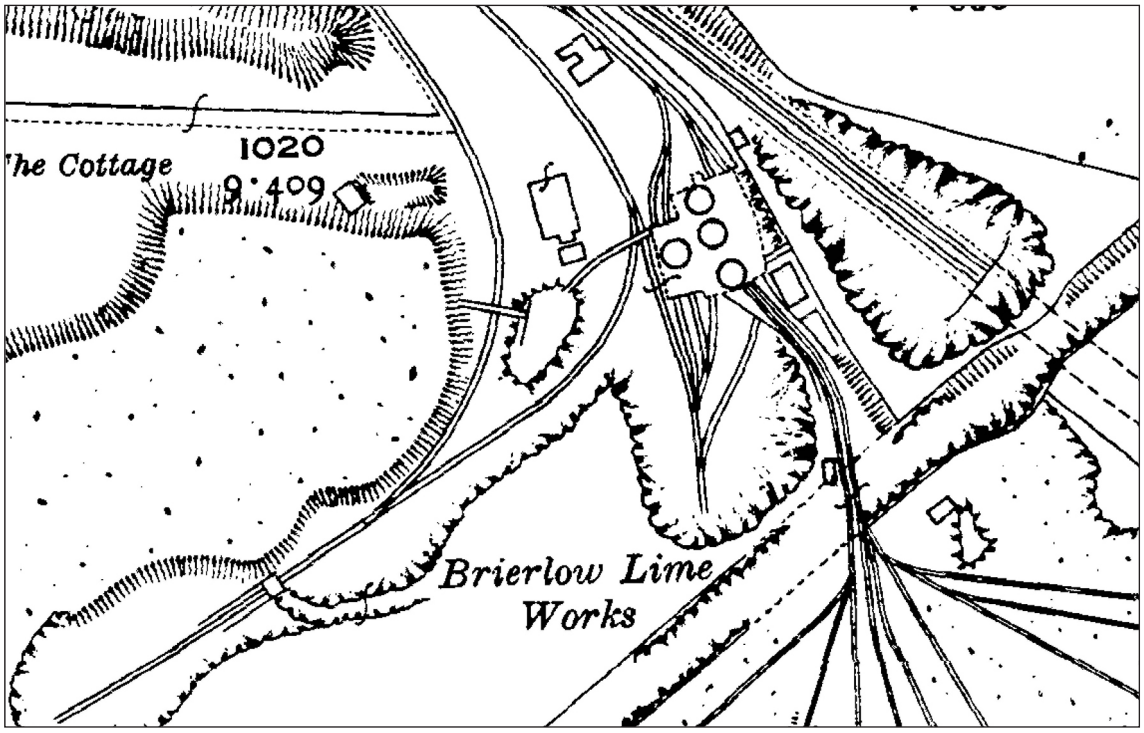

Fig 18. Bank of limekilns built over rail spurs at Brierlow Lime Works, Derbyshire, and therefore probably very similar in design to the Bellmanpark kilns. The map shows the works as it was just after the First World War; the kilns no longer survive. (Reproduced from the 1922 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

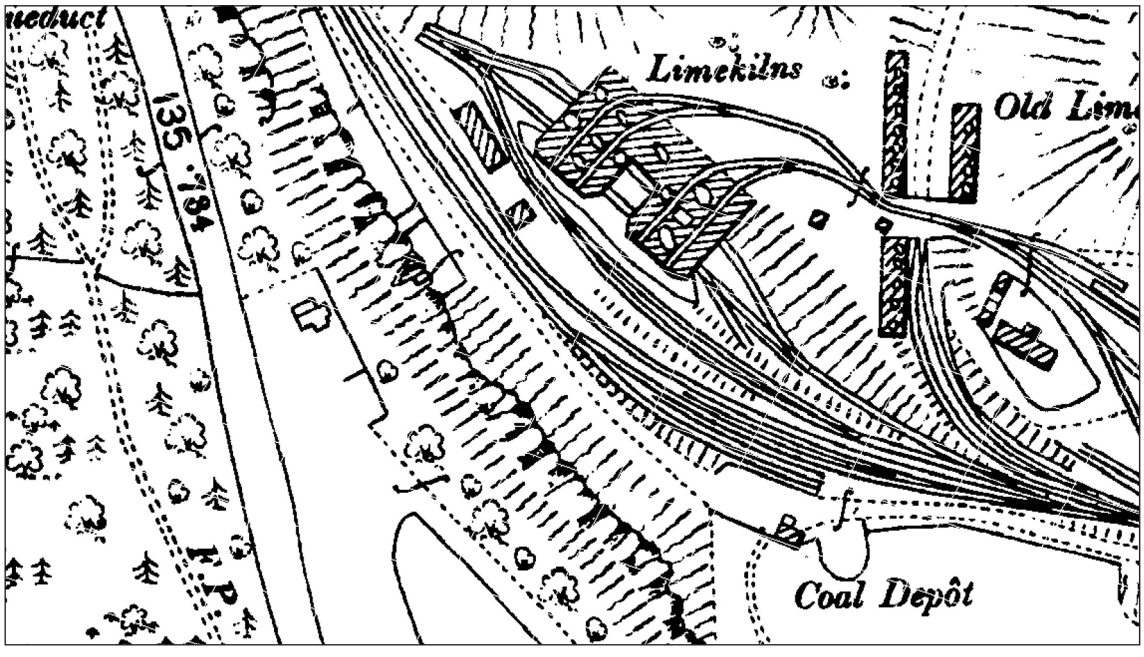

Fig 19. Bank of limekilns over rail spurs at Lane Head Quarry, Co Durham, towards the end of the 19th century, again seemingly similar to the Bellmanpark design. No longer extant. (Reproduced from the 1895 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024)

of what the demolished covered-loading kiln complex here formerly looked like. The Littlemill kilns, in contrast, are well preserved and were already listed at Grade II* when assessed by MPP (Chitty 2001b, Northumberland no. 13; NHLE 1041773); a recent photograph of them from Historic England's Images of England database is reproduced here as Figure 21.

The Castle Point kilns are also well preserved, and likewise were already designated (in this case scheduled) when assessed by MPP (Chitty 2001b, Northumberland no. 18A; NHLE1006434); they are owned and cared for by the National Trust. The Castle Point kilns were already out of use at the time of the earliest OS 25-inch mapping of Holy Island, but available published information suggests they were constructed over one end of a short tramway which connected them not to the national rail network, but to nearby coastal jetties for onward shipment of the burned lime by sea to Dundee (The National Trust 2021). Additional photographs of the kilns are available on-line at Kitching 2021d.

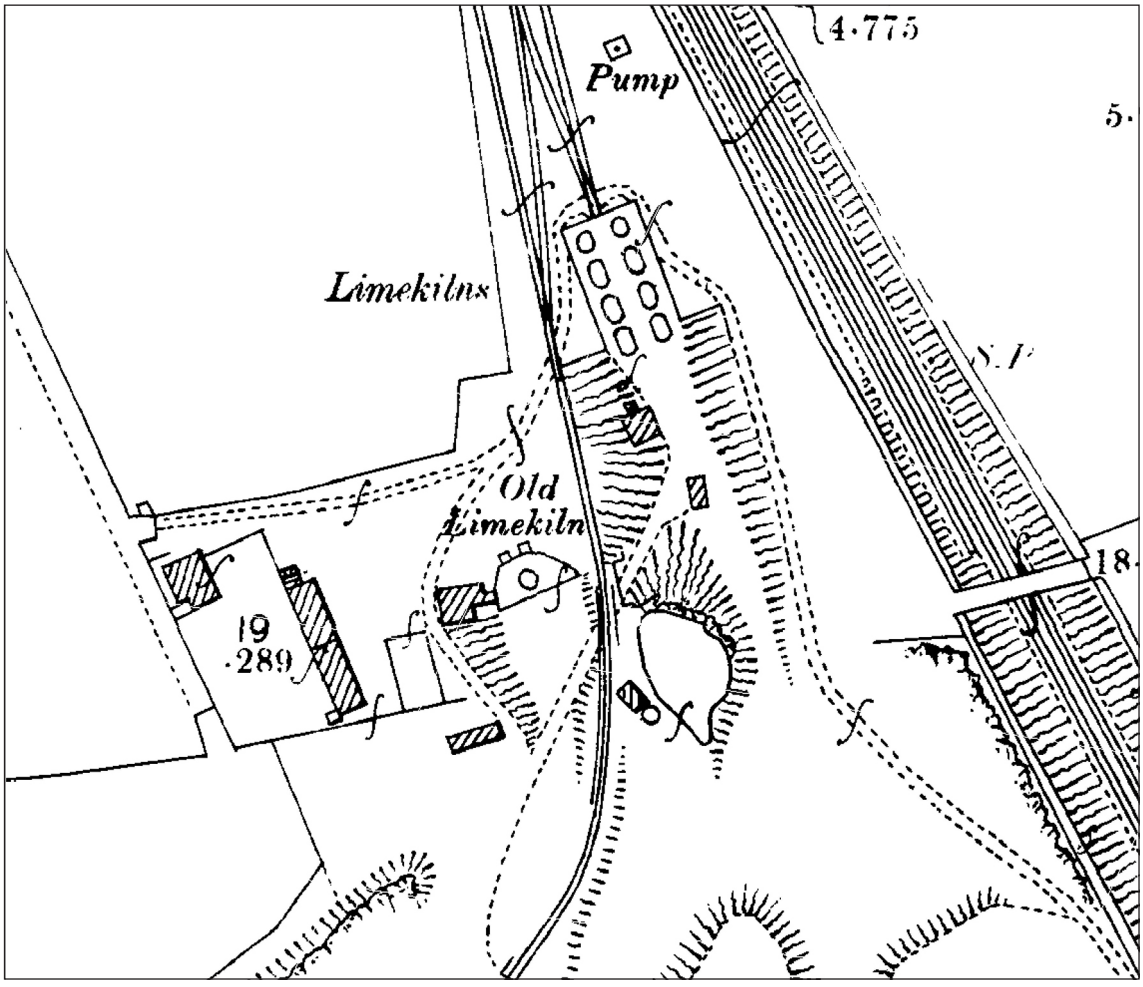

Fig 20. The kiln bank at Littlemill Quarries, Northumberland, towards the end of the 19th century. Later maps also show a rail spur running on to the top of the bank from the quarries to the south; this delivered limestone to be loaded into the kilns. (Reproduced from the 1897 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

Fig 21. The Grade II-listed Littlemill limekiln bank from the north, showing the entrance to the central rail passage. The top of what is probably an interconnecting cross passage can just be seen in the centre of the western (right-hand) wall. (© Mr Peter Oakley Clarke. Source Historic England, IoE No: 237036 Film No: 02000 Image: 31).*

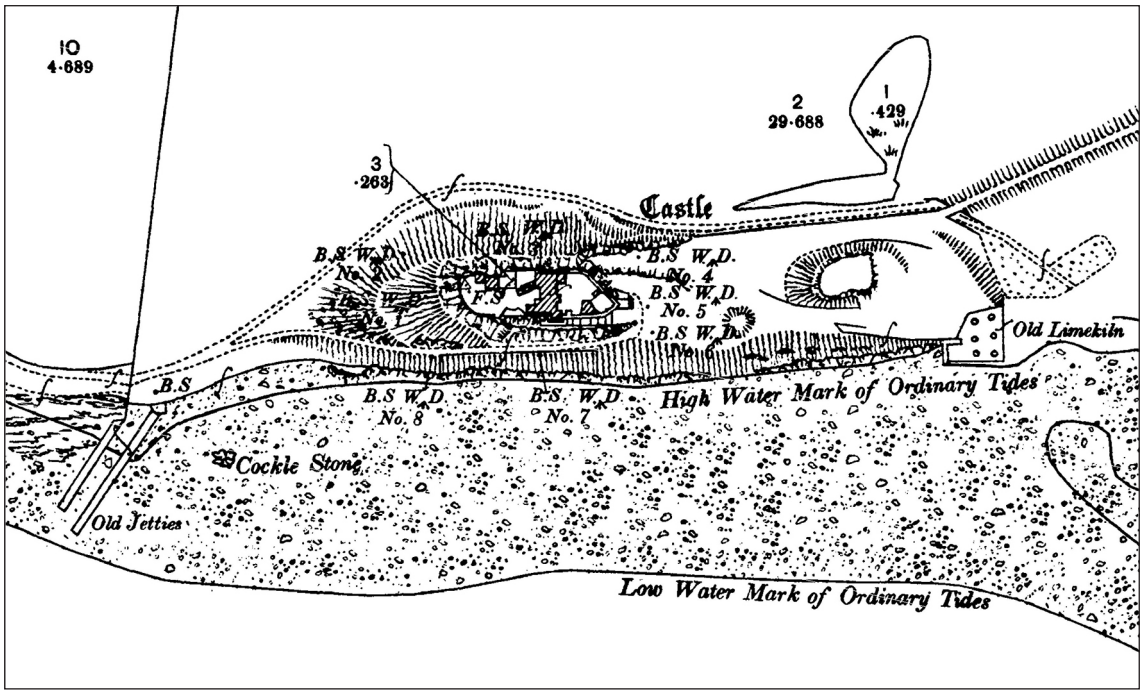

Fig 22. The Castle Point Limekilns on Holy Island were already disused at the end of the 19th century, but were originally connected to nearby jetties (left of frame) by a short tramway originating in a passage inside the kiln bank (right of frame). (Reproduced from the 1898 Ordnance Survey 25-inch map © and database right Crown Copyright and Landmark Information Group (All rights reserved 2018) Licence numbers 000394 and TP0024).

SIGNIFICANCE

This contextual research has demonstrated that the Bellmanpark kiln block bears ready comparison to other lime draw-kiln complexes of the industrial era that are deemed to meet the designation requirements of listing (special architectural and historical importance) and/or scheduling (national importance). But it has also confirmed that the kilns have a particular significance in the access arrangements they preserve for the unloading of quicklime directly into rail wagons passing in tunnels beneath them. Drawing on bodies of existing information, including historic maps, the research has demonstrated that the most common arrangement for the unloading of quicklime from kilns into rail wagons at limeworks was for the wagons simply to pass in front of the draw arches of the kilns and be loaded in the open air, beneath roofed but open-fronted sheds, through some kind of suspended platform extending out over the wagons (as at the Marsden Works in South Tyneside), or for the wagons to enter the draw arch of each kiln singly and directly. Only four other examples of the Bellmanpark arrangement - where discharging of the kilns was into wagons passing through tunnels beneath rows of kilns configured side by side - have been identified in England, and of these four only two survive: at Littlemill and Castle Point, both in Northumberland. This would seem to confirm the assessment of the Bellmanpark kilns in the current scheduling description quoted at the beginning of this report (Introduction, above), as a rare survival of their type.

Only detailed survey and analysis of the Bellmanpark, Littlemill and Castle Point kiln complexes will reveal their true internal plan, detail of how they were discharged - including the degree of survival of original *in-situ* structural elements such as draw-hole furniture which we know survives in part at Bellmanpark - and tell us how comparable the three examples actually are. Both the Littlemill and Castle Point complexes have already been investigated in some detail, but either the present location of the records made is unknown (Littlemill) or the research was a desk-based assessment of the kilns' history, not a record of their structure and method of drawing (Castle Point). Plans, elevations and cross-sections of Littlemill at scales ranging from 1:50 to 1:200 were reportedly produced in 1976 by Stafford Linsley of Newcastle University's then Department of Adult Education for the 'Industrial Archaeology Record' (Northumberland HER, site N5640, authority 5), but the location of those records was in 2016 unknown (Liz Williams, Northumberland Heritage and HER Officer, pers comm)[1]. Investigation of the Castle Point kilns on behalf of the site owners, the National Trust, was carried out by Addyman Archaeology in 2008-9, but comprised a desk-based assessment of historical information rather than a detailed record of the kiln structure (Gow and Addyman 2009). A selection of photographs of both kiln complexes is reproduced in an overview of limekilns in the Northumberland Coast AONB (The Archaeological Practice 2010), but without detailed explanation or commentary of what the photographs show or, as importantly, do not show, it is difficult to begin to compare either site properly to Bellmanpark.

[1] In 2017/18, Stafford Linsley transferred his remaining archive, including copies of the Littlemill drawings, to the care of the Historic England Archive. The collection is currently undergoing cataloguing.

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