

4. The 18th-century industrial landscape between St Monans and Pittenweem: a cartographic and archaeological study

Colin Martin

NB: National Grid references, which are given in bold, all bear an NO prefix.

Early Maps

Ainslie's map of 1775 records 'Pans' on the coast just to the east of St Monans, together with a building marked 'Fire Engine' a short distance inland (Illus 4.1). These features are clearly the saltpans and steam-driven pump of the Newark Coal and Salt Work Company, both recently erected. With their belching clouds of smoke and steam in an otherwise largely rural setting, these intrusions must have instantly engaged the notice of the cartographer. Their inclusion on his map, it may be noted in passing, confirms the reliable and up-to-date nature of Ainslie's field observations.

The most significant record of the industrial complex which lay between St Monans and Pittenweem in the late 18th century is the large-scale map (1 inch to 50 yards, or 1:1800) of the coal workings and associated waggonways drawn up by Sir John Anstruther's factor, Gavin Hogg, in 1785 (NAS RHP 22) (Illus 4.2). This was prepared as a consequence of litigation between Sir John and his cousin, Sir Robert Anstruther, over a pipe which crossed part of Sir Robert's land (see this volume, page 33–34). The map measures 800 x 590 mm, representing 1.44 km by 1.062 km, or 153 hectares, on the ground. It is oriented some 25° west of Grid North. Interpolation with the OS coverage shows that its corners lie (approximately) at the following NGR points: **5274 0274**; **5408 0335**; **5455 0238**; and **5330 0178**. For reasons of space the redrawn version of the survey has omitted margins of 90 m on the west and 470 m on the east, areas which are relatively uninformative in the context of this study. The area shown in Illus 4.2 is thus bounded approximately by **5294 0278**; **5368 0315**; **5415 0217**; and **5339 0182**.

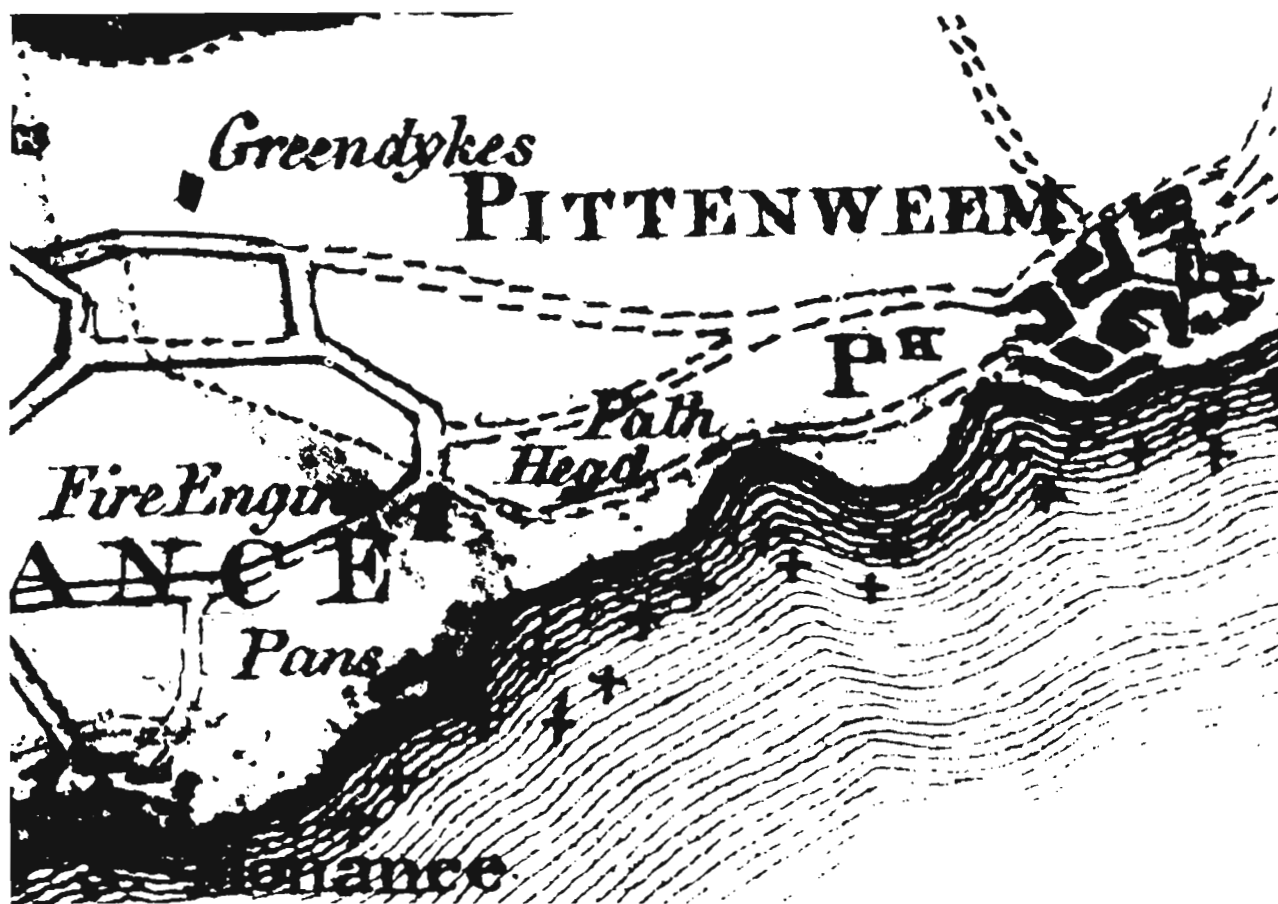
Most of the features on Hogg's survey are not readily identifiable today, but there are recognisable fixed points which provide a framework for

comparison with the modern cartography of the area. A road runs west from Pittenweem towards a junction where it forks right towards Colinsburgh and left towards Elie, reflecting the present pattern of roads and evidently running on the same courses. The north-south road shown close to the western edge of Hogg's survey appears to be the track marked 'Black Road' on modern OS maps, which intersects the Elie Road at **5333 0217** and the Colinsburgh Road at **5308 0268**. Two further locations common to both maps can also be identified. One is the cottage at Pathhead ('Brae Head' on the Hogg map) with its associated sub-rectangular field, while the other is the head of the ramp which carried the waggonway down to the pans at St Philips, identifiable today at **5344 0194**.

From these common points the following selected linear comparisons can be tabulated:

	Hogg	OS
Black Road between its junctions with the Colinsburgh and Elie Roads	887 m	832 m
Junction of the Colinsburgh and Elie Roads to the head of the waggonway ramp	747 m	746 m
Junction of the Colinsburgh and Elie Roads to the Black Road-Elie Road junction	738 m	677 m
Junction of the Colinsburgh and Elie Roads to the Black Road-Elie Road junction	885 m	835 m
W end of Pathhead Cottage to the Black Road-Colinsburgh Road junction	878 m	852 m

These comparisons are sufficient to show that the accuracy of the Hogg map is not constant, with the linear data tested ranging from near precision to measurements which can be as much as 8 per cent too low or 6 per cent too high. This impression



Illus 4.1. Enlarged detail from John Ainslie's map of Fife (1775) showing the site of the St Philips pans and the location of the 'Fire Engine'.

of variability within the map is reinforced by an obvious discrepancy in the coastline, shown as running almost straight along the bottom of the map when in fact there is a bight some 140 m deep in its middle. Other discrepancies emerged when the archaeological data were compared with features on the map (see below).

On balance, it seems likely that the survey was based upon a framework of several reasonably accurate primary measurements from which an 'eyeballed' sketch map was built up. Gavin Hogg, of course, must have known this landscape like the back of his hand. While it is not therefore a survey in the modern cartographic sense, it can be assumed to represent correctly the interrelationships between the contemporary landscape and the industrial features superimposed upon it. It was for just this purpose, indeed, that the map was compiled.

The heart of the map is the main deposit of deep coal which was currently being worked. This is shown as a grid of pillars and passageways which reflects the contemporary 'room and stoop' method of working (Duckham 1970, 59). This feature extends, by interpolation with the OS coverage, approximately from 533 023 to 539 028. These workings were serviced by the pit labelled '1st Deep' at the west and 'Deep Pit' in the centre of the

deposit. 'Tofthill Pit' was associated with a subsidiary deposit, the Tofthill Field, which lay just to the east of the map as shown.

Other pits which appear to have been in contemporary use are 'North Pit', a short distance from 'Deep Pit', and two pits apparently associated with the 'Engine House' - 'Bye Pit' and '1st Deep Pit', both of which are recorded as being 38 fathoms (70 m) deep. 1st Deep, an unnamed shaft, and Tofthill Pit were linked by a tunnel labelled 'Level in 1st seam of four coal', which provided for drainage and access to the southern face of the coalfield. A similar passage ('Level of the Parrot Coal') ran across the north of the deposit with access from Deep Pit and another unnamed pit a little to the west. North Pit connected with another 'Level in the Parrot Coal', and was probably associated with a proposed exploitation of unworked deposits to the north of the main seam.

Various abandoned pits are shown, one of which was 'said to be a horse gyn pitt in Cromwell's time', while two long strips of subsidence which run parallel and to the south of the current workings represent earlier exploitation of seams close to the surface.

The drainage of the deep mine was originally effected by a wind-driven pump close to 1st Deep, but by the time of Hogg's survey this had been

replaced by a steam pump, contained in a two-storey Engine House which is clearly depicted on his map. Landale's Report of 1854 notes that the 'Engine Pit' was 39 fathoms (71.5 m), and that the pump drew water to within 6 fathoms (12.6 m) of the surface before discharging it via a 'day level or delivery drift' to the sea (NAS GD147/62/11). The precise method whereby the underground workings as a whole were drained is unclear, although improvements to it involved the laying of a pipeline ('The Pipe'), part of which ran through a segment of Sir Robert Anstruther's ground and gave rise to the litigation in 1785 which prompted Gavin Hogg's survey (see this volume, page 33–34).

The course of a drainage ditch associated with earlier coal working by the Earl of Kellie is shown at the top of the map.

Surface features noted by Hogg include the road system, already discussed, various land divisions (especially the strips and other holdings owned by Sir Robert Anstruther), and the course of a waggonway which serviced the coal-mines and the salt pans at St Philips. Its function was to bear loads economically to the outlet port of Pittenweem. The waggonway was made up of wooden rails on which ran horse-drawn waggons capable of carrying upwards of two tons (Lewis 1970, 189–90; Ayris et al 1998). A single horse could haul such a load over level ground, while downhill runs were negotiated by the waggonmaster under the control of his brakes, with the horse unhitched and tethered behind.

The course of the Pittenweem waggonway was conditioned in part by topography – mainly the need to avoid the rising ground at Toft Hill (Croft Hill on some modern maps, centred on 539 026). It also had to accommodate the obstructive tactics of Sir Robert Anstruther, who held a number of long strips of land – relics of the open-rig system which his cousin Sir John, as an improving landowner, was striving to abolish – which ran across much of the industrial area. Hogg's plan clearly shows the ingenuity with which the waggonways were routed to pass between or round the 'no go' areas while keeping to a level contour.

The main waggonway runs north from the pit-head at 1st Deep before curving around four of Sir Robert's rigs to follow a long straight which continues eastward for nearly 1 km, at which point it runs off the map. About 400 m along the straight it is joined by a branch line which serves the salt-works. This curves southwards, just shaving the head of one of Sir Robert's rigs, to pass North Pit and Deep Pit before crossing the Colinsburgh Road and heading south-west towards the pans.

The Ordnance Survey

The First Edition of the Ordnance Survey 6 inches to the mile (1:10,560) coverage of this area (Fife and

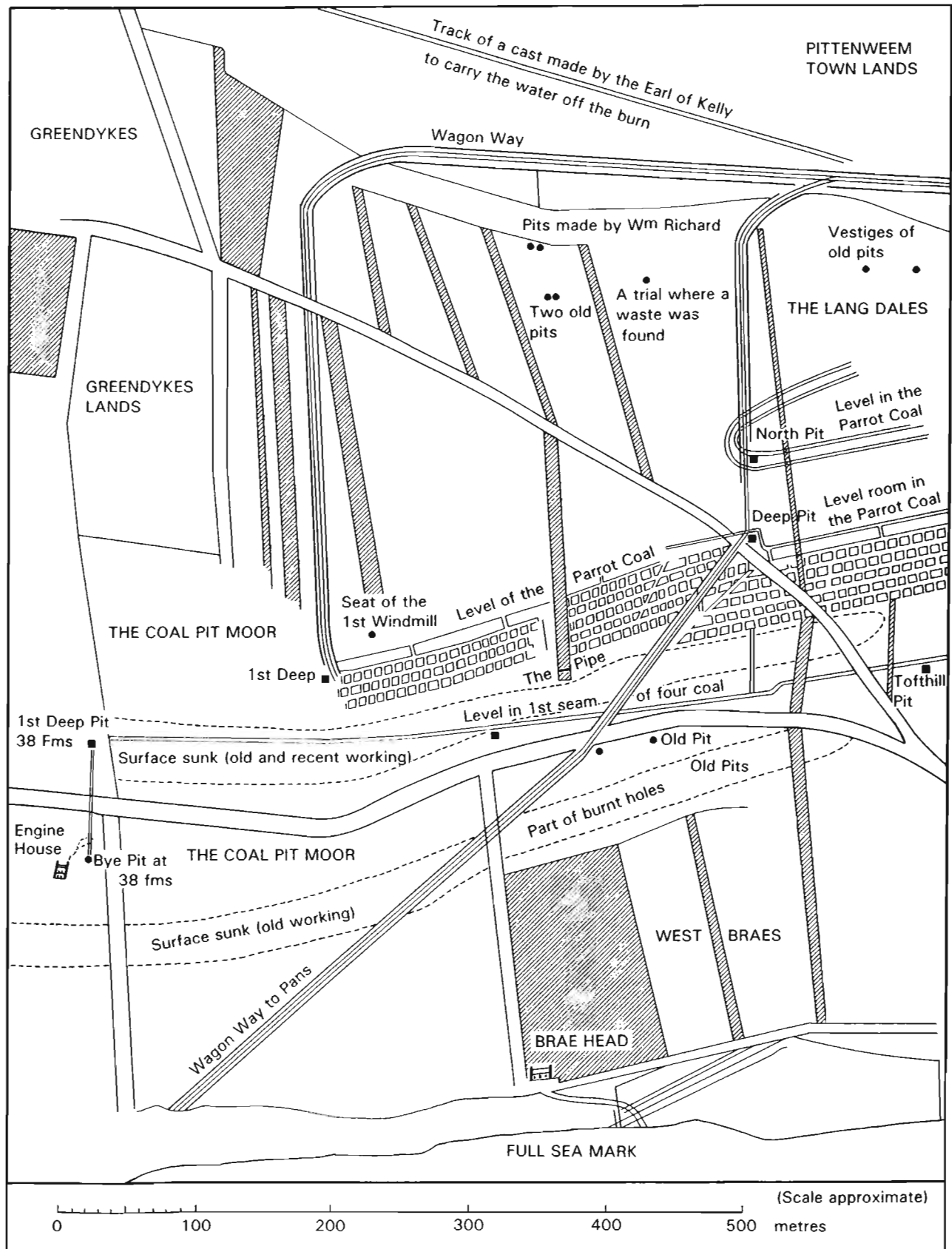
Kinross, Sheets 26 and 27) was published in 1855 from information gathered in 1851–4 (Illus 4.3). It is axiomatic that from its beginnings the veracity and accuracy of OS coverage can be accepted for most practical purposes without question, therefore data derived from early editions can be plotted with confidence on current maps. In the context of the present study it is fortunate that substantial elements of the late 18th-century industrial landscape survived long enough to be recorded in the maps of the mid 19th century, some of them obvious and others less so.

Most striking are the remains of the nine St Philips panhouses, shown as a setting of abandoned but apparently still at least partially standing structures, which closely match in size and spacing the foundations excavated by Murdoch and Lewis (Illus 4.4, and 2.1). The site of the wind-engine, labelled as a ruin, is also clearly marked, as is the ramp which carries a track from the top of the escarpment to the level of the pans, now recognised as a component of the waggonway. Finally, the feature marked 'Mineral Well' (the compiler of the OS *Name Book* remarked on the foul taste of its waters, and doubted their supposed medicinal properties) is almost certainly the outfall of Landale's 'day level or delivery drift' by which water brought up by the steam pump was discharged into the sea. This feature has been demolished recently to improve the field, although the drainage outfall below it continues to function in spectacular fashion.

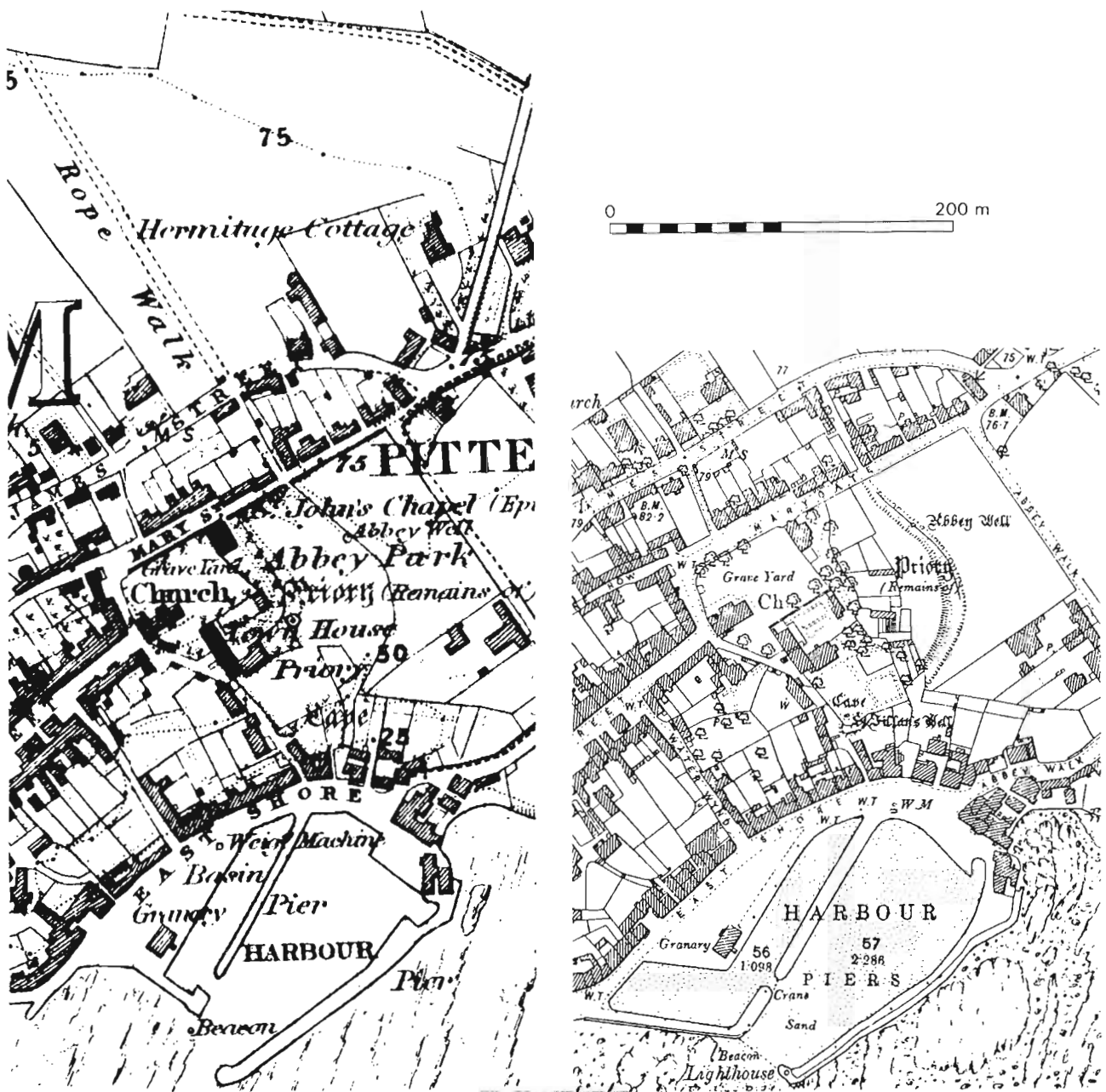
The colliery buildings to the east of the Engine House and Bye Pit which by about 1795 had become known as 'Coal Farm' (see this volume, page 31) were, by the time of the OS survey, wholly agricultural in character, though they continued to bear the name (as they do today) and, just south-west of them, is a feature clearly marked 'Coal Pit' (Illus 4.3), which is almost certainly the 'Engine pit ... standing open and walled round' described by Landale in 1854.

By good fortune the OS map was surveyed before the Leven & East Fife Railway passed through this sector in 1865, for the 19th-century line utilised much of the long north straight of the former waggonway. The pre-railway mapping shows the course of this straight first as a field boundary running from 5345 0287 to 5374 0293. From there it continues as an unfenced trackway as far as the Arncroach Road at 5441 0310, just short of what was to become Pittenweem Station and slightly beyond the area covered by Hogg's survey. This trackway is labelled 'Old Coal Road' in the Parliamentary Boundary Survey of 1832.

At some point shortly thereafter, the waggonway must have turned southward to follow the level contour around the back of Toft Hill, in the direction of Pittenweem Harbour. The first part of this sector appears to have left no trace, but what



Illus 4.2. Gavin Hogg's survey of 1785, redrawn for clarity. Parts of the right- and left-hand portions of the original map are omitted, and some of the captions have been simplified. Land belonging to Sir Robert Anstruther is indicated by hatching.



Illus 4.5. Enlarged detail of the 1855 1:10560 O.S. map (left) showing the Pittenweem rope-walk and the line of the waggonway curving through Abbey Park towards the harbour. The pier shown is that built by Sir John Anstruther in 1771. On the right is a detail of the 1893 1:2500 O.S. map of the harbour area, adjusted to the same scale, which shows the waggonway's route through Abbey Park as a hachured cutting.

must be its continuation as it approaches the town survives on the map as an unfenced straight track 220 m long, marked 'Rope Walk' and running from 5487 0295 to 5496 0274 (Illus 4.5). It seems that the burgeoning fishing industry of Pittenweem sensibly utilised this long and level stretch of redundant ground, which was still in the Town Council's possession, for making or repairing its cordage.

From the Rope Walk the line of the waggonway can be traced by way of the short lane which links James Street and Mary Street, after which it passes into the grounds of Abbey Park. Here its course is clearly delineated on the 1855 map as it curves down towards the harbour. A more detailed de-

piction of it in the First Edition of the 1:2500 OS map of 1893 (Fifeshire Sheet XXII.15), reproduced to an adjusted common scale as an insert to Illus 4.5, clearly shows the waggonway line as a cutting through the field. This cutting occupies the foreground of C E Horsburgh's watercolour of Pittenweem Priory, painted in 1818, of which a detail is reproduced in Illus 4.6. Abbey Park is now occupied by houses, but the line of the Waggon Road, still bearing that name though otherwise unremembered locally, runs as a sunken access path between them (Illus 4.7 and 4.7a). The sides of the cutting remain prominent, especially in the common garden ground to the south of the houses.



Illus 4.6. A detail from C E Horsburgh's watercolour, painted in 1818, of Pittenweem Priory. In the foreground, beyond the fence, the waggonway cutting is clearly seen. (Author's collection).

Finally the waggonway route passes through a gap in the harbour frontage between Numbers 5 and 7 East Shore at **5501 0251**, marked on both the 1855 and 1893 surveys and still extant today, though gated off as a yard. From there the waggons ran directly onto Sir John Anstruther's coal pier, built in 1771 and demolished in the early years of the 20th century to increase the inner harbour's capacity. The original pier is, however, marked on the older OS maps and, happily, it survived long enough to be photographed (Illus 4.8).

Archaeological field-work

1. The salt pans

The windmill tower east of St Monans (more properly described as a wind-engine) at **5330 0183** (A in Illus 4.31) has long been recognised as part of the St Philips saltworks mentioned in *The Old Statistical Account of Scotland* (Donnachie & Stewart 1967: 291) (Illus 4.9). Further field-work in the 1970s noted extensive rock-cutting in the foreshore (B in Illus 4.31), apparently associated with the complex, while a stratigraphical sequence of industrial debris with some inserted structural features was observed in the eroding shoreline between **5372 0177** and **5340 0173**. A winter flight over the site in 1980, when vegetation cover was low, revealed a

fan-shaped setting of nine depressions which could be identified with the nine ruined pan buildings recorded on the OS map of 1855 (C in Illus 4.31). Subsequent monitoring of the site drew attention to the erosion which led to a rescue excavation of the easternmost structure in 1985 (Lewis 1989).

An aerial photograph taken in 1989 provides a general view of the saltpan complex at Low Water, looking east (Illus 4.10). To the left is the wind-engine tower on the escarpment. The eroding coastline, and the easternmost excavated pan-house, are clearly seen. East of the tower is the graded waggonway ramp leading down from the escarpment to the pan complex (D in Illus 4.31). Towards the top of the photograph is the hollow and bank of the 'mineral well', believed to be the outfall of the drift from the pumping engine located next to the Bye Pit (E in Illus 4.31).

In the intertidal zone may be seen a series of rock-cut features running axially from seawards towards the wind-engine (Illus 4.11). The main feature is a sub-rectangular excavation at **5334 0174**, measuring 36 m by 7.5 m. Its bottom is carefully levelled, and the feature can best be identified as the seating for a reservoir tank. No evidence of associated structure now survives, but it was probably lined with masonry walls which have



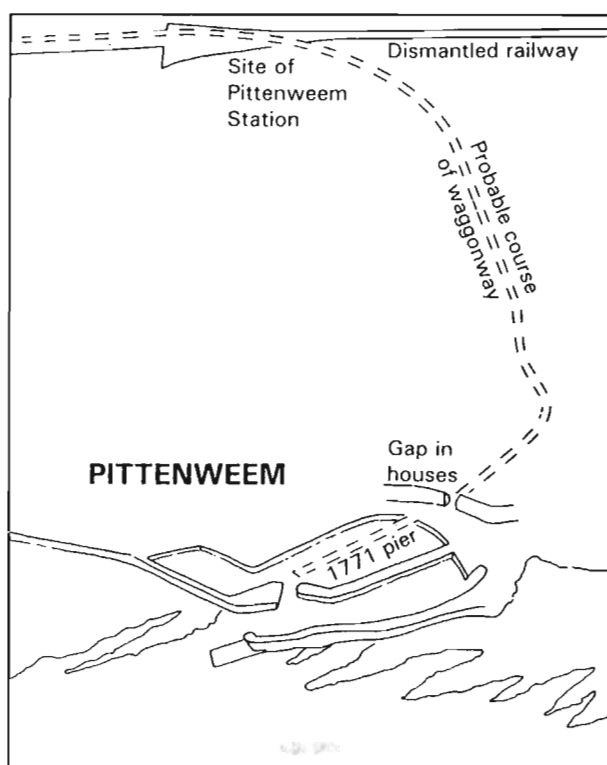
Illus 4.7. Pittenweem: the key (4.7a)(right) indicates the reconstructed course of the waggonway.

either been robbed or dispersed by wave action. A channel of rectangular section, 25 m long and 1 m wide, runs seawards from this feature, descending along its course by way of a cascade of three carefully fashioned steps (Illus 4.12). It ends at 5335 0172, though a 12 m extension cut has been

driven, angled towards the east, through an outcrop of rock. Close to the reservoir end of the channel two checks for a sluice gate have been cut (Illus 4.13). It may have been here perhaps that John Bayne met with his fatal accident in 1811 (see this volume, page 36). Other less prominent ver-



Illus 4.8. The inner pier of Pittenweem Harbour, photographed c 1890. This is the original coal pier built by Sir John Anstruther in 1771. Note the gap in the houses beyond, through which the waggonway passed (reproduced courtesy of the Scottish Fisheries Museum, Neg No 89/177).



Illus 4.7a. Key to Illus 4.7 (left).

tical grooves in the sides of both cuts may be connected with the securing of associated pipework.

A cut is also evident on the shoreward edge of the reservoir, although here the section is U-shaped rather than square (Illus 4.14). This cut also bears evidence of vertical grooving. Further cutting towards the shore seems intended to provide a regular gradient for a continuation of the wooden pipework of which two sections were identified during excavation (see this volume, page 13). Traces of rock-cutting through the middle of the main reservoir suggest that the pipe extended as far as or beyond its southern edge. [It is worth noting that this differs from the views of Murdoch and Lewis, who believe that the pipe probably comprised no more than the two sections exposed at the bulkhead – Editor.]

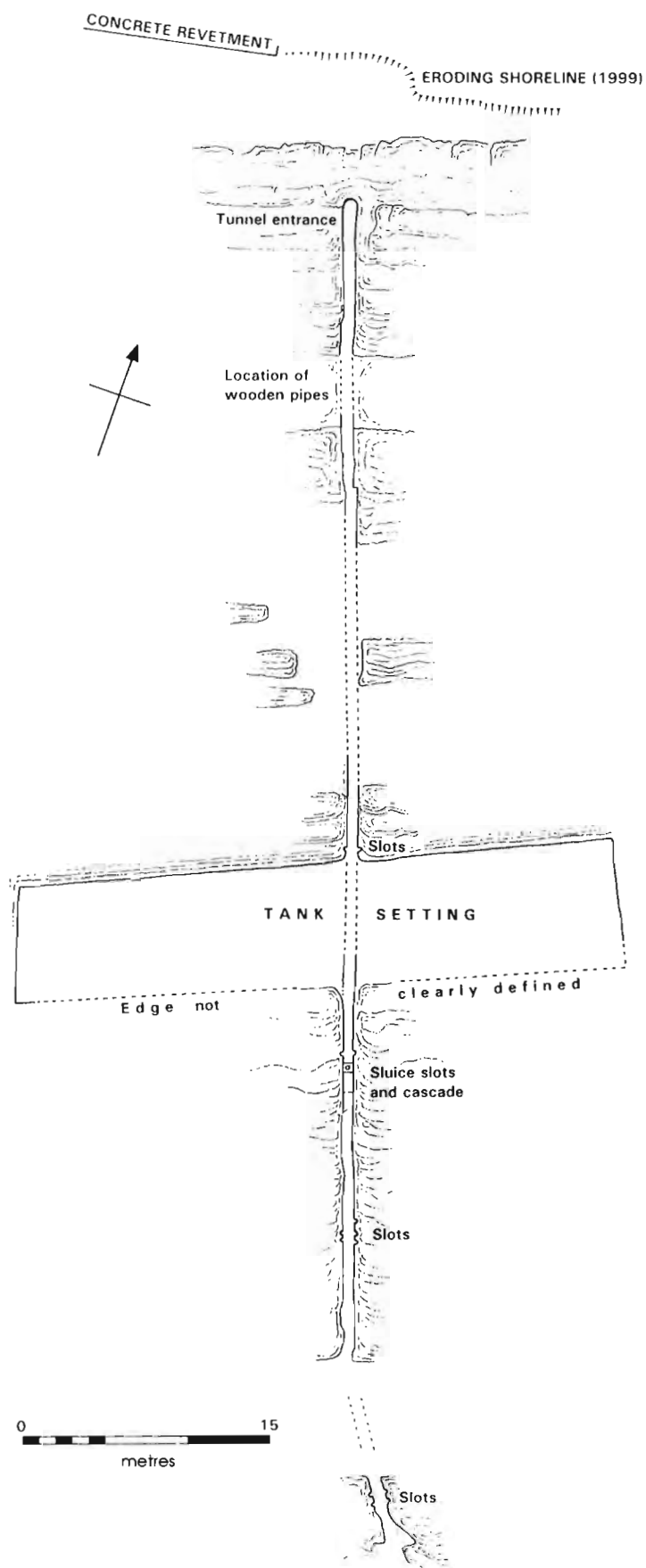
Since archaeological monitoring of the site began in the late 1970s, erosion of the foreshore has been continuous, progressing at a rate of approximately 1 m per decade. Comparison of the present-day shoreline with that recorded by the Ordnance Survey in 1855 suggests that this rate of erosion has been constant since then, involving the net loss of some 15 m of coast in 150 years. Confirmatory evidence which supports an erosion rate of this order is provided 230 m to the east (at 5352 0193), where deposits of concreted industrial



Illus 4.9. The wind-engine tower at St Philips, before restoration.



Illus 4.10. Aerial view of the St Philips complex, looking east.



Illus 4.11. General survey of rock-cut features on the foreshore at St Philips.



Illus 4.12. The rock-cut inlet channel at St Philips, looking north towards the wind-engine tower situated on the escarpment. The panhouses stood on the level ground immediately below it.



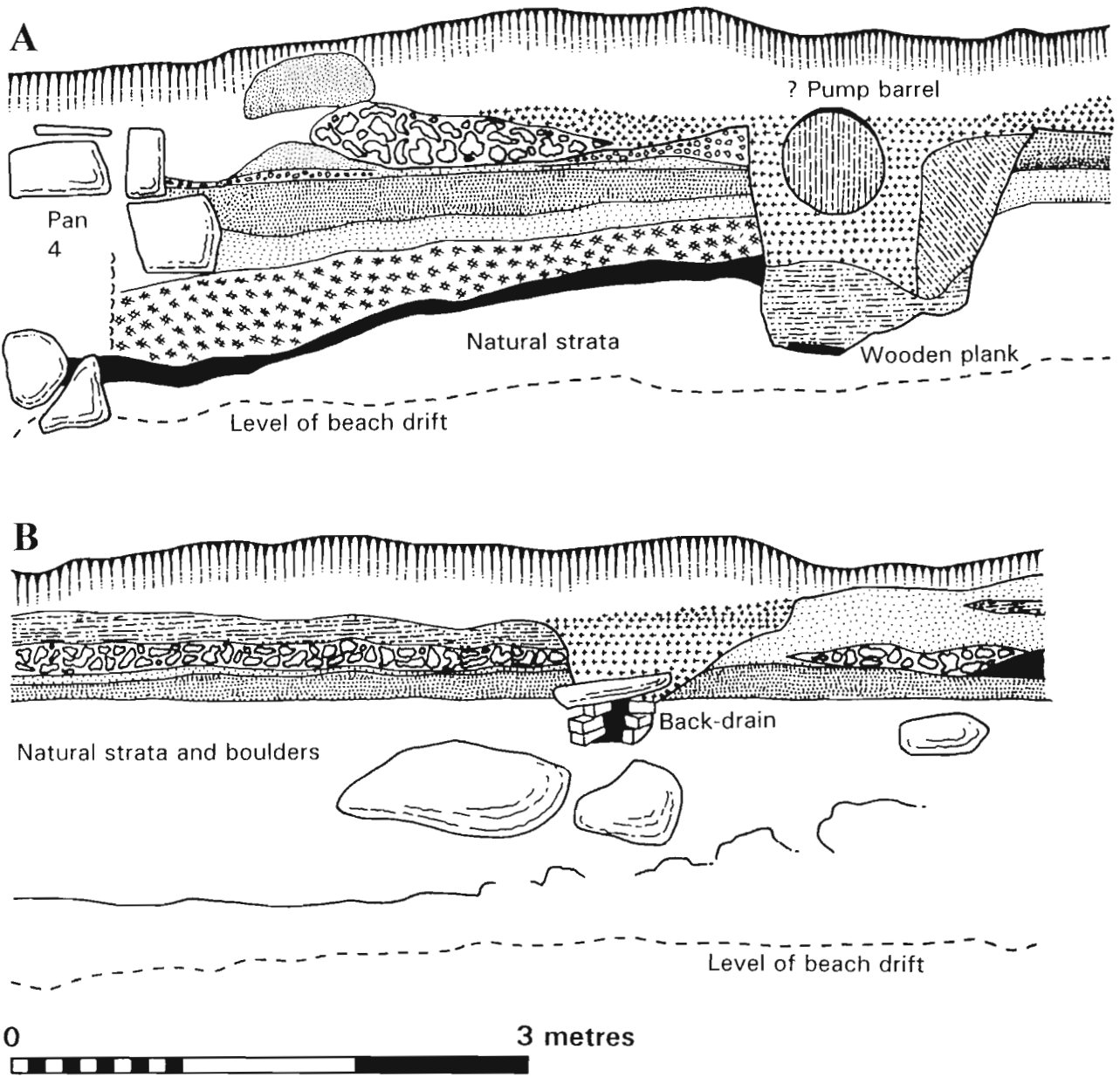
Illus 4.14. View across the reservoir as the tide flows in through the inlet channel (top). Note the U-section of the outlet pipe-channel in the foreground.



Illus 4.13. The inlet channel, looking seaward. The check for a sluice can be seen in the foreground.

debris are attached to rocks up to 20 m from the present shoreline. Erosion at St Philips since c1770 (if not mitigated by unknown factors) therefore may have been as much as 23 m.

Two sections of the eroding foreshore were recorded by archaeology students from St Andrews University in 1981 (Illus 4.15). Section A shows features apparently associated with the cutting which houses the pipe channel discussed on page 16 above. The western edge of the section is bounded by the east wall of Panhouse 4. A deep trench has been cut through to the underlying geological strata to house a wooden cylindrical tube associated with a reinforcing iron band. Fragments of the wood are preserved within the iron concretion. At c 0.4 m in diameter the bore is far too great to have served as a suction pipe, and the feature may perhaps be part of the barrel of a horizontal pump (see Murdoch and Lewis this volume, page 25). Part of a wooden plank lay at the bottom of the feature. It is noteworthy that the stratigraphy of dumped industrial debris is cut through by the pipe trench, indicating that the trench was either a late feature in the development



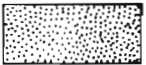
KEY TO STRATA



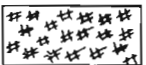
Burnt clinker and brick



Light silt



Heavy silt



Hard grit with coal fragments



Redeposited clay with inclusions



Grey/blue clay



Infill of pump barrel



Coal (natural or redeposited)



Humic infill with inclusions



Fragmented stone

Illus 4.15. Sections in the eroding cliff-face recorded in 1981.



Illus 4.16. Lenses of white scale revealed in the eroding section, 1981. These are believed to be chippings from the pans.

of Sir John Anstruther's salt-making complex, or that similar activity had been going on here prior to the 1770s. The primary infill of the feature contained some fragments of wood, bone, and glass, and a sherd of Throsk-type pottery of probable 17th-century date (Caldwell & Dean 1992).

The stratigraphy shown in Section B demonstrates that the back-drains associated with the pan buildings (Lewis 1989, 367) were also late features in the sequence. Deposits recognisable in the stratigraphic sequence include burnt clinker, brick and tile debris, coal ash, fragments of coal, and distinctive lenses of white crystalline scale, doubtless chippings thrown out during routine cleaning of the pans (Illus 4.16) (Whatley 1984a, 12–13).

A fragment of green-glazed pottery, probably of 15th- or 16th-century date was recovered in 1998, 30 mm below the pre-industrial deposition land surface in the eroding foreshore adjacent to Panhouse 4. It thus provides a *terminus post quem* (albeit somewhat imprecise) for industrial activity at this part of the site.

2. The industrial hinterland

Gavin Hogg's survey of 1785 excludes the saltpan complex at St Philips, although a branch line of the waggonway shown running in this direction is labelled 'Wagon Way to Pans'. Hogg's line ends at

the edge of the escarpment above the pan buildings. Just at this point there is a field gate from which a carefully engineered ramp runs down to the lower level. This can be confidently identified as a feature associated with the 18th-century waggonway (Illus 4.17; D in Illus 4.31).

Between 1984 and 1991 extensive aerial photographic reconnaissance of the area was carried out by the author as part of the Scottish Archaeological Air Photography Committee's sponsored flying programme, funded by RCAHMS. Particularly good results were obtained during the exceptionally dry summers of 1984 and 1989 (Illus 4.18). Crop mark formation was further encouraged by unusually good drainage occasioned by the abandoned coal workings – a characteristic reflected in the place-name 'Waterless' immediately above the main galleries (see below). Many of the features recorded in the Hogg survey could be identified with confidence, while traces of earlier industrial activity could be isolated by utilising our relatively full knowledge of the late 18th-century landscape as an extractive 'filter'. Much evidence of pre-enclosure land division and cultivation was also recorded.

The following aerial photographs encapsulate most of the identified features, and each is discussed in conjunction with the wider historical landscape and the Hogg survey. That survey, and



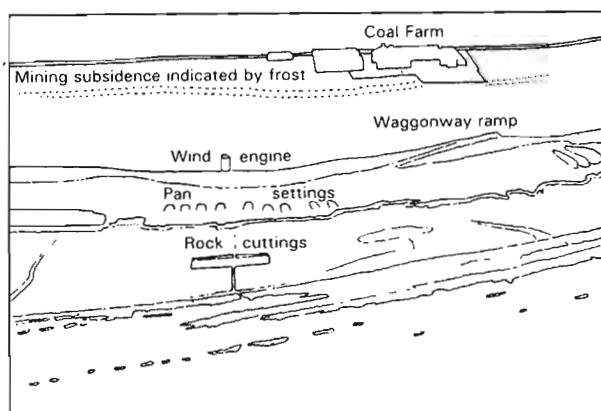
Illus 4.17. Foundations of the easternmost panhouse (9), revealed during excavation in 1985. Beyond it the waggonway ramp can be seen ascending to the top of the escarpment.



Illus 4.18. Aerial photograph of the former industrial landscape, photographed during the dry summer of 1984. Coal Farm is in the left foreground, Pathhead towards the right. Crop mark formation in the fields to the north is extensive.



Illus 4.19. St Philips saltpan complex and wind-engine tower from the south-east, looking towards Coal Farm. The key (4.19a)(below) indicates visible features.



Illus 4.19a. Key to Illus 4.19.

the general plot of archaeological features (Illus 4.2 and 4.31) have been arranged as fold-outs so that they may be consulted simultaneously with the photographs and text.

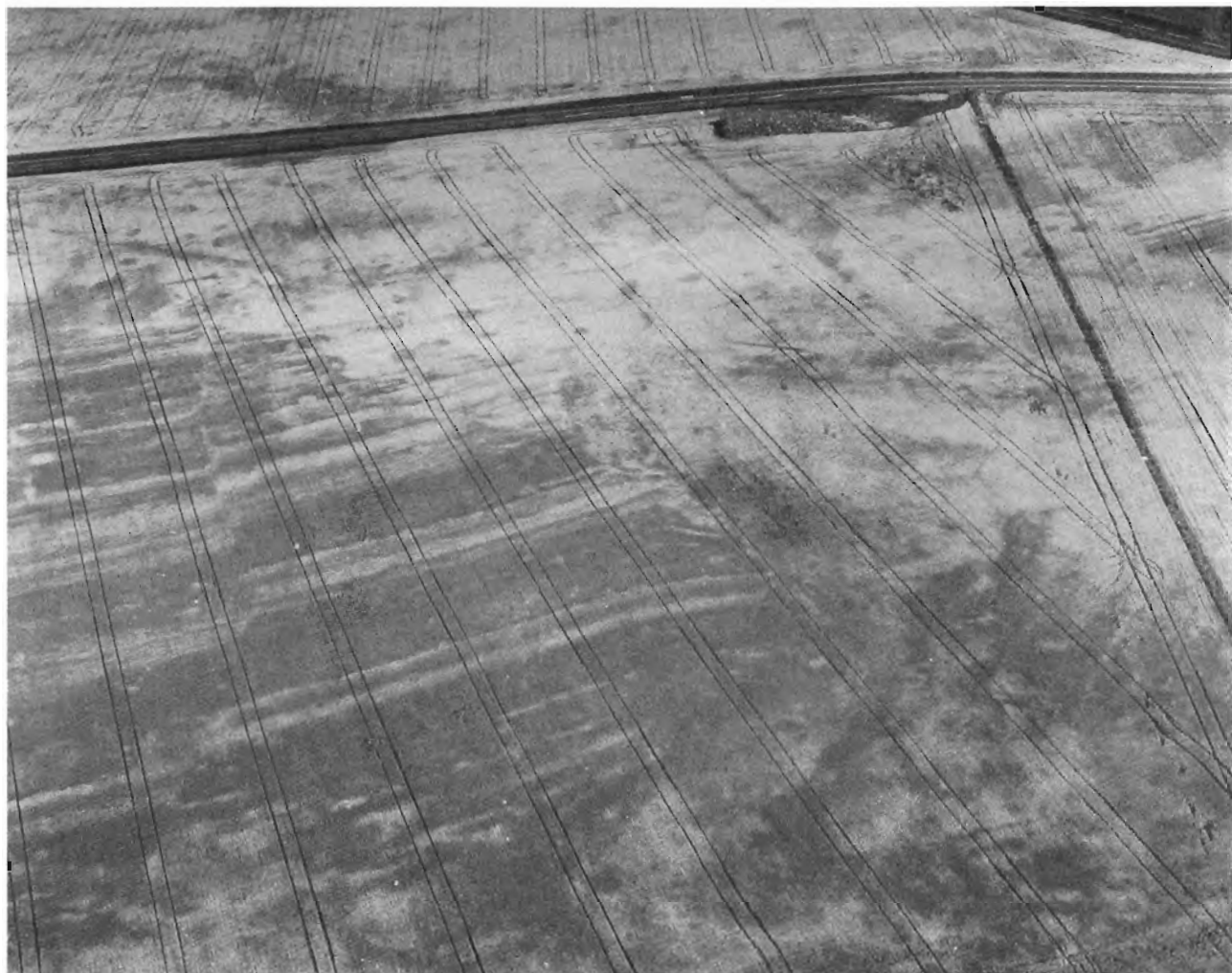
Illustrations 4.19 and 4.19a. This photograph was taken on a bright winter's morning, when the sun had burnt off most of the previous night's frost. A narrow line of frosted ground, however, can be seen running across the top of the picture, just below Coal Farm, which picks out a hollow marked on Hogg's survey as subsidence caused by earlier coal working (F in Illus 4.31). This deposit of shallow coal would have been among the first to be exploited on the site, and may therefore be of

considerable antiquity. The hollows of the nine panhouses are clearly seen, as is the waggonway ramp. On the extreme right are the hollow and adjacent mound of the presumed outlet drift.

A short distance to the west of Coal Farm, ploughing regularly brings up traces of brick debris and ash (G in Illus 4.31), indicating the probable location of the Engine House marked on Hogg's map.

Illustration 4.20. Features in the field south of the Elie Road, centred on 538 023. The crop marks towards the left of the photograph are geological in character, and trace out the dipping strata of rocks close to their surface (I in Illus 4.31). However, their clarity, and particularly the dark positive lines between the light parching of the underlying rock, may have been caused by the extraction of surface outcrops of coal. Such exploitation left excavated linear slots in the ground known as 'in-gaun e'en' (ingoing eyes) and, because this coal was usually the most easily won, generally represents the earliest phase of extraction on a site (Duckham 1970, 40-1). The top right segment of the photograph shows a palimpsest of pits and linear features. Hogg notes that this area contained traces of 'old pits', including one remembered locally as having been worked 'in Cromwell's time'.

Illustration 4.21. The field to the north of Coal Farm, looking towards Waterless Bridge (top left).



Illus 4.20. Geological and other features in the field to the south of the Elie Road, centred on NO 538 023.

At bottom centre can be seen the negative crop-mark of a solid circular feature with an annular surround (J in Illus 4.31). This may be identified as Hogg's 'Seat of the 1st Windmill', which he locates a short distance north-east of the 1st Deep Pit. There are no crop-mark indications of this pit, or of the waggonway which led northwards from it, although the prominent linear feature extending upwards from the centre can be recognised as a ditch associated with one of Sir Robert Anstruther's strips (K in Illus 4.31). On the basis of Hogg's map, the waggonway may be presumed to have started a short distance to the left (west) of the windmill base, heading roughly parallel with the ditch towards the present Waterless Bridge. Beyond this point its course is indicated by firm crop-mark evidence (Illus 4.22). The lighter areas of crop reveal numerous pits, presumably associated with coal extraction but unrecorded by Hogg.

Illustrations 4.22 and 4.22a. The field to the north of Waterless Bridge, looking south-west with the bridge at top centre. Issuing from it and running towards the left is a crop mark indicating the

course of the dismantled railway, still marked by a power line. The double-linear crop marks which curve through the centre of the photograph can be identified as the side ditches of the 18th-century waggonway, following the course shown by Hogg (L in Illus 4.31). Running from bottom left to top right is a broad linear feature which equates with one of the land boundaries marked on the Hogg map (M in Illus 4.31). Beyond this boundary, and patently respecting it, are closely-spaced parallel lines indicative of rig-and-furrow cultivation. It was this pre-enclosure landscape, and the possession by Sir Robert Anstruther of some of the rigs (as indicated by Hogg) that occasioned the dispute over the waggonway's route.

The small semicircular feature (N in Illus 4.31) to the right of centre towards the top of the photograph is probably of prehistoric origin, and seems to be an outlier of the Greendykes complex (see below).

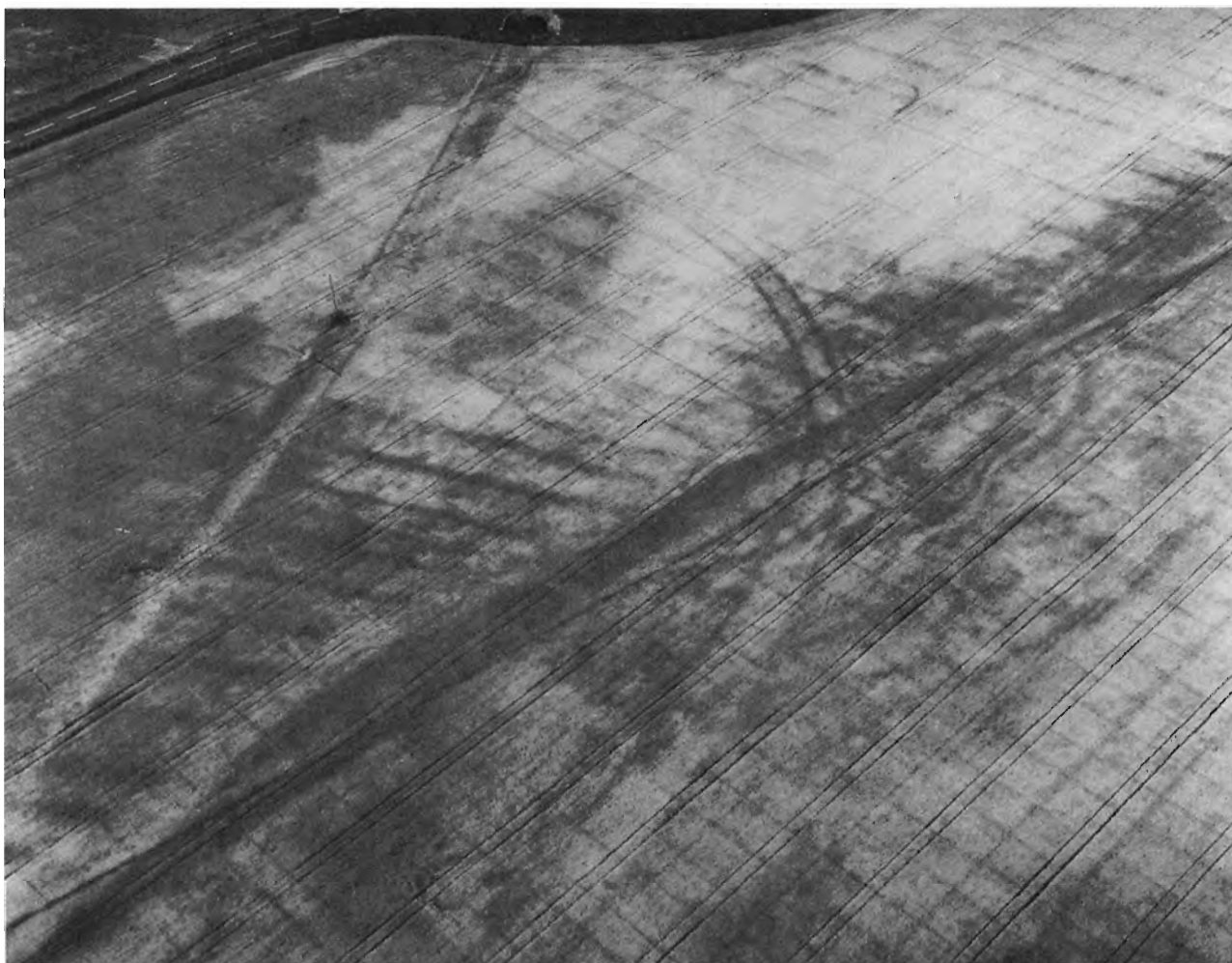
Illustration 4.23. A general view of the northern sector of the waggonway's route, looking west. The dominant feature, curving down from the upper left, is the line of the dismantled railway. To



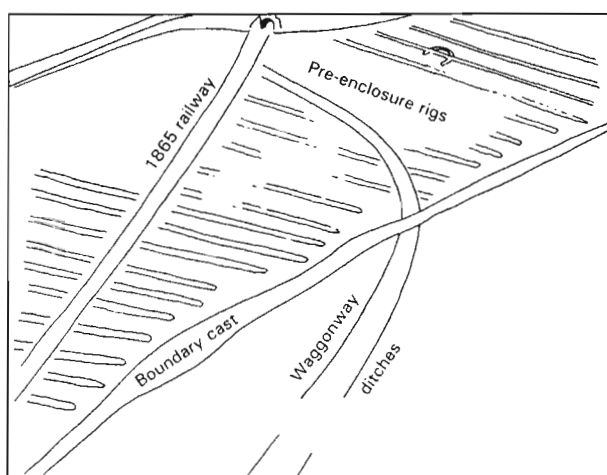
Illus 4.21. The field to the north of Coal Farm, showing crop marks of industrial and other features. The negative circular crop mark with an annular surround at bottom centre represents the foundations of a wind-engine shown on the Hogg map.

its right, beyond Waterless Bridge, the curving waggonway ditches shown in Illus 4.22 can be discerned. The curve ends just before it reaches the long field boundary which crosses the upper part of the photograph. The ditches can then be fol-

lowed as faint straight lines until they merge with the course of the later railway, which utilised this section of the abandoned waggonway. The unmasked portion of straight waggonway has been observed during winter reconnaissance as a line of



Illus 4.22. The field to the north of Waterless Bridge, showing crop marks of the dismantled 1865 railway, the curving side ditches of the 18th-century waggonway, and evidence of enclosure ditches and rig-and-furrow cultivation. The key (4.22a)(below) indicates visible features.



Illus 4.22a. Key to Illus 4.22.

lighter soil, presumably caused by a surface spread of ballast material.

A long straight crop mark runs diagonally towards the right from a point close to the waggonway-railway intersection, and continues

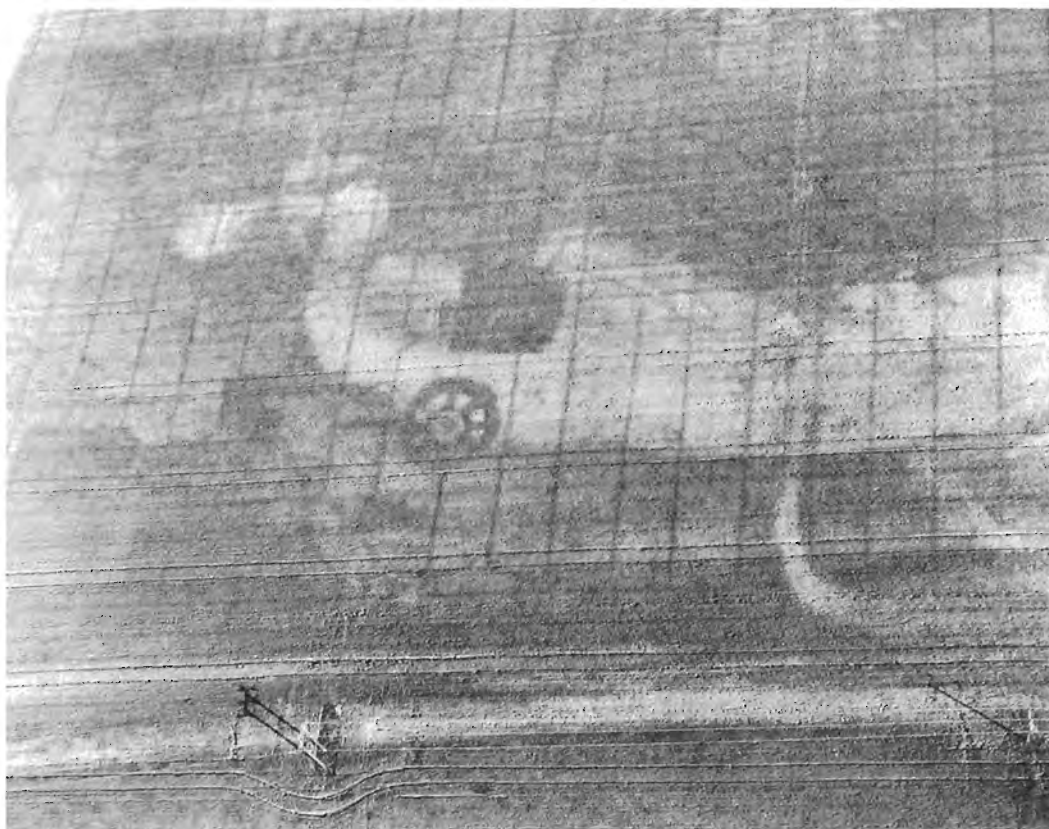
beyond the field boundary (O in Illus 4.31). Shortly thereafter it meanders towards the wood near the top of the photograph, through which runs an unnamed watercourse. This feature can be identified with the 'Track of a cast made by the Earl of Kellie to carry the water off the burn', marked on the Hogg map. The Earl's estates lay to the north of the Pittenweem Town Lands and Sir Robert Anstruther's holdings. In the early 1740s the Earl was extracting coal from this locality, and petitioning Pittenweem Town Council on matters relating to drainage (see this volume, page 28). A remarkable crop mark appears just to the right of the waggonway-railway intersection, and is shown in more detail in Illus 4.24 (P in Illus 4.31). It appears to represent a square coal-pit with an adjacent circular feature with radial 'spokes' emanating from a 'hub', best identified as the spindle base and foundation seatings of a timber-built horse winding engine. This is presumably the pit worked by the Earl of Kellie, which, since it lies outside the area of dispute in the 1785 litigation, is not marked on the I Hogg map.



Illus 4.23. A general view of the northern sector of the waggonway's route, looking west. Crop-mark features are identified in Illus 4.31.

Illustration 4.25. The triangular field enclosed by the Colinsburgh Road (top) and the Elie Road, the junction of which lies just beyond the top right of the photograph. Running through its axis is the line of the waggonway branch to the pans, revealed towards the top by a negative crop-mark feature of two closely-spaced parallel lines, probably induced by the foundations of stone revetments supporting a low embankment to carry the waggonway over a dip in the ground (Q in Illus 4.31). Below this feature the line is continued by traces of two positive crop-mark features, more

widely spaced, which can be identified as lineside drainage ditches (R in Illus 4.31). The projected course of the waggonway heads straight for the ramp at the St Philips saltworks without adopting the angular bend at its intersection with the Elie Road shown by Hogg, which appears to be a cartographic error. This, it may be suggested, probably stems from Hogg's failure to plot the correct morphology of the adjacent coastline, so introducing a skew to his survey which he has adjusted by 'bending' the waggonway to accommodate his error.



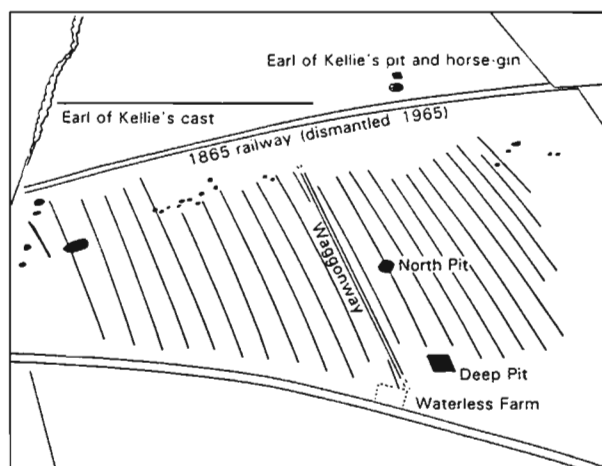
Illus 4.24. Crop mark of coal-pit and horse-winding-engine thought to have been operated by the Earl of Kellie.



Illus 4.25. The triangular field which lies between the Colinsburgh and Elie Roads, the junction of which lies just beyond the top right. Traces of the waggonway's branch route to the pans can be seen running through the centre of the photograph.



Illus 4.26. The field to the north of the Colinsburgh Road, beyond the sector shown in Illus 4.25. The key (4.26a)(below) identifies crop-mark features.



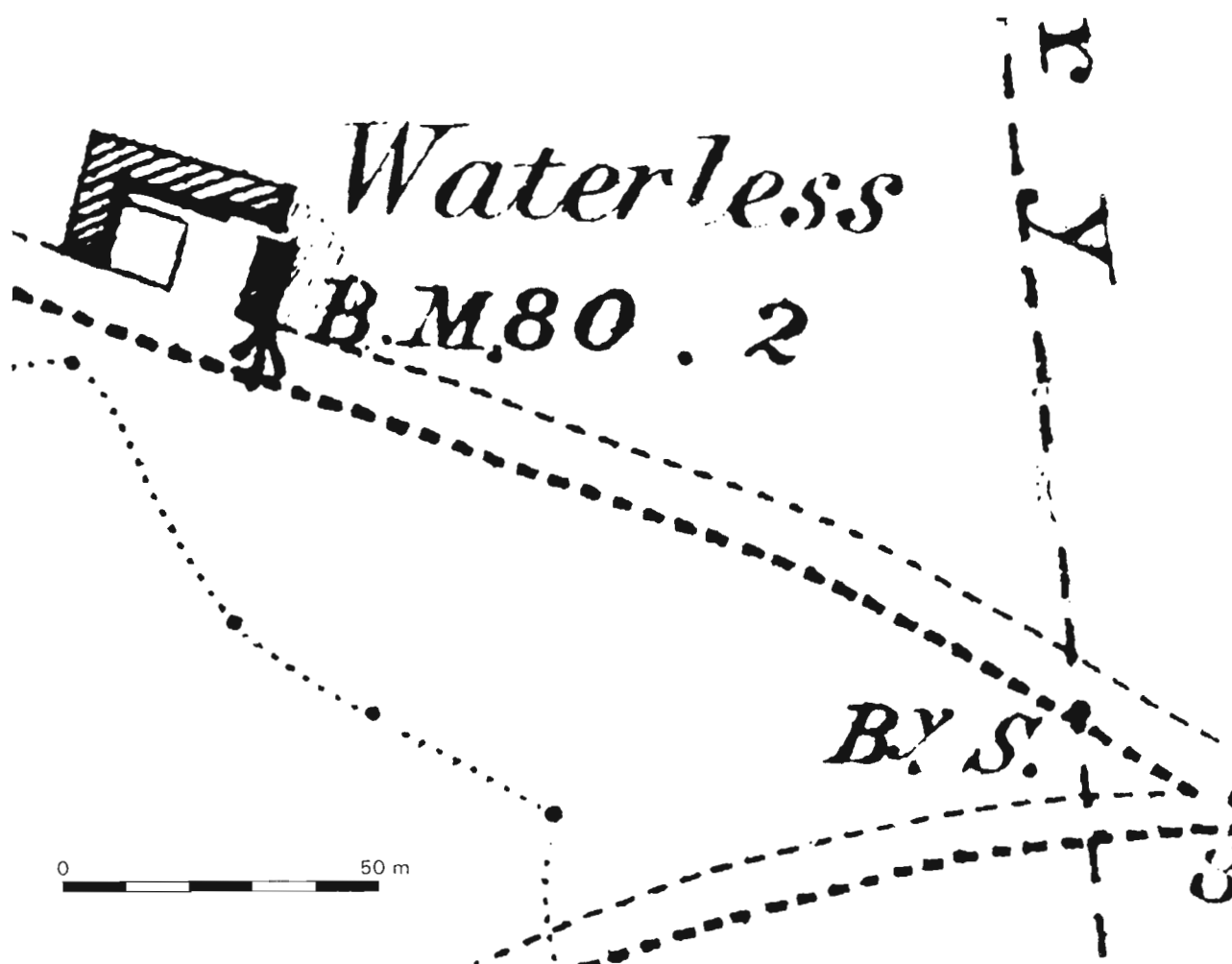
Illus 4.26a. Key to Illus 4.26.

Other features may be discerned in the photograph. To the left of the wagonway two rows of pits of various sizes, some coalescing, probably represent bell pit extraction from an early phase of the exploitation of the coal deposit (S in Illus 4.31) (Duckham 1970, 45). More pit features can be seen

elsewhere in the field. A short linear feature is also evident.

Illustrations 4.26 and 4.26a. The field to the north of the Colinsburgh Road, beyond the sector shown in Illus 4.25. Traces of rig-and-furrow cultivation are clearly evident, almost obscuring indications of the wagonway branch line. However, the wagonway's known point of intersection with the edge of the lower field (shown in Illus 4.25), and the route shown by Hogg, allow its faint but unmistakably straight course to be recognised against the slight curve of the more dominant rigs.

A square crop mark close to the road can be identified as the 'Deep Pit', exactly as shown by Hogg (T in Illus 4.31). Some distance beyond, on the same side of the wagonway, a more amorphous crop mark undoubtedly indicates the location of the 'North Pit' (U in Illus 4.31). This has shown up more clearly as a distinctive soil mark during winter reconnaissance. Pits and other features can be seen in the landscape beyond, as can the line of the dismantled railway, the Earl of Kellie's 'Cast', and the pit and horse-engine crop mark described above.



Illus 4.27. The buildings of Waterless Farm, now demolished, in an enlarged detail from the 1855 O.S. 1:10560 map. It is suggested that these were re-used pit-head buildings adjacent to the Deep Pit, as shown on Hogg's map.

A little below and to the left of the Deep Pit crop mark, hard against the road, is a negative crop mark of clearly defined rectangular form (V in Illus 4.31). This coincides with the yard of Waterless Farm, no longer standing but marked on the 1855 OS map, of which an enlarged detail is shown in Illus 4.27. The proximity of this feature to the Deep Pit suggests that these buildings and their associated hard-standing were originally pit-head structures subsequently adapted, as at Coal Farm, for agricultural purposes.

Illustration 4.28. The S-bend in the Colinsburgh Road at Waterless Bridge, occasioned by the need to cross the railway at approximately right-angles. To the right of the present road can be seen the crop marks of parallel ditches marking the course of the earlier road (W in Illus 4.31). A pre-enclosure boundary ditch (marked by Hogg) crosses the photograph diagonally from the top right. In the foreground are indications of extensive delving.

Illustrations 4.29 and 4.30. Crop marks at the site of the now vanished farm of Greendykes, which was noted by Hogg and later recorded on the 1855 OS map. Indications of the mid 19th-century enclosed field system, and of earlier rig-and-furrow cultivation, may be discerned. In the foreground, and along the edge of the trees, are crop marks of round and square barrows of probable Iron Age date. These ploughed-out prehistoric earthworks, when upstanding, no doubt provided Greendykes with its name, reminding us that settlement in the landscape is an ever-changing continuum.

Conclusion

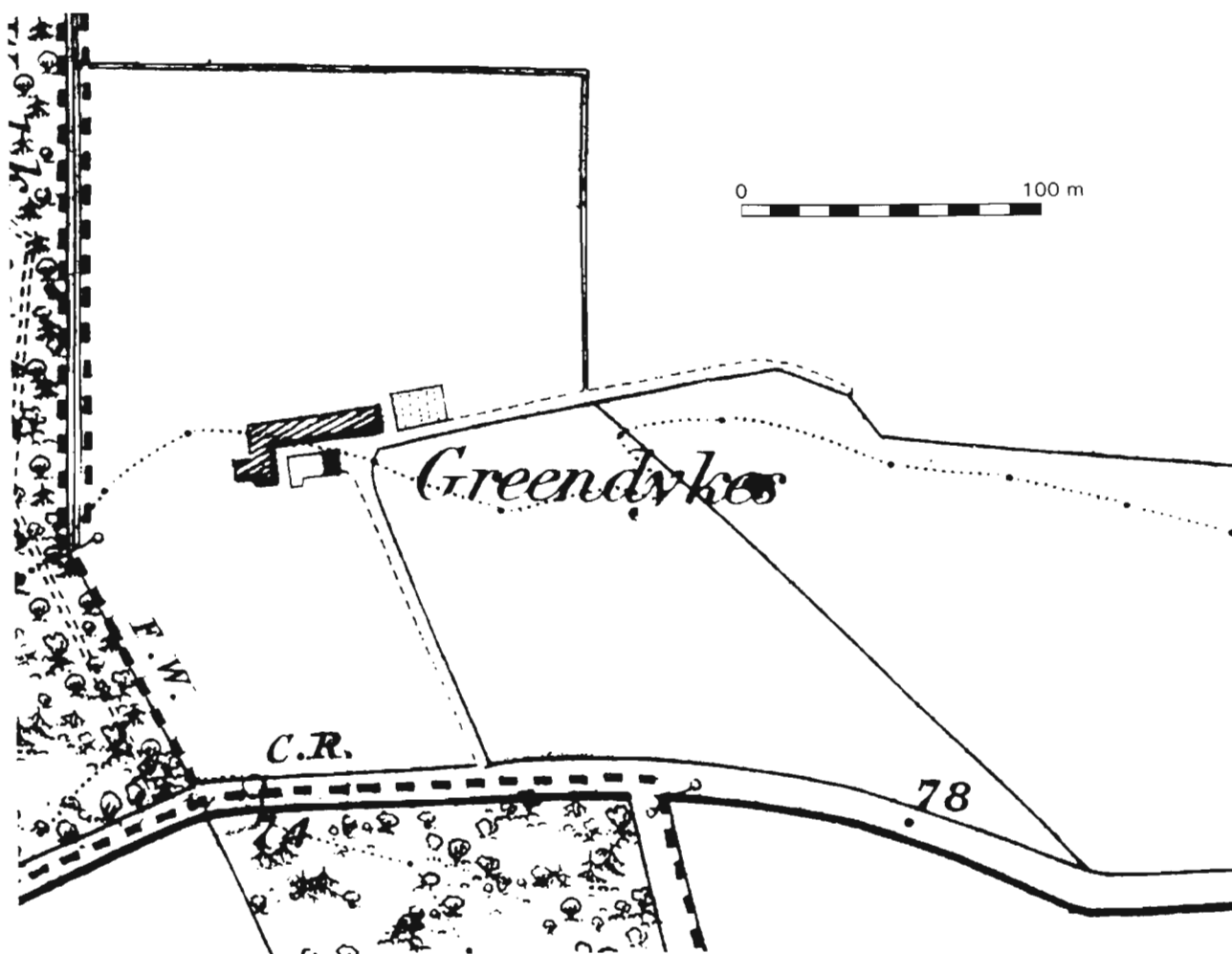
Remarkably, the existence of a functioning 18th-century waggonway system involving almost 2½ miles (3.87 km) of track at Pittenweem seems to have escaped the knowledge or attention of industrial historians and archaeologists until the present study was conducted. It is not mentioned in Lewis's seminal and otherwise comprehensive *Early Wooden Railways* (1970), Duckham's *A History*



Illus 4.28. The S-bend at Waterless Bridge which carries the road across the demolished 1865 railway, visible as a crop mark running diagonally across the picture. Parallel crop marks to the right of the present road may be identified as the side ditches of its pre-railway predecessor.



Illus 4.29. Crop marks on the site of the demolished 18th-century farm at Greendykes.



Illus 4.30. Greendykes farm buildings, enlarged from the 1855 OS 1:10560 map.

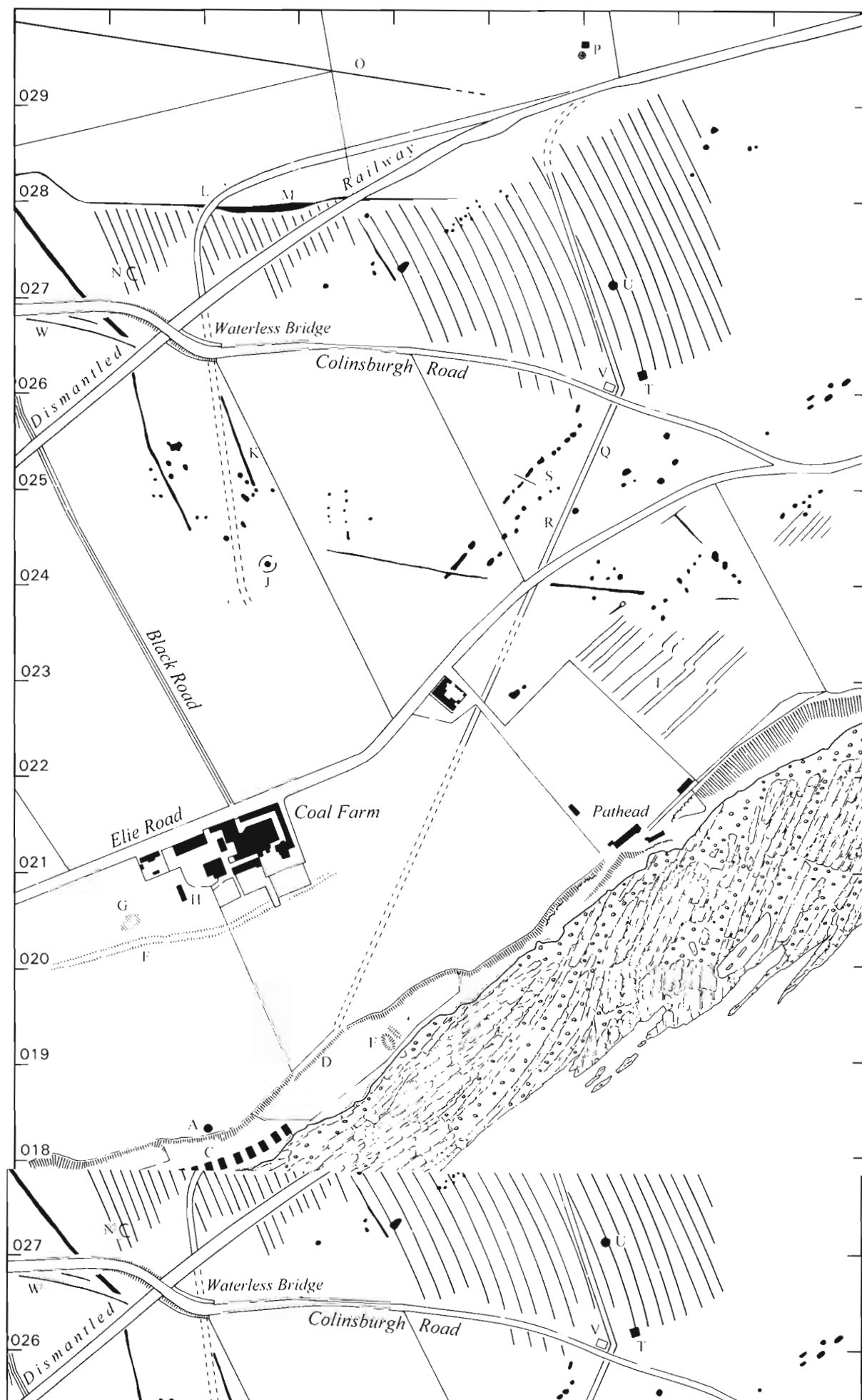
of the Scottish Coal Industry (1970), or Dott's *Early Scottish Colliery Waggonways* (1947). This may be explained in part by the fact that Sir John Anstruther's industrial enterprises were relatively short-lived and obscure, and because documents relating to them have either not survived or are contained (often as fragmentary or oblique references) in collections outside the major public repositories. Even *The Old Statistical Account of Scotland*, which provides significant information on coal mining and salt production in the area, makes no mention of a waggonway.

A more compelling reason, perhaps, is that today's rural landscape between Pittenweem and St Monans does not bear any obvious association

with the white heat of industrial innovation, so few have sought to find evidence of it there. Paradoxically, however, the ultimate failure of these enterprises, and the reversion of the land to agriculture, has fossilised the almost intact pattern of a late 18th-century industrial landscape in a form which has not survived at the locations of more successful ventures of the same kind, where subsequent development has swept away most evidence of their origins. For this reason, the whole area, with its interrelated and complex group of archaeological features, represents a remarkable and probably unique monument to early industry in Scotland.

Illus 4.31. General map of the area, with archaeological features plotted in red. The key to the lettering is as follows:

- A The wind-engine tower at St Philips.
- B Rock-cut features in the foreshore.
- C The nine panhouses.
- D The waggonway ramp.
- E Presumed outfall of Landale's 'day level' (now demolished).
- F Hollow caused by coal extraction.
- G Spread of brick and ash, indicating location of the Engine House.
- H Landale's 'Engine pit', recorded by the OS in 1855.
- I Crop marks of surface strata identified as 'ingau e'en'.
- J Crop mark indicating 'Seat of the 1st Windmill' (Hogg).
- K Linear crop mark showing a ditch associated with one of Sir Robert Anstruther's rigs.
- L Crop marks showing the curving drainage ditches of the waggonway.
- M Crop mark showing a ditch associated with the pre-enclosure rig-and-furrow pattern.
- N Semicircular crop-mark feature, probably pre-historic.
- O Linear crop mark tracing a cast (ditch) belonging to the Earl of Kellie (Hogg).
- P Crop marks showing a pit-head and horse-engine.
- Q Negative crop marks showing revetment walls beside the waggonway.
- R Drainage ditches associated with the waggonway.
- S Crop-mark features identified as bell pits.
- T Crop mark indicating the location of 'Deep Pit' (Hogg).
- U Crop mark indicating the location of 'North Pit' (Hogg).
- V Negative crop mark associated with the former Waterless Farm.
- W Crop marks indicating drainage ditches beside the former road.



demolished).

- F Hollow caused by coal extraction.
- G Spread of brick and ash, indicating location of the Engine House.
- H Landale's 'Engine pit', recorded by the OS in 1855.
- I Crop marks of surface strata identified as 'ingau e'en'.
- J Crop mark indicating 'Seat of the 1st Windmill' (Hogg).
- K Linear crop mark showing a ditch associated with