

Illus 1 Location map showing the course of the Scottish Command Line against a background of the contemporary road and rail network. Planned demolitions (a cross) and rail blocks (cross within a circle) beyond the main part of the Command Line are marked. Vulnerable beaches identified and blocked in 1940 are also labelled. The beaches to the NE at Lunan Bay and Montrose (and later Arbroath) were also defended.

The Scottish Command Line: the archaeology and history of a 1940 anti-tank ‘stop-line’

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Introduction

The Command Line in Fife and Perthshire (Illus 1) was part of an extensive network of defences erected in the summer and autumn of 1940, when an invasion of Britain seemed certain in the aftermath of the defeat of the allied armies in France and the Low Countries. On the E coast, vulnerable beaches were defended; fields and beaches were obstructed to prevent powered aircraft and gliders landing; shallow lochs and lagoons were obstructed to prevent seaplanes landing; anti-tank (A/Tk) lines, formed by ditches and other obstacles, and reinforced by pillboxes (concrete blockhouses to be armed on the Command Line with Bren light machine guns, Vickers medium machine guns, Boys Anti-Tank Rifles and – in one case – an A/Tk gun) and other defensive works, were drawn across the countryside to hamper the movement of the enemy’s armoured forces: the Scottish Command Line was one of these. This paper sets out its historical context, the history of its design and construction, its planned use, and describes its various elements and what still survives on the ground.

In 1940 the Army’s ‘Scottish Command’ was responsible for the whole of Scotland and Northern Ireland. The Scottish Command Line was described in Scottish Command’s Defence Scheme (TNA WO166/122: 2 October 1940) as (capitalisation as original):

A defensive line, to cover the approaches in favourable country to the FORTH–CLYDE isthmus ... constructed from Dysart ... on the FIRTH OF FORTH along the railway line to NEWBURGH ... From KINFAUNS ... to a mile south of STANLEY ... the line forms a bridgehead covering Perth to the East and NE. From STANLEY ... the line follows the railway and river to DUNKELD ... with extensions to TUMMEL BRIDGE. A continuous anti-tank obstacle is included.

The depth and complexity of the Command Line reflect the perceived levels of risk. The deepest defences block the easiest routes towards Perth along the A90 and A94 and across Fife towards the naval base at Rosyth, along the line of the A91, A92, A911 and A914 (Illus 1).

Sources of information

Elements of the Line were first published in Henry Wills’s (1985) pioneering account *Pill boxes: a study of UK defences 1940*; John Guy undertook a rapid survey for

Historic Scotland of Scotland’s 20th-century defences in the 1990s; the Defence of Britain Project (DoB) collated a great deal of information from a variety of sources, mostly volunteers, about defences (<http://ads.ahds.ac.uk/catalogue/specColl/dob>); Redfern surveyed documentary (mainly War Office) records for Second World War fortifications (Redfern 1998).

By the time I started my research on the southern (Fife) sector of the Command Line the information contained in these previous surveys had been incorporated into the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) database. David Easton of RCAHMS had also undertaken a rapid survey of 1940s RAF and Luftwaffe aerial photography that had revealed the location of A/Tk ditches, mostly already filled in and appearing as soil marks, both in the southern and northern sectors. I was fortunate in being able to undertake a more detailed examination of all the available vertical cover, and could make accurate transcriptions of the marks, once I had corrected the photographs to the contemporary mapping. Fife Council also kindly supplied copies of modern colour vertical aerial photography which provided more information.

My earlier work on the Cowie stop-line in the NE of Scotland (Barclay 2005) confirmed the value of the War Diaries of the units who built the lines and the higher-level formations (such as Scottish Command HQ in Edinburgh) who ordered the work. The Command Line, particularly the southern – Fife – part, is in the most part well-documented in the War Diaries, and my survey of them revealed, particularly in the diaries of No 2 General Construction Battalion Royal Engineers (TNA WO166/3443) a set of 1:10,560 maps marked up with the planned and implemented defences, and a detailed table of the siting and nature of the road, river and rail blocks in the southern sector. The consequence of this is that I was able to identify in the field far more features than might otherwise have been the case (for example, the remains of slit-trenches marked on the maps that would otherwise have seemed to be mere bumps and hollows).

The northern (Perthshire) sector is less well-documented. Redfern (1998) plotted points (such as road blocks) and lines of barriers from a tracing on the 52 (Highland) Division war diary for 1941 (TNA WO166/636) and other War Office files; and David Easton’s work on the vertical aerial photographs

revealed traces of filled-in A/Tk ditches on both sides of the Tay near Perth Aerodrome, Guildtown and Stanley. Further survey of the photographs and intensive fieldwork has filled in this picture, and there are references in the War Office files that provide further information: for example, the report, dated 9 July 1940, of a reconnaissance of the W bank of the Tay and its immediate hinterland, with prioritised actions to improve it as an A/Tk barrier (TNA WO166/3845).

The archive of the project: geographical information system layers; georeferenced aerial photographs and War Office maps; copies of documents and photographs have been deposited with Fife and Perth & Kinross Councils and RCAHMS. The Redfern and Guy surveys and the RAF and Luftwaffe aerial photographs are available for consultation at RCAHMS.

Tactical design

The strategic purpose of the Line – to delay the enemy until reserves could be gathered for counterattack – would be met by the tactical arrangement of its elements. The key principle was stated by the Commander Royal Engineers (CRE), Scottish Command on 13 June 1940 (TNA WO166/115):

The full value of an obstacle cannot be realized unless it is under fire. The dissipation of resources on obstacles which are not covered by fire is wasteful and must be avoided.

On 14 August 1940 this was stated more explicitly (TNA WO166/122):

Every obstacle must be covered by fire. Without this the obstacle is practically valueless as the attacker can remove it by hand or by gunfire.

The CRE had already (4 June 1940) (TNA WO166/122) instructed that:

obstacles are to be sited so as to divert tanks into certain lanes of approach which will be mined as mines become available.

In relation to A/Tk ditches the CRE wrote, on 2 April 1940 (TNA WO166/115):

Anti-tank ditches must be sited on the same principles as other obstacles, ie they should be sited tactically to canalize the attack into positions from which they can best be dealt with by weapons. They should be enfiladed by anti-tank weapons and defended by machine gun and small arms fire, in order to prevent destruction of the obstacle.

The V-shaped salients visible on the Command Line were designed to allow A/Tk guns to provide enfilade fire without the danger of hitting each other (TNA WO166/115). That the Line was pegged out on the

ground with considerable care is demonstrated by a reference in the war diary of 17 Infantry Brigade (Bde) in which it was noted, on a practice-manning on 1 August 1940 of the partly-constructed line by the 2nd Battalion (Bn) Royal Scots Fusiliers, that part of the ditch had been dug on the wrong alignment, the consequence being, ‘the fire plan would be upset’ (TNA WO166/924).

In the descriptive section below I highlight some of the tactical arrangements.

The building and intended use of the Command Line

April–June 1940 – why the Command Line was built

Between the invasion of Norway on 9 April 1940 and 22 June, when France surrendered, German forces took control of the whole eastern coastline of the North Sea and English Channel (Collier 1957). Between 27 May and 4 June over 330,000 British and allied troops were evacuated from Dunkirk, leaving behind most of the army’s heavy equipment. Over 600 tanks, more than a thousand field guns and 850 A/Tk guns were lost (ibid, 127). The Divisions at home had been partly stripped of these classes of weapon to supply the British Expeditionary Force, and retained only about a sixth of the field and A/Tk guns to which they were entitled (ibid, 123).

It is clear from a number of sources that both the public (Addison and Crang 2010) and the military (eg Alanbrooke 2001) saw invasion as a near-certainty. The impression of the Nazi regime that the events of the late 1930s had given was of a terrifyingly efficient, well-organised and undefeated enemy; as General Ironside himself wrote on 9 May 1940:

Obviously, when one considers how the Germans have worked out their plans for conquest of all the other countries, they must have considered how to get at us. Parachutists, troop-carrying aeroplanes, tanks in flat-bottomed boats and the like (Ironside et al 1962, 333).

That this, in fact, was not the case, was not known until post-war research revealed the truth. Therefore, in the face of what was believed to be an imminent German invasion of the S coast, a priority was given to the construction of defences to protect the United Kingdom (Collier 1957, 127). The Battle of Britain, interpreted as the preliminary bombardment for the invasion, lasted from early July to the end of October (Collier 1957).

The Home Defence Executive had been set up on 10 May to plan the defence of the UK. The forces at General Ironside’s disposal were:

not only ill-equipped; they also lacked mobility ... In the absence of strong mobile forces deeply imbued with the offensive spirit, Ironside came to the

conclusion that his best chance lay in combining his few mobile columns with static defences deployed over a wide area (Collier 1957, 129).

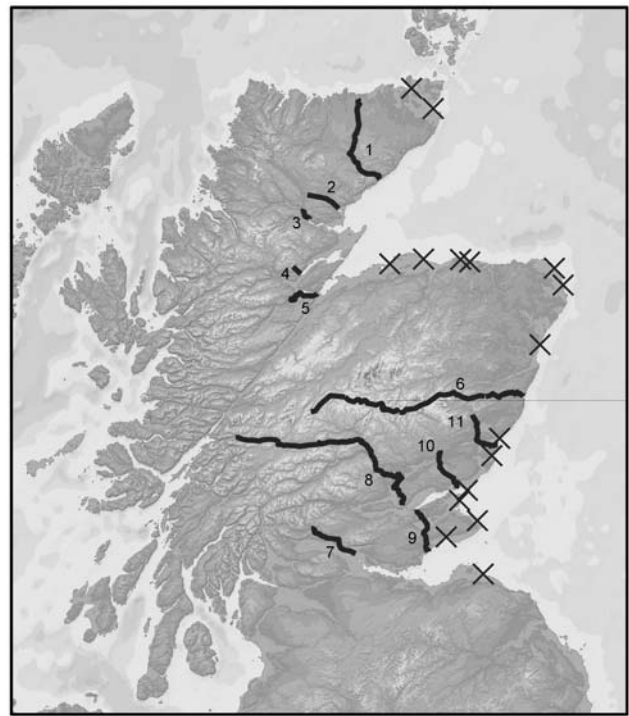
Ironside’s plans included:

1. *Extended crust of defence along probable invasion beaches to beat off minor enterprises and to watch for German invasion attempts and canalize penetrations;*
2. *Blocks manned by LDVs to stop or delay German armoured columns that had broken through;*
3. *Defence lines to cover London – GHQ line and Corps and Divisional lines;*
4. *General reserve;*
5. *Small mobile local reserves to deal with paratroop landings (Ironside et al 1962, 371).*

The ‘stop-lines’ were intended to slow down enemy formations or to contain a mobile invasion force in one part of the country and to ‘prevent enemy columns rushing about the country’ (Ironside et al 1962, 368); the German armoured divisions had completely out-maneuvred the less mobile allied forces in France and Belgium and the stop-lines were intended to restrict their freedom of movement. The overall pattern of the defences has been described generally in a number of publications. While the S coast of England was the likeliest target for the main invasion, the risk of diversionary attacks – by sea or air – to pin down reserves or to attack fleet bases was such that defences had also to be built around most of the E coast and inland.

By the end of May it was becoming clear that the number of troops in Scotland could not address all the defence commitments that had been identified and on the 24th Lt General Carrington, the Commander-in-Chief, Scottish Command sent a rather tetchy note to the C-in-C Home Forces asking that he ‘be given guidance as to what aspect of defence is to take priority in this Command’ (TNA WO166/115). He states firmly that it would be impracticable for him to accept the priority given in separate orders to the protection of ports, the protection of the naval bases at Rosyth and Invergordon, and the close defence of vulnerable beaches, with the forces at his disposal (stated as the equivalent of 11 ill-equipped battalions, eight of which were already committed to the protection of Orkney, Shetland and the mainland naval bases). He considered that the main risk was from airborne troops, and that troops should be concentrated to protect the naval bases and the ports of Aberdeen and Dundee from that eventuality, with no forces being allocated to beach defence or to the defence of other vulnerable ports.

An appreciation of the defence of Scotland was prepared by C-in-C Scottish Command for GHQ, Home Forces, on 9 June 1940 (TNA WO199/568), comparing the limited risks faced by Scotland prior to the fall of Norway – small-scale raids on the coast or naval facilities – with the increased risks after the fall of Norway, as Scotland was now within easier reach of enemy air bases. It was suggested that a series of lines to



Illus 2 *The vulnerable beaches identified in October 1940 (TNA file WO166/116) marked by crosses, and the stop-lines listed in July 1940 (TNA file WO166/434).*

- 1 Helmsdale–Kinbrace–Forsinard–Melvich
- 2 Loch Fleet – Rogart–Lairg
- 3 Bonar Bridge –Inveran
- 4 Dingwall
- 5 Kessock–Beauly–Kilmopack
- 6 Cowie Line: Stonehaven– Cowie Water – Bridge of Dye – Devil’s Elbow –Drumochter
- 7 Alloa–Dunblane–Callander
- 8 Command Line North
- 9 Command Line South
- 10 Kirriemuir Line: Barnhill–Kirriemuir
- 11 Montrose–Brechin–Edzell– North Esk

delay the enemy could be created, resources permitting. These are shown on Illus 2. The Perth–Dunkeld–Rannoch line (which was to become the northern sector of the Command Line) was seen as the most effective to defend the industrial capacity of ‘Edinburgh and Glasgow’. GHQ in London gave permission on 14 June 1940 for the line to be constructed, but suggested it be extended across Fife to the Firth of Forth: this line – Dysart to Newburgh – would become the southern sector of the Command Line.

It is interesting to note that the ‘GHQ Reserve Line’, a stop-line that ran from Bristol, S of London and then parallel to the E coast to northern England, seems not to have been included in any Scottish Command list of stop-lines nor to have been mentioned in any defence plans I have seen. Although a line was reconnoitred from the border to Musselburgh and from Stirling to Callander and Loch Tay, I am not aware of any construction and only the Alloa–Dunblane–Callander line (number 7 on Illus 2) may reflect some of the thinking behind it.

Late June–October 1940

The design and building of the Command Line

Late June

On 21 June 1940 Scottish Command HQ of the Royal Engineers (RE) set out provisional organisational arrangements for the Command Line (TNA WO166/122) explicitly formalising what was already in hand, as RE units had moved onto site and started work on the Line as early as 18–19 June. On the 19th the RE unit attached to Command HQ ('Edinburgh Army Troops') had moved from work on the defences of the River Forth to Murthly, N of Perth. On the 18th the CO of 229 Army Field Company (Coy) RE had undertaken a reconnaissance of the whole Line with General Curtis, acting Commander of RE in Scotland (CRE) (TNA WO166/3698).

Initially (TNA WO166/122) three RE companies were to be responsible for the Dysart to Newburgh sector, and three for the northern sector. The priority of work was set out as:

- digging of A/Tk ditch along parts of line not naturally tankproof;
- preparation of demolition of road and rail bridges;
- construction of *abatis* (obstructions created from felled trees, often wired together); and
- turning partial into complete A/Tk obstacles.

Scottish Command undertook to give all possible assistance with mechanical excavators, Pioneer Corps and civilian labour. By 26 June, when a more detailed document was prepared, the planned resources had increased (TNA WO166/122). Under the overall command of Lt Col Nutt, based in Perth, the Fife sector (under the command of Major Miller at Kinross) was intended to have:

- five RE companies;
- 100 locally-sourced labourers;
- 1000 men from Westfield Colliery;
- 2000 men wanted from labour exchanges;
- volunteers raised locally; and
- 20 mechanical excavators, some of which were already on site, with others in transit or ordered.

The Tay sector, under the command of Lt Col McKenzie at Murthly, had:

- four companies of RE;
- one company of Pioneers;
- 170 men raised locally;
- 200 wanted from labour exchanges;
- volunteers wanted locally;
- four mechanical excavators with four more expected and more wanted; and
- four 'railway grabs' (presumably rail mounted excavators usually used for track maintenance).

The war diary of No 2 Gen Construction Bn (TNA WO166/3443) refers to excavating machines from Glasgow City Council, which had had four excavators

requisitioned in late May/early June (minutes of council housing sub-committee 7/6/1940). A further 15 had been requisitioned by 21 June, although it is not clear how many of these were sent to Fife. It was noted that there were no bridge demolitions practicable in Fife, but those on the Tay sector were being identified.

229 and 230 Field Coys RE were already at work on the Fife sector in the last days of June, with, on one day, 80 men of the Gordon Highlanders also digging, and on another Local Defence Volunteers (later to be renamed the Home Guard) and 100 LNER railwaymen volunteering to dig. 231 RE Field Park Coy not only worked on the Line but was responsible for setting up the equipment dump, employing civilian labour and negotiating with the farmers across whose land the A/Tk barrier was to be dug. In their sector, at Falkland, excavators from the construction company Wimpey started work on the 30th.

On the Tay sector, units were arriving from the 20th until the last days of June, starting work immediately on making the W bank of the Tay, where necessary, a stronger A/Tk obstacle. The key RE formation on the northern sector at this stage was HQ Edinburgh Army Troops (comprising 585 Field Park Coy, 586 and 587 Field Coys).

The impression given from the war diaries is of high efficiency and commitment by the RE troops and higher command – decisions are being taken and implemented very rapidly (for example, the Fife sector of the Command Line was decided upon only on 14–15 June, and troops arrived to start building it less than a week later). It is also worth remembering that some of the engineer units arriving on 27/28 June had been evacuated from Dunkirk only three weeks before, but had reformed and re-equipped in the time. This contrasts with the disappointing output of local civilian contractors, noted in one unit's war diary before the end of June (TNA WO166/1028).

July

On 2 July the A/Tk line across Fife – hitherto referred to either by the places it ran between, or called the 'Curtis Line', after the General in charge of RE troops – was re-named as the 'Command Line'.

On 6 July the three RE companies comprising HQ Edinburgh Army Troops handed over their role to the engineering companies (271 and 272 Field and 273 Field Park Coys) attached to 46 Division (whose HQ was at Stirling). On 1 July No 2 General Construction Bn RE (comprising 660, 661, 667 and 668 RE Coys and 144 and 157 Pioneer Coys) moved to the Line, splitting itself over northern and southern sectors. The southern sector was also using large numbers of other labourers: for example, 400 men from No 4 Stevedore Bn (based at Rosyth) were being carried by train to Thornton Junction every day for ditch-digging and by 14 July 500 directly-employed civilian labourers from Edinburgh, Leith and Falkirk were engaged on the work (TNA WO166/3699). Volunteer labourers in large numbers



*Illus 3 A pristine section of A/Tk ditch in Surrey, July 1940.
(Imperial War Museum, H2473)*

continued to be employed: for example, 250 men from Nairn's linoleum works in Kirkcaldy were working on the Line on 1 July, on the next day 240 miners and 180 further volunteers (TNA WO166/3699). From late June, and in increasing numbers through July, mechanical diggers were deployed, with their civilian drivers, on the ditch-digging in the southern and northern sectors, and on the bank of the Tay in the N (TNA WO166/3851); these were drawn from Glasgow Council Housing Department and civilian contractors (whose men were also employed in the ditch digging and in constructing road blocks (TNA WO166/3858)). There is a frustrating lack of detail about the role of contractors, but 661 General Construction Coy supervised work by Wimpey valued at £11,000 in that month (TNA WO167/1028); unfortunately, the Wimpey companies do not hold archive material from this period. Unspecified poor performance of commercial contractors reported by RE units continued to be a problem; during the month it was noted, in the files of the Scottish HQ of the Royal Engineers (TNA WO166/122), that 'civilian firms contracting to supply pillboxes etc completely failed to fulfil their promises'. This may relate to a correspondence between Scottish Command and the suppliers of prefabricated pillboxes in July 1940 for the supply of 50 Norcon pillboxes (TNA WO199/2657 Jun–Aug 1940), many for the Command Line; fortuitously, delay in supplying these allowed the order to be cancelled when the emphasis of defence policy changed. In fairness to the suppliers, the delays may have been caused by difficulties in obtaining cement. The war diary of 229 Field Coy RE, before it left the area on 20 July, also records difficulties about hire charges and overtime with the Glasgow Council and its machine drivers during the month (TNA WO166/

3698). Unfortunately, I have been unable to locate any correspondence, the existence of which is implied by the file, that might cast more light on the issues.

The work being undertaken during July comprised the creation of the A/Tk barrier – either the ditch or making the western bank of the Tay a more formidable barrier. The barrier was dug by machine or by hand to conform to the pattern established by the War Office (Illus 3). The vertical ditch and riverbank faces created had to be revetted with timber, brushwood and hurdles, the supply or manufacture of which, and their fixing in place with wire are mentioned frequently in unit war diaries, particularly that of 144 Pioneer Coy (TNA WO166/5628). Also mentioned is the felling of woodland to create fields of fire (TNA WO166/5628: 4 July 1940). In early July the revetting work fell behind the digging, and heavy rain in the second week flooded many sections already dug and led to the collapse of un-revetted ditch (TNA WO166/3699; WO166/3700).

Originally, policy promulgated on 25 July was that no infantry trenches or concrete works were to be built on the Command Line (TNA WO166/3443) (although this was countermanded in August – see below); also, it was decided that a second A/Tk ditch was to be dug in advance (ie to the E of) that already planned. During July arrangements for all road and rail demolitions of the Tay and Tummel had been completed.

On 19 July General Ironside was superseded as Commander-in-Chief Home Forces by General Brooke, GOC Southern Command, and an immediate change in defence policy was instituted, towards a more mobile counter-attacking form of defence: 'henceforth the stop-lines would take second place' (Collier 1957, 143; Lowry 2004, 13). Brooke opposed concrete roadblocks because they would impede the mobility of defenders

(Wills 1985, 13). As the immediate crisis of the summer of 1940 passed, and other priorities faced the beleaguered country, a decision was promulgated on 7 August 1940 that the 'absolute priority' enjoyed by defence works henceforth could no longer be maintained (TNA WO166/122). That there was still a role for fixed defences within the more mobile strategy is made clear in a letter dated 30 August from Churchill to General Ismay (his Chief-of-Staff) noting: 'Now that the coast there [Dover] is finished there is no reason why we should not develop these lines, which in no way detracts from the principle of vehement counter-attack' (Wills 1985, 13).

Planned use – July and August

The barrier was being built at the peak of the fear of invasion and the units building the Line and those that were to man the defences were also training and preparing for the battle. Until after Dunkirk 9 (Highland) Infantry Division (a shadow division for the 51st Division) was the only full division in Scotland, and one of its roles was to defend the line that was to become the Command Line (TNA WO166/434). 9 Division was renumbered as 51 (Highland) Division after the surrender of the 51st at St Valery in the middle of June.

On 4 July 5 Division, which had been evacuated from Dunkirk a month earlier, moved from its initial concentration point in Aberdeenshire to central Scotland, where it was to act as the Scottish Command reserve and take over responsibility for the Command Line (TNA WO166/434, 9 Div Operation Instruction 27, 7 July; WO166/419). Operational orders issued during July described the roles of its three infantry brigades (13, 15 and 17 Infantry Bdes), to act either as a mobile counterattacking force to be employed against a landing anywhere between Berwick-upon-Tweed and Kinnaird Head (Fraserburgh), or to man the Command Line, or to prepare to counterattack E across the line of the Great Glen, as circumstances determined. It was not expected that both southern and northern sectors of the Command Line would have to be manned at the same time.

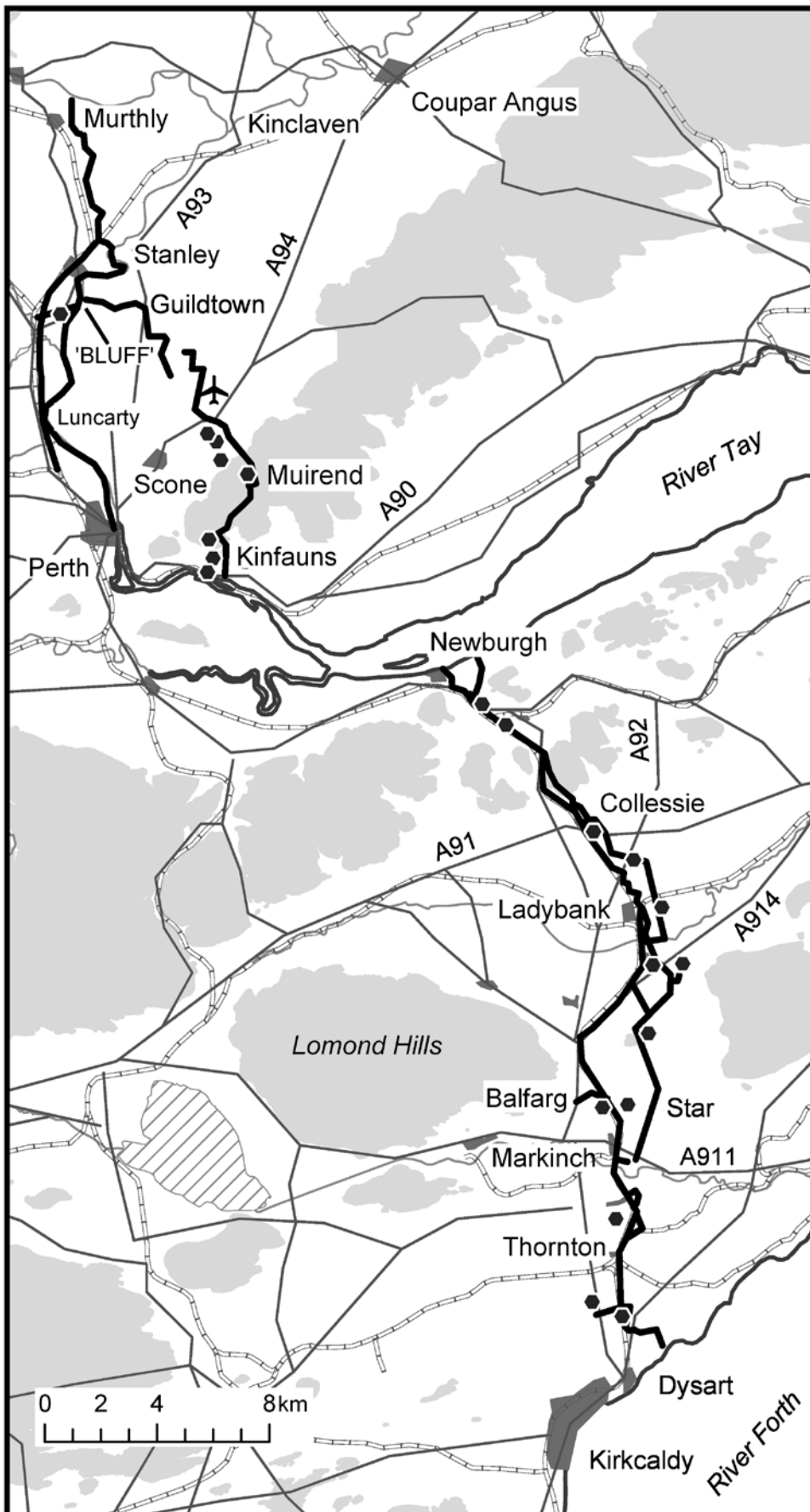
If the southern sector of the Command Line had to be occupied, 13 Bde was responsible for the portion from the southern end of the Line, at Blair Point near Dysart, to Kirkforthar, just N of Markinch (Illus 4) (TNA WO166/919). The Brigade's three infantry battalions were distributed as follows: on the right (southern) flank 2 Battalion (Bn) the Wiltshire Regiment to the Thornton railway junction. The central part of the Brigade's area was the responsibility of 2 Bn the Cameronians, from the SE edge of Markinch, to the pillbox NE of the village, on the road to Star. A detached company was to hold the area E of the railway round a pillbox near Coaltown of Balgonie, and two detached roadblocks at Cadham, behind the line (not illustrated). The left flank was to be covered by, and a reserve to be provided by 2 Bn Royal Inniskilling Fusiliers. One

company was to be positioned round Star Moss, NW of Star village – where there are many infantry firing positions) and another to cover an extension of the Line westward, to block the main road. If the line were to be manned, the rest of the battalion was to be in reserve round Leslie.

North of 13 Bde the Line was the responsibility of 15 Bde, according to 13 Bde Operation Instruction 39 (TNA WO166/919: 5 August 1940). Unfortunately 15 Bde's own war diary, and those of its constituent battalions, provide no detail of planned dispositions.

If the northern (Perthshire) sector of the Command Line had to be manned, 13 Bde was to occupy the southern portion, from the Tay at Kinfauns northwards over the hills, across the main A94 road, to South Friarton (N of Perth/Scone airfield; TNA WO166/919). Within the brigade's area, 2 Bn Cameronians manned the southernmost section, from Kinfauns to just S of Knowhead (2km N). No troops were allocated to the sector over the hill to Muirend (Illus 4). 2 Bn Wiltshires occupied the sector from Muirend pillbox to just S of the A94 including two pillboxes overlooking the entrance to the airfield at Perth/Scone. 2 Bn Inniskillings were responsible for the section from just S of the airfield to South Friarton (SE of Guildtown), where this portion of the A/Tk ditch runs out. The brigade artillery was to be positioned round the mouth of the Earn and near Moncrieffe House at Bridge of Earn (SSE of Perth). Guns of 205 A/Tk battery were to be spread amongst the battalions; one was to be in the A/Tk pillbox overlooking the airfield while two were to the W of the airfield at Scone. The 7th Battalion of the Cheshire regiment was the medium machine gun battalion for the Division and the war diaries of 13 and 17 Bdes both mention the role that companies of the Bn would play in their area (TNA WO166/919; WO166/924): B company, with 12 Vickers machine guns provided support for 13 Bde. The company was split into three platoons, each with two two-gun sections. This force was to be reinforced by a platoon (four guns) from D company – one section was probably to be placed in the machine-gun pillbox at Kinfauns (Illus 4; Table 2). The rest of D company was to be deployed round Moncrieffe Hill and Kirkton Hill overlooking the artillery deployment, the Tay, and the Line at Kinfauns.

North of Perth the 17th Infantry Brigade was to be split between the E and W banks of the Tay (TNA WO166/924). On the E bank 2 Bn Royal Scots Fusiliers manned the A/Tk ditch from Mavisbank, on the A93 S of Guildtown, to where the ditch meets the Tay at a point the army called 'BLUFF' (Illus 4). The unit was also responsible for protecting Hatton Ferry (S of Luncarty), where a temporary bridge was to be erected if invasion threatened. The battalion had five 25mm A/Tk guns. 6 Bn Seaforth Highlanders was to have detachments at Stanley, Murthly, Caputh Bridge and Dunkeld. 2 Bn Northamptonshire Regiment was in reserve.



Illus 4 Location map showing the extent of the anti-tank barrier, between Dysart and Newburgh in the S, and between Kinfauns/Perth and Murthly in the N. The locations of the 21 pillboxes built on the Line are also shown, but not the location of the pillboxes at Ladybank army depot and Perth/Scone airfield.

The 15th Infantry Brigade was responsible for the sector N of 17 Bde. It was part of Scottish Command reserve and one role was to man the Command Line from Perth to Dunkeld. The brigade command did not believe that the Tay was a satisfactory barrier, in particular because the banks of the river were heavily wooded and would provide cover for enemy troops, and intended instead to deploy troops to the E of the river, to protect the approaches to the bridges at Dunkeld, Caputh and Kinclaven: 1 Bn the Green Howards was deployed to N and S of Kinclaven on the E bank of the river, between Meikleour and Cargill. 1 Bn Yorkshire and Lancaster Regiment covered the E side from Caputh to Dunkeld. 1 Bn King's Own Yorkshire Light Infantry was in reserve in Luncarty, with a company at Stanley to monitor the approaches to Burnmouth Ferry (just N of Stanley) and to cross the river to the E bank if necessary.

It should be stressed that the disposition of troops was not continuously along the A/Tk ditch, but in concentrations and detachments covering high-risk points – usually where major routes crossed the Line, leaving, for example, hilly areas much more lightly manned.

During July and August the commander of 13 Infantry Bde undertook reconnaissance of both northern and southern Command Line sectors, followed by a 'manning exercise' on the N section on 16 August (TNA WO166/919). An exercise was undertaken on 29 and 30 August to test communications, one of the brigade's infantry battalions (2 Royal Inniskilling Fusiliers) acting as enemy.

On 26 July instructions were issued for the role of RE troops in the event of invasion – in view of their lack of mobility company commanders were to prepare plans to defend the adjacent sections of the Line, manning roadblocks and (where the A/Tk ditch had not been completed) erecting barriers of barbed wire and mines. If the enemy over-ran the Line, RE troops were to conceal themselves and then attempt to retake and close the barrier behind the enemy's advance guard. Even before the promulgation of this formal instruction most units had made some preparation: for example 144 Pioneer Coy had created a mobile reaction column, in part presumably because it covered some of the more far-flung posts such as at Tummel Bridge (Illus 1) (TNA WO166/5628). On 21 July, another Pioneer Coy, in the S sector, undertook a practice occupation of the defences in its sector, along with the local Home Guard unit (renamed from the LDV the day before). In general RE and Pioneer units were placed under the operational command of the appropriate infantry brigades.

August

A conference on 8 August 1940 (TNA WO166/3443) overturned the policy, promulgated in July, that there were to be no infantry trenches or pillboxes on the

Command Line. It was now intended that there would be one concrete A/Tk-gun pillbox and one machine-gun pillbox at each of the 25 (significant) roads that crossed the Command Line – 14 in S sector and 11 in N: that is, a total of 50 pillboxes. In the end far fewer pillboxes were constructed: I am aware of 21 planned or built on Command Line, with a further four at Perth/Scone Airfield and three at Ladybank army depot which (500m to the W) were close enough to be of value in defending the Line. At a further conference on 14 August, Royal Engineers examined the 'modified hexagonal Bren', which seems to have been the basic Type 24 with shell-proof walls. They agreed that it could be further 'modified for use as a combined A/Tk Rifle and Bren Gun by altering the two rifle loopholes in the long face [which usually flanked the door] accordingly and shifting the doorway to one of the opposite faces' (TNA WO166/3443). Four pillboxes on the Command Line are referred to as 'Bren & ATk Rifle' type in progress record forms on the same file and it seems likely that these (which I have termed Command Line type (b)) are the modified Type 24s. There is no evidence of whether the infantry units who would have manned the pillboxes intended to use them in the way the RE suggested. As Osborne (2008, 78) has noted, permanent brick shuttering was used because of a shortage of timber to make re-usable wooden shuttering. There are, in fact, many more than 25 roads and tracks crossing the Line; over 100 road- rail- and river-blocks were constructed in the southern sector alone. Orders were given (TNA WO166/122) for the digging of un-revetted weapon pits and section posts (trenches) to a depth of 2–3ft, and great numbers of these are marked on the 1:10,560 maps annotated by No 2 General Construction Bn (TNA WO166/3443); they are marked as black dots on the maps accompanying the detailed description of the Line, below.

Decisions were being made in mid-August about the siting of pillboxes, in some cases by officers of 5 Division and in others by Colonel Nutt, who was in charge of the construction of the Line.

A minute of 14 August 1940 promulgated the view of the CRE (TNA WO166/122) that horizontal-rail roadblocks were not adequate to close gaps wider than 16ft (c4.9m) and that where a wider gap was to be blocked vertical or bent rail barriers were to be built. Existing or partially-built horizontal rail barriers were to be retained where they were blocking gaps under 16ft wide.

From late in the month the files of No 2 General Construction Bn RE (TNA WO166/3443) contain detailed progress reports. By 27 August 34½ miles (55.5km) of A/Tk ditch had been completed, with 9¾ miles (c15.7km) left to revet, 70 road and railway blocks had been completed and 18 pillboxes were projected or in hand.

The war diary for 660 General Construction Coy RE (TNA WO166/3845) provides illustrative detail about the sort of work going on during August and

Table 1 *Extracts from 660 General Construction Company RE war diary.*

Monday 5 August 1940

<i>number of men</i>	<i>location</i>	<i>remarks</i>
8 660 GC Coy	Scone Woods	winning brushwood
9 660 GC Coy	North Inch	revetting complete
74 Messrs Duncan	601499	excavation to trenches and river obstacle

31, August 1940

<i>number of men</i>	<i>location</i>	<i>remarks</i>
7 660 GC Coy	East Bonhard	erecting brick road blocks
27 660 GC Coy	609481	revetting Tay and Almond river bank

September, including features I could identify during fieldwork. The Diary includes work by the company itself and by Pioneer Corps and private contractors; see Table 1.

September to October

In the end, 21 pillboxes were built on the Command Line – eight in the northern section and 13 in the southern (Table 2; locations shown on Illus 4). Significant progress was made on all the pillboxes during September. By the 24th it was planned that work on the Line would be completed by mid-October using the RE and Pioneers available. 660, 661 and 668 General Construction Companies were to leave the area by the end of September, leaving 110 Army Troops Coy, 273 Field Pk Coy, and 131 and 157 Pioneer companies. The command structure for the Line was to be dismantled.

November 1940 onwards – maintenance and abandonment

By 2 November, apart from salvaging equipment and stores and making good problems reported by farmers, the Line was complete, including all the pillboxes and 385 infantry firing posts (trenches). On 4 November Col Nutt set out proposals for the maintenance of the Command Line. A single Pioneer company would be split between Falkland and Dunkeld, the unit commander being responsible for inspecting the whole of the Line, including roadblocks, pillboxes and infantry posts, every month. 157 Pioneer Coy was made responsible for the task on 29 November (TNA WO166/3443). In December the unit was improving drainage and repairing revetments and it continued its responsibilities until June 1941, when the unit moved to Glasgow. 110 Army Troops Coy RE were still in the area (TNA WO166/3609) but do not seem to have worked on the Line after November, when the unit

was increasingly involved in building huts for winter accommodation.

With the departure of 5 Division, responsibility for manning the Command Line fell to 52 (Lowland) Division. In 52 Division's Operation Instruction 4, dated 16 December 1940 (TNA WO166/635), its roles are many and varied, but one was for two of its brigades to occupy either the Command Line's southern sector (from Blair Point to Collessie) or the northern sector (on the E side of the Tay, from Kinfauns to the E bank of the Tay at 'BLUFF'). Detailed instructions were issued in January 1941. While 52 Division included detailed firing plans for medium machine gun cover for the whole of the southern sector, there are no references to infantry being positioned N of Collessie.

Operation Instruction 7 of 52 Division (TNA WO166/636: 4 January 1941) provides more detail on the northern sector: Home Guard units were manning all road blocks on the Command Line and at key bridges (Kinclaven, Caputh and Dunkeld) as well as at Hatton and Burnmouth Ferries; the Infantry Training Centre in Perth was providing guards for the Perth bridges. On the Command Line from Kinfauns to the Tay at point 'BLUFF' 157 Bde was on the right flank, 156 Bde on the left.

Even in June 1941 the Chiefs of Staff still believed that a high standard of anti-invasion preparation was needed (TNA WO166/5701). However, the war diary of Scottish Command's RE notes that 'Orders were given on 20th February 1941 that no further pillboxes were to be built' (TNA WO166/136). In March this order was clarified to exclude airfield pillboxes, the construction of which was to continue.

The Polish Army took over responsibility for the defence of Fife and southern Angus in mid-October 1940. Polish Army files (PISM A.VI.1/73; A.VI.31/5) include, in 1941, detailed plans for the manning of the northern Command Line from Kinfauns to the E bank of the Tay at point 'BLUFF'. The Polish files show a very high level of detailed preparedness, and the maps even include proposals for a further length of A/Tk ditch to be dug running E/W to the N of Scone, between the Tay and the existing line of A/Tk ditch. The Poles also planned very much more extensive minefields along the A/Tk ditch than the British forces they replaced. There is no mention of the Fife sector of the Command Line in the Polish records I have examined and Polish concentrations seem to have been E of the Command Line, on and close behind the E Fife beaches (PISM C.538/I 1940; C.538/I 1940).

Changes in defence policy over the winter were reflected in the war diary of 110 Army Troops Coy RE for February 1941 (TNA WO166/3609), which contains a list of and progress report on the creation of over 120 roadblocks in Fife. These cluster round towns and villages, blocking routes of communication, conforming to the new doctrine of the defence of 'nodal points', rather than linear defensive systems.

The elements comprising the Line

The Command Line had the following elements:

- the anti-tank (A/Tk) barrier;
- road, rail and river blocks;
- firing positions;
- demolitions; and
- planned minefields.

The anti-tank barrier

There were up to four parallel lines of A/Tk barrier, most often an A/Tk ditch, which the Chief Engineer's office advised should be at least 5ft deep and 18ft across, the steep side that the enemy tank would face being revetted with timber and brushwood held in place with galvanised wire (Illus 3). In a handful of places some of this galvanised wire is still visible, albeit far less frequently than was the case on the Cowie Line (Barclay 2005); in one place, at Loanfolds, upright timbers survive. Existing obstacles were used wherever they existed or could be strengthened: watercourses; railway cuttings and embankments; groups of buildings; woodland; bogs. The parallel lines of A/Tk ditch are sometimes linked by roughly perpendicular cross-ditches to form closed cells; in two places (at Thornton and Balfarg (Illus 4) the A/Tk ditch runs westwards, perpendicular to the primary ditch, to block what was then the main N-S road.

There were probably many *abatis*, obstacles made of felled trees, often wired together to make it more difficult to move them; they are referred to occasionally in the files but with little precision about nature or location.

There are many A/Tk cubes, A/Tk walls and occasionally 'pimples', also called dragon's teeth, filling in vulnerable parts of the line or associated with a road or rail block; in two places there are major stretches of dragon's teeth forming the main A/Tk barrier.

It is important to remember that there were more ephemeral elements: in particular barbed wire, much of it 'Dannert' wire – concertina coils. The file (TNA WO166/115) suggests, 'Wire obstacles should, where possible, be erected on both sides of the anti-tank obstacle'. No surviving barbed wire was found on the survey of the Command Line, but occasional angle-iron pickets – L-section mild steel posts with holes and notches to hold the wire – were noted.

The War Office maps on file WO166/3443 also show the positions of many movable wooden foot-bridges over ditches for farmers and stock; these were to be removed if invasion threatened.

Road-, rail- and river-blocks

There would have been a block of some sort at every point where the A/Tk barrier met a road, railway or tram track, or on road bridges under or over the railway line, where it is close to or itself forms the A/Tk barrier. There were also fixed blocks in watercourses. On

roads and railways there were three kinds of movable barriers: vertical rail; horizontal rail; wire (although there were only two clearly identified examples of the last). Some minor tracks were blocked permanently to vehicular traffic, while allowing pedestrians to pass, and some of these blocks still survive, mainly on minor roads and tracks.

Scottish Command (TNA WO166/116) reiterated (on 14 July 1940) best practice for siting and manning roadblocks (that the block is to be a 'trap' that should not be visible from any great distance, and with men in positions around and in advance of the block to engage stopped vehicles). The advice and diagrams were promulgated throughout Scottish Command and the Home Guard.

Firing positions

The firing positions for infantry and guns took the form of:

- loopholes in walls;
- slit trenches and weapon pits; the files suggest there were 385 of these;
- in four places more complex firing positions, formed of trenches and weapon pits, were constructed; and
- 21 pillboxes (eight in the northern sector and 13 in the southern); these were sited in discussion between the RE officers and the infantry units who were to man them; a further seven pillboxes were built in positions where they would have reinforced the Command Line, three protecting Ladybank army depot and four recorded at Perth/Scone aerodrome (although there is no evidence whether these pillboxes were built at this time, or later, in 1941); in turn, three of the Command Line pillboxes would have materially aided the defence of the aerodrome, which lay immediately to the E of the A/Tk ditch.

Pillboxes

Seventeen of the original 21 Command Line pillboxes survive. Four types are represented, and the destroyed boxes probably conformed to two of the types. All the survivors have 'shell-proof' thick walls (1.3m).

a Hexagonal pillbox based on Type 24 (Osborne 2008) designed for Bren, usually with one loophole per side; most have rifle loops flanking the door on the longest side; the door may be moved from its usual location on the longest side; some have additional stretches of wall covering the entrance. This type is probably based on Scottish Command CESC drawing number 2865 (TNA WO166/122) (Osborne 2008); there were certainly nine and were probably 12 of these on the Line (South (S)5; S6; S9; S10; S11; S12; S13; S14; S15; North (N)1; N3; N4; N8. Table 2); that at SWEETHOPE is illustrated (Illus 7).

Table 2 *Pillboxes on the Command Line.*

The table below is ordered by War Office Command Line sector (North or South) and the serial number applied by the Royal Engineers (not always in strict S to N order)

South 1 Slagheap (NT 3036 9581) Illus 10

War Office file WO166/3443 lists this as for 'Bren & A/Tk Rifle'. The pillbox was located within Dysart Colliery (Randolph Pit). Destroyed by 1946. The probability is that this was one of the Type 24 variants I have identified as Command Line type (b).

South 2 Hillman (NT 2929 9557) Illus 10

War Office file WO166/3443 lists this as for 'Bren & A/Tk Rifle'. It is a Type 24 variant pillbox with thick 'shell-proof' walls of brick-shuttered concrete under a rectangular reinforced concrete roof, which hides its shape from the air. The sides other than the entrance have one loop, apart from the N, which has two – presumably allowing for the Bren and A/Tk Rifle. Internally the loops have cast tops but brick-shuttered sides. There is a cruciform ricochet wall. Command Line type (b). Illus 5.

South 3 Muiriespot (NT 3052 9938) Illus 13

War Office file WO166/3443 lists this as for 'DMG', for double Vickers medium machine guns. This is a brick-shuttered rectangular concrete pillbox with thick 'shell-proof' walls and two large loops facing over the open field to the ESE and a rifle loop on the northern wall. Both loops have beneath them a dwarf wall of bricks, T-shaped on plan, which in better-preserved examples (see below) supports a heavy wooden table for the guns. Command Line type (c).

South 4 Starview (NO 3016 0297) Illus 13/15

War Office file WO166/3443 lists this as for 'DMG', once again for double Vickers guns. A rectangular brick-shuttered concrete pillbox with thick 'shell-proof' walls and two large loops facing over open land to the NNW – shooting into the rear of enemy troops approaching the anti-tank ditch. The right flank of the box is covered by the hill and wood of Whitehill Plantation and the rear by the ridge into the side of which the box is dug. The position on the side of a hill means that the roof is internally and externally at two levels. Like Muiriespot there is a flanking rifle loop. Command Line type (c). Illus 8.

South 5 Searchlight Hill (NO 2952 0332) Illus 13/15

War Office file WO166/3443 lists this as for a 'Bren'. It is a hexagonal Type 24, brick-shuttered concrete pillbox with thick 'shell-proof' walls under a rectangular concrete roof, tucked into the corner between the railway cutting and a railway bridge. The entrance is flanked by two rifle loops. The rectangular plan given by the rectangular roof is further enhanced by a thin brick wall on the W side. One face is coated with stone to merge in with the wall flanking the railway. The same bridge abutment wall has been raised since the war and now masks one of the loops. The roof has triangular holes set round the edge of the roof, perhaps to hold angle-iron pickets. Command Line type (a).

South 9 Quarry (NO 3083 0558) Illus 15

War Office file WO166/3443 lists this as for a 'Bren'. This box does not survive and there is no trace on the vertical aerial photographs of a structure at the grid reference given on the file. Probably a standard Type 24, Command Line type (a).

South 10 Annfield (NO 3192 0776) Illus 17

This pillbox, described in War Office file WO166/3443 as for a 'Bren', is a hexagonal brick-shuttered concrete pillbox with thick 'shell-proof' walls, but without the rectangular concrete roof. It lies hidden, and before my fieldwork, unrecorded, in a strip of woodland. There is a flanking wall running 1.6m to the left (E) of the door, presumably to provide cover from fire from the northern part of the field. A semi-circular steel collar is set into the brickwork at the top of the wall just left of door. There are stepped rifle loops on both sides of door and Bren loops in the other five faces. There is a Y-shaped internal ricochet wall. The internal splay of the loops have wooden platforms and the usual hole about 4 inches by 9 inches under the loop to accommodate the Bren tripod. The loops are precast concrete units. The pillbox has rounded external corners except at rear. A fairly standard shell-proof Type 24 pillbox, Command Line type (a).

South 6 (actually N of 9 and 10) Loanfoot (NO 3133 0817) Illus 17

War Office file WO166/3443 lists this as for a 'Bren'. This is the northernmost example of a Type 24 under a rectangular concrete roof. The hexagonal brick-shuttered pillbox with thick 'shell-proof' walls is tucked into the SE corner of the garden of the house called Loanfoot. It differs from serial numbers South 2 and 5 in having precast loops. An identical loop (Illus 20) is set into the NE corner of the garden wall. There are three holes in the garden wall to allow fire from three of the pillbox's loopholes. There is an internal Y-shaped ricochet wall. The fire from the pillbox and loop-holed wall would be concentrated SE, towards a pair of roadblocks on the main road. Command Line type (a).

South 11 Sweethope (NO 3125 1044) Illus 17

War Office file WO166/3443 lists this as for a 'Bren'. It is a Type 24 pillbox with thick shell-proof brick-shuttered concrete walls covering Rail Block E NE of Ladybank. It has rounded corners except at the two corners of the entrance wall. There are two rifle loops flanking the door and a single loop in each of the other walls. It has precast loopholes. Y-shaped internal ricochet wall. Command Line type (a). Illus 7.

Ladybank Army Camp 1–3 Illus 17

Three hexagonal brick-shuttered concrete pillbox on the boundary of the army camp, now destroyed.

South 12 Melville (NO 3040 1186) Illus 17

War Office file WO166/3443 lists this as for a 'Bren'. This is a hexagonal Type 24, brick-shuttered concrete pillbox with rounded corners apart from the corners of the entrance wall. The pillbox has an external blast wall to the E of the entrance. It has pre-cast loopholes. T-shaped internal brick ricochet wall. Command Line type (a). Illus 23.

South 13 Cask Hill (NO 2864 1316) Illus 24

War Office file WO166/3443 lists this as for 'Bren & A/Tk Rifle' – the Command Line type 24 variant. It is brick-shuttered concrete with shell-proof walls. Its corners are generally rounded, including the wall with the entrance. The northern walls (to the left of the

entrance wall) are buried. The wall opposite the entrance has two loopholes and has sharp corners. The other wall has a single loophole. All the loopholes are precast. The internal ricochet wall has been removed to convert the pillbox into a workshop. The face with the two loopholes is partly camouflaged with stone to match the field wall. Command Line type (a). Illus 25.

South 14 Skyline (c NO 252 170) Illus 28

War Office file WO166/3443 lists this as for a 'Bren' pillbox; there is no trace in the mapped location. Probably a standard Type 24, Command Line type (a).

South 15 Fort (NO 2416 1799) Illus 28

War Office file WO166/3443 lists this as for 'Bren'. The pillbox is a hexagonal brick-shuttered concrete pillbox with a single loophole on the three fully visible faces; the rest are buried under slip from the railway embankment above it. Unlike pillboxes to the S this box has sharp, not rounded, corners. Probably a standard Type 24, Command Line type (a). Illus 29.

North 1 Kinfauns Garage (c NO 159 218) Illus 30

War Office file WO166/3443 lists this as a 'Bren' pillbox. The mapped site lies within the area of a demolished garage on the edge of the main Perth–Dundee road but there is no trace. Probably a standard Type 24, Command Line type (a).

North 2 Kinfauns Wood (NO 1591 2228) Illus 30

War Office file WO166/3443 lists this as a 'DMG' (Double Machine Gun) pillbox. A rectangular pillbox with two large embrasures for Vickers machine guns (similar to South 3 and 4, and North 5), set in a wooded slope overlooking the A90 road. There are brick dwarf walls below both embrasures, which were to support the timber shelves on which the guns rested. Command Line type (c). Illus 31.

North 3 Binns Farm (NO 1593 2295) Illus 30

War Office file WO166/3443 lists this as a 'Bren' pillbox, described by John Guy as a Type 24. Before it was partly buried, Mark Hall of Perth Museum described this as a hexagonal pillbox with four embrasures; the presence of rectangular sockets below the embrasures confirms this as a Bren box. It is set into a quarry, and presumably there would have been no field of fire for a fifth embrasure. It seems to have been brick-shuttered concrete. Command Line type (a).

North 4 Muirend (NO 1693 2532) Illus 30

War Office file WO166/3443 lists this as a 'Bren' pillbox, which lies within a small farm steading. It is a heavily-overgrown seven-sided variant of Type 24, as the entrance is set into the corner between two walls. The next wall to clockwise of the entrance has no loop, as it faces the end of a farm building. The other five walls have single pre-cast Bren Gun loops. A Y-shaped internal ricochet wall has been removed. Command Line type (a).

North 5 Hangar View (NO 1598 2685) Illus 33

War Office file WO166/3443 lists this as a 'DMG' pillbox. This is the best preserved of the four rectangular double-embrasure pillboxes for a pair of Vickers machine gun. It lies in the corner of a field overlooking the pillboxes North 6 and 7 and the main road past the entrance of Perth/Scone Airfield. There are rifle loops in the eastern and southern walls; they are made of pre-cast slabs, different from the precast units found in the southern part of the Command Line. In this pillbox the heavy timber 'table' provided to support the guns survives completely intact. Command Line type (c). Illus 34 and 35.

North 6 Circles (NO 1554 2733) Illus 33

War Office file WO166/3443 lists this as a 'A/Tk & Bren' pillbox. This is the only Type 28 pillbox for 2pdr anti-tank gun on the Command Line. As is standard, it is provided with a separate chamber for a Bren Gun, which is accessed reached down two steps to the E from the gun-chamber. The Bren chamber has two rifle loops. The anti-tank gun and Bren face due N, towards the main road passing Perth/Scone Airfield. There are small indents under the A/Tk gun embrasure, presumably to make space for part of the gun carriage. Pillbox North 7 lies a short distance to the south. Command Line type (d). Illus 9 and 36.

North 7 Sawmills (NO 1555 2730) Illus 33

War Office file WO166/3443 lists this as a 'Bren & A/Tk Rifle' pillbox. A modified Type 24 hexagonal pillbox much buried by field clearance stone. The longest side, instead of the entrance, has two Bren/A/Tk Rifle loops; the two walls attached to the longest wall are blank, while the remaining three sides have single loops and the entrance. There is a cruciform internal ricochet wall. Command Line type (b).

Perth Aerodrome 1–4 Illus 33

Three Type 24 and a Type 27 pillbox to the S and W of Perth/Scone Airfield. None survive.

North 8 Gowrie (NO 1071 3151) Illus 38/39

War Office file WO166/3443 lists this as a 'Bren' pillbox. Hexagonal Type 24 brick-shuttered concrete pillbox in a narrow but dense strip of woodland overlooking the Tay. There are single Bren loops in five of the faces, with the entrance (flanked by rifle loops) in the sixth, facing the River Tay. There is a filled-in square pit in front of the entrance. There is a Y-shaped internal ricochet wall.

b Hexagonal pillbox based on Type 24, but where the entrance is moved from the longest face to allow the two flanking rifle loops to be increased in size to accommodate a Bren and A/Tk Rifle side by side; this design is referred to in a report on a Command Line RE conference on 14 August 1940 (TNA WO166/3443). Some of the walls may have no loops; the type has a cruciform ricochet wall; there were certainly three and probably four of these on the Line (S1; S2; S13; N7. Table 2); that at Thornton HILLMAN is illustrated (Illus 5 and 6).

Amongst the surviving pillboxes, there are two of type *a* and one of type *b* which have a rectangular concrete roof that disguises the hexagonal shape.

c Four rectangular pillboxes with two large loopholes facing in one direction, for two heavy Vickers machine guns, and subsidiary flanking rifle loops; an intention to issue drawings for this type is intimated in file WO166/122 on 20 August 1940; Osborne (2008 and pers comm) notes that this type is found only on the Command Line in Fife and resembles BEF double machine gun pillboxes in France and Belgium (S3; S4; N2; N5. Table 2). That at STARVIEW is illustrated (Illus 8). As noted above, some of the RE units on the Command Line had moved almost straight from Dunkirk.

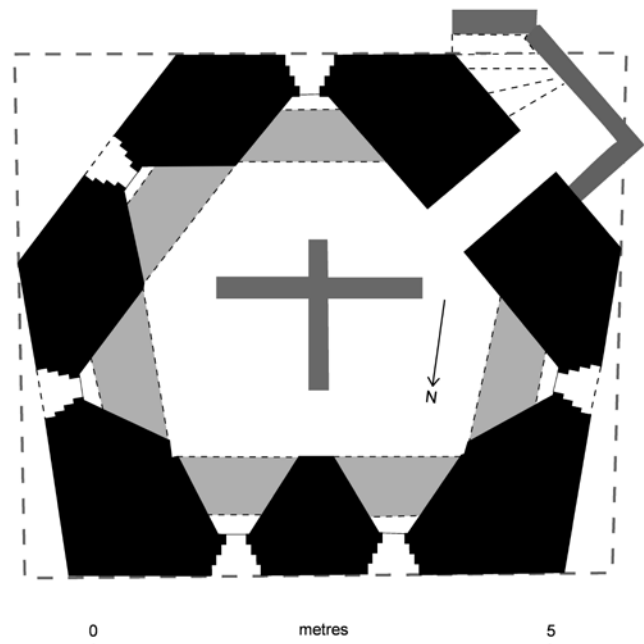
d A single classic Type 28 pillbox for a 2pdr anti-tank gun with separate Bren chamber (pillbox North 6: CIRCLES. Table 2. Illus 9).

That a pillbox embrasure was primarily intended for a Bren Gun can be determined by the presence of a small rectangular hole immediately below it. This was to make room for one leg of the Bren's tripod mounting, a feature illustrated on a BEF pillbox plan and section on file (TNA WO199/2657). These holes measure about 10cm by 15cm and, where they survive, had either removal or hinged wooden lids.

The information available for the three Ladybank army depot and four Perth/Scone aerodrome pillboxes (all of which have been demolished) suggests a variety of types. From analysis of wartime aerial photographs RCAHMS suggest that Perth had at least four pillboxes: three Type 24s and a Type 27, a type particularly associated with airfields, with an anti-aircraft position in a central well. Osborne (pers comm) notes that the Ladybank pillboxes were regular hexagons with very wide, shallow loopholes, characteristic of the guard-posts that were often furnished at military depots. I have not as yet found evidence about the date of construction of these pillboxes.

Demolitions and mines

The preparations for defence included a range of planned demolitions in the northern part of the



Illus 5 Plan of the HILLMAN pillbox (serial number South 2) near Thornton, a Type 24 variant designed to provide for a Bren Gun and Boys A/Tk Rifle in adjacent loops on one face, in this case the northern one. This is one of the Command Line pillboxes with an overhanging rectangular roof.



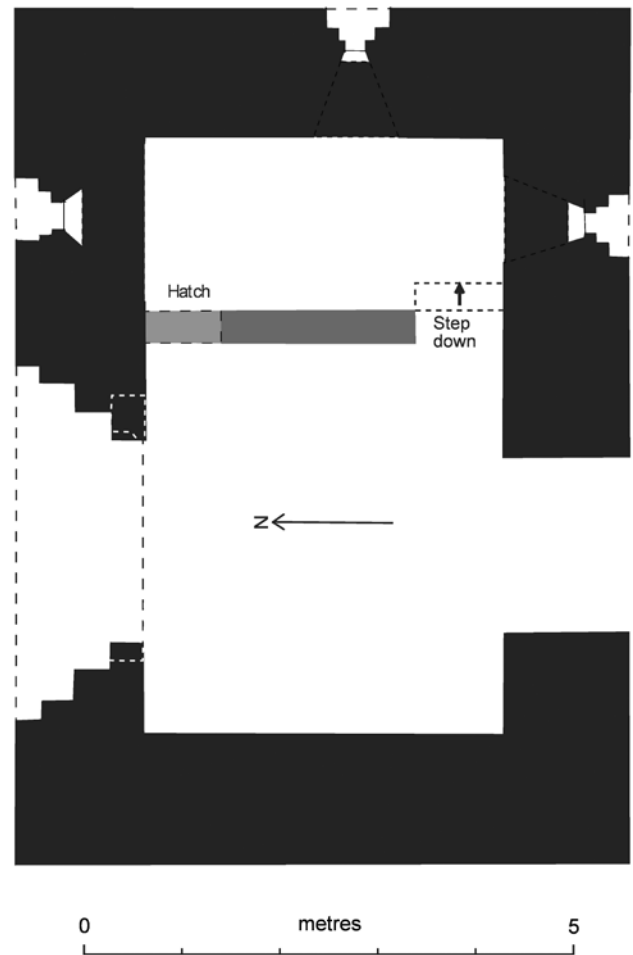
Illus 6 The north-facing wall of the HILLMAN pillbox showing the Bren Gun and A/Tk Rifle embrasures.



Illus 7 The SWEETHOPE pillbox (serial number South 11; Illus 17, a Type 24 Bren Gun pillbox, immediately beside the main railway line just NE of Ladybank junction, covering the blocks on the railway (Illus 21).



Illus 8 *The STARVIEW pillbox (serial number South 4). This type (without a type number) resembles a design erected by the British Expeditionary Force in France (Osborne 2008, 155–6) and is found in the UK only on the Command Line. It was intended to house a pair of Vickers medium machine guns.*



Command Line (Illus 1): there were no watercourses in Fife large enough to act as a barrier. Across the Tay, demolition was planned of the two road bridges and the railway bridge in Perth; the rail bridge at Ballathie; the road bridges at Kinclaven, Caputh and Dunkeld; and the railway bridge at Dalguise. Over the Tummel: the road and rail bridges at Ballinluig; and the road bridge at Clunie (just W of Pitlochry). Over the River Garry: Garry Bridge (where there was a later plan to crater the road). Finally, both the old and 'new' road bridges at Tummel Bridge were to be demolished, although these plans were later superseded by plans to crater the roads to N and S.

In three places there were plans to mine the railway – at Luncarty, at a point just S of Stanley, and at Stanley Junction, N of the village.

It was intended to sow A/Tk minefields if invasion threatened. The location of some of the planned minefields is mapped in 52 Division's war diary (TNA WO166/636) in January 1941. There were to be three in the northern section, blocking routes and gaps between woodland to S and NW of Ardgilzean Plantation. The six planned minefields in the southern sector were well behind the Line, closing routes W of Ladybank at Sheills, W of Freuchie and W of Thornton, mostly in areas now built over by Glenrothes. The Polish plans for the northern sector of the Command Line involved much greater use of mines along the A/Tk ditch. The Poles

Illus 9 *The single Type 28 A/Tk gun/Bren pillbox on the Command Line (CIRCLES; serial number North 6; Illus 33). The pillbox faces north from a low hill along the main road past the entrance to Scone/Perth airfield. The pillbox has two chambers: the western is to hold a 2 pdr A/Tk gun, which would be pushed in from the rear (south) side. A separate Bren chamber is entered down a step from the A/Tk gun chamber. There is a small hatch between the two chambers at the floor level of the A/Tk gun chamber. One of the Command Line variant Type 24 pillboxes, where there are two loopholes on one wall to accommodate a Bren Gun and Boys A/Tk rifle side by side, lies just to the south.*

also took a much more radical approach to tactical demolitions, and made at least outline preparations for the demolition of every significant road and rail bridge in Angus, Fife and eastern Perthshire, clearly intending to make the Germans fight for every foot of Scottish soil (PISM A.VI.31/3; A.VI.31/4; A.VI.31/5; A.VI.31/6; A.VI.31/7; A.VI.31/8a/b).

The course of the Command Line, and what survives

Southern (Fife) Sector

As noted above the 1:10,560 maps annotated by No 2 General Construction Bn, RE (TNA WO166.3443) provide, for the southern sector, a very detailed record of what was intended to be built, or actually built. The map was supplemented by a large table listing the location and type of almost all the road-, rail- and river-blocks on the southern part of the Line. This record has been supplemented and corrected by examination of the vertical aerial photographs, field visits, both my own and those of earlier workers recorded by RCAHMS. Below, the features of the Line are described from generally S to N. Fuller descriptions are contained in the project archive lodged with RCAHMS and Fife Council and Perth & Kinross Heritage Trust.

The numbering of blocks in the southern sector on the published figures follows that in the War Office files. Below, I do not mention every block or part of the barrier, only those where features survive. On the vast majority of public roads the blocks (sockets set in the road or blocks to support horizontal rails) were removed by the end of or soon after the war; on minor roads and farm tracks some traces occasionally remain. Most roadblocks were covered by firing positions – usually trenches, but occasionally pillboxes. As noted above, War Office doctrine was that obstacles were valueless if not covered by fire – the enemy could simply dismantle them.

Dysart to Balgonie Colliery Illus 10

The southern end of the Line lies on the beach at Dysart, where the annotated map shows the presence of concrete A/Tk blocks: the shattered remains of two survive. The beach was covered by two firing positions on the clifftops. A single A/Tk barrier, in places formed by existing features but in most places a surviving ditch, runs inland, at first along the bottom of the cliff, to the first roadblock RB67, on the drive running through Blair Den Wood. Where the A/Tk barrier crosses the un-named burn NE of Blair farm the barrier is formed by three A/Tk cubes, still in position, the gap between two of them filled by a mature tree. Picket posts (used to hold barbed wire) survive in this area, reused in a modern fence. Part of the A/Tk ditch is concrete-faced.

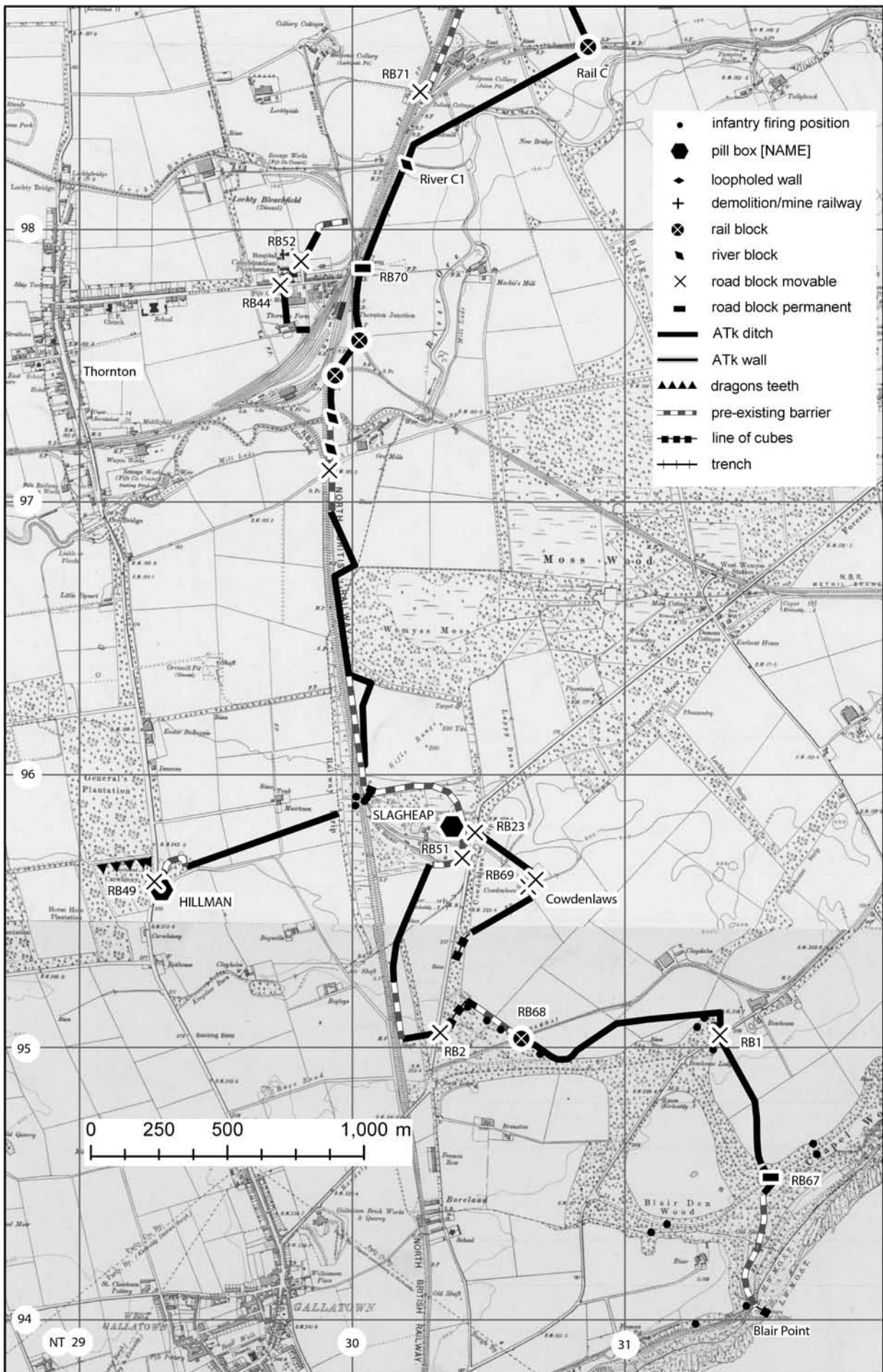
A single A/Tk ditch runs NNW from RB67 to RB 1 (on the A955) and then on to RB68, on what is mapped as a mine tramway (with no trace of rails on the 1946 vertical aerial photographs). North of this permanent block the A/Tk barrier was probably formed by the dense woodland, or *abatis* (obstacles formed by felled trees, often wired together to make removal difficult); in this area some of the infantry trenches are still visible in the woodland. There is a small section of extant A/Tk ditch at the N edge of this wood, now partly rubbish- and water-filled, before it gives over to what

was probably a line of concrete A/Tk cubes, of which only two remain, close to RB2 (on the A915). RB2 was of the vertical-rail type: one of the concrete sockets has been dug out of the road-bed and dumped in the wood. The A/Tk ditch ran W to the deep railway cutting, which provided the barrier for about 200m. Here, the A/Tk ditch headed off NNE, into what was then arable land, but is now part of reclaimed colliery workings.

South of what was then Dysart Colliery (Randolph Pit) there are two roughly parallel A/Tk barriers. The eastern A/Tk ditch springs from the woodland (Cowdenlaws Strip) running along the E side of the A915. The barrier within the wood seems to have been provided by A/Tk cubes, of which only two fragments survive. The eastern ditch then runs off NE to Cowdenlaws Farm, following an existing watercourse. The eastern ditch runs to the garden wall of Cowdenlaws, where the barrier is formed by a concrete A/Tk wall, 90cm thick and 1.4m high, running 43m up to RB69 (W) (Illus 11). This roadblock survives in perfect condition. It is a horizontal rail-type block, where three horizontal rails were placed, at need, in slots or sockets in large concrete/brick blocks. The western block here abuts the concrete A/Tk wall while the eastern originally abutted a farm building, now demolished. Originally a pillbox (number South 1 in the War Office tables, codename 'SLAGHEAP') stood within the colliery complex covering RB23 on the main road, and RB51 (on a track into the colliery) and also firing NE up the main road. The pillbox is initially referred to (TNA WO166/3443) as 'hexagonal Bren' but in later summaries on the same file, when under construction, it is described as 'Bren and A/Tk Rifle'; the latter is probably correct. The difference between the two is discussed above.

A feature of the Line in Fife is that in two places the generally N–S A/Tk ditches are supplemented by extensions westwards, usually to block the main N–S road. One of these extensions runs W from the railway to RB49 on the B9130 road (now a minor road leading to Thornton, but then the main road N from Kirkcaldy). There is no trace of the road block but 'dragon's teeth' (sets of small concrete tetrahedrons cast as a unit in this case (Illus 12)) survive to the W of the road, and a pillbox (serial number (South) 2 in the War Office sequence, codename 'HILLMAN') lies just to the SE (Illus 5 and 6). The paired Bren Gun and Boys A/Tk Rifle loops face N.

To the N the contemporary mapping and aerial photographs, and my field survey show that in part the barrier was provided by the railway embankment, in part by a ditch dug immediately to the E. As in many places one must wonder why it was felt necessary to have such a ditch, as the embankment or cutting often forms what the layman would consider an adequate barrier. Parts of the open ditch survive along this section: in places along the former colliery boundary (where some of the galvanised wire holding the revetting is visible) and in places along the base of the embankment, where the embankment is revetted by





Illus 11 Road block RB69 at Cowdenlaws Farm (location, *Illus 10*), with part of the 43m-long A/Tk wall visible behind. This type of road block relies on three sections of tram rail inserted into vertical slots or horizontal wood-lined sockets.

horizontally-laid sleepers held by vertically-set lengths of tram rail. Parts of the ditch now serve as, and may have been adapted from, drainage ditches; other parts are almost wholly filled in.

In 1940 Thornton was a major rail junction at the heart of a complex network serving the towns, villages and especially the collieries of central Fife. Branch lines running to the junction from E Fife towns and villages and St Andrews had movable blocks, all now obliterated by a golf course. North of the clubhouse a short section of A/Tk ditch survives, running up to RB70 (a permanent block across what is now the access to the golf course). North of RB70 faint traces of the A/Tk ditch survive, up to River Block C1 on the River Lochty, which consisted of concrete blocks and steel rails.

An extension of the barrier to the W of the main A/Tk line encircles the hamlet to the W of the main rail line. In 1940 this hamlet hosted both a major auction mart and the Thornton Poorhouse (both now demolished), and the A/Tk barrier incorporated these buildings. There were two roadblocks: RB 52 was on the access road to the Poorhouse; it was formed of vertical bent rails and one of the sockets survives in what is now an unused track. RB44, on the road through the hamlet, has been removed, but there is a length of associated A/Tk wall to the N of the road, on the edge of the grounds of the Poorhouse.

North of the Lochty Burn (River Block C1) part of the barrier is formed by the railway embankment: RB71

Illus 10 (left) *The southernmost portion of the Scottish Command Line from Blair Point, Dysart to north of Thornton Junction. A notable feature is the westward extension of the A/Tk barrier to block the main road at RB49 at the HILLMAN pillbox. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1919 and 1920), reproduced by permission of the Trustees of the National Library of Scotland.*



Illus 12 A section of 'pimples' or 'dragon's teeth' to the west of road block RB49, close to the HILLMAN pillbox (*Illus 10*).

falls on this section, and blocked a bridge under the railway line: it was a horizontal-rail type, and clawed-back fragments of the concrete supports for the horizontal rails survive. A second line of the barrier forms a salient to the E formed by A/Tk ditch running NE over a low-lying field, which on the War Office map is marked by blue hatching, perhaps implying that it floods. The eastern point of the salient lies where the ditch meets a railway line forming the southern boundary of Balgonie Colliery. Here there are the remains of Rail Block C (a vertical-rail barrier on what was then a double rail line from Leven). This line is disused but at the time of the field visit was still laid with a single line of track. While the elements of the barrier lying on or under the track are not visible, concrete A/Tk walls have been built up the sides of the shallow rail cutting, between the block itself and the A/Tk ditches in the fields to N and S. The A/Tk ditch runs NNW from this block to Muriespot farm, where it re-joins the main A/Tk barrier.

Balgonie Colliery to Balfarg / Star Moss Illus 13

At Muriespot a bridge over the deep rail cutting seems to have been blocked by A/Tk cubes, although it was not numbered as a roadblock. Between the railway cutting and the A/Tk ditch there is a surviving pillbox (War Office serial number South 3 'MURIESPOT'). The double medium machine gun embrasures face SE. The map shows five slit trenches close by. The War Office map shows a second pillbox here, but this seems not to have been built: it does not appear on any list on the files.

At Coaltown of Balgonie the A/Tk barrier is provided by the railway embankment, but a line of ditch loops out to the E to form a salient, possibly to block the N-S road (at RB53 and RB24): the houses of Millburn Avenue – built before 1940 but not on the map – are used as part of the barrier. RB3 in the village is one of only two roadblocks referred to in the files as formed solely by wire entanglements.

At Markinch the barrier bifurcates. The 'main' (western) line continues alongside or formed by the railway, across the River Leven; both the river and a mill lade were blocked. RB54 at the entrance to the railway goods-yard (a horizontal rail barrier, half of which survives, with a length of concrete A/Tk wall to its S). What may be a further length of wall links RB54 to RB5 (a vertical rail block) on the bridge over the railway which also has a length of A/Tk wall surviving. The A/Tk ditch runs on to the N.

The other, parallel, line of A/Tk barrier, to the E of Markinch, starts at what is now the B9130 road, at roadblock RB25. There are infantry slit-trenches in a gap between the barrier and St Drostan's Cemetery, where an infantry firing position overlooking the valley has been created in the wall – two sections of tram rail have been inserted to create a firing slit 1.9m wide and 15cm high (Illus 14).

The western A/Tk barrier follows the railway embankment through RB 75 (a permanent block N of Markinch – sections of A/Tk wall survive to both sides), River Block F1, RB 64 (vertical rail – concrete block and wall survive) and RB55 (horizontal rail – fragments of block attached to walls of bridge). From RB55 the barrier is provided by the wall of a cemetery and the burn to the E, and then by the rail embankment. The A/Tk ditch resumes, zig-zagging across a field to a roadblock (RB6) on the un-numbered road between Markinch and Star.

The parallel eastern A/Tk barrier strikes across open country until it meets the Markinch-Star road at RB27. Between the two lines is a group of infantry fire positions on Cuinin Hill and Whitehill Plantation SW and W of RB27. Behind the Plantation is pillbox serial no South 4, STARVIEW a double medium machine gun type, with two large embrasures (Illus 8), facing NE, covering the open ground between the two lines of A/Tk barrier. The eastern A/Tk ditch continues NE, with road blocks at RB 28 (vertical rail – where a length of concrete A/Tk wall survives), and RB29.

Balfarg/Star Moss to Kettlebridge Illus 15

The western A/Tk ditch zig-zags N. At a point where a track crosses the railway line, about 125m behind the A/Tk ditch, pillbox serial no South 5 (SEARCHLIGHT HILL) is built into the western end of the bridge (Illus 16). Douglas Spiers (pers comm) informs me that recent excavation on the hill to the S has revealed a wartime searchlight position, which explains the name.

From the pillbox a branch of the A/Tk barrier strikes westward to Balfarg. This is the second place on the Line where the barrier extends westward to block the main N-S road (now the A92); from the pillbox the barrier is formed by an A/Tk ditch, running WNW to a wood in which there are five infantry positions. The A/Tk ditch then runs SW to RB 45; some dragon's teeth survive in the woodland on the southern side of the road. The barrier loops through the hamlet of Balfarg, around which there are five roadblocks, two of them (RB46 and RB48) on the main A92 road. The only trace surviving is a length of concrete A/Tk wall running S of RB47, onto the edge of the Neolithic and Bronze Age ceremonial complex excavated in the 1980s (Barclay & Russell-White 1993); I misinterpreted this as a water control feature in that report, although a feature at Balfarg is described in a War Office file (TNA WO166/3443) as a 'dam'!

Returning to the main barrier, the eastern and western A/Tk barriers are up to 2km apart in this section. The western A/Tk barrier N of pillbox SEARCHLIGHT HILL is formed by a ditch in the S (where water-filled sections survive in Lochmuir Wood), the deep railway cutting in the central area (including RB 8, where a length of concrete A/Tk wall survives) ending at Falkland Road Station (RB 9, where part of the road block and 23m of A/Tk wall survive).

The western barrier closely parallels the railway embankment with a road block at every point where a road or track passes under or over it. On the western line, at RB 56 there are two sections of flanking A/Tk wall and the mineral railway from Forthar Quarry carried under the road in a tunnel was also permanently blocked by a massive concrete cube (RB 77). RB79 is a permanent block, taking the form of a 15m-long A/Tk wall built across the track some 95m from the rail embankment, but allowing pedestrian passage; it survives. This run of A/Tk ditch ends at RB11, where a further length of A/Tk wall survives. At this point a stretch of A/Tk ditch links the eastern and western barrier, blocking the main NE-SW road at RB32.

Looking again at the southern part of Illus 15, the eastern A/Tk ditch strikes off in a straight line to the NNW, passing Star Moss, within which 11 infantry

Illus 13 (right) *The portion of the Scottish Command Line from Balgonie Colliery to Balfarg/Star Moss. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1920), reproduced by permission of the Trustees of the National Library of Scotland.*



emplacements are mapped. The ditch runs on to the un-numbered Kennoway–Freuchie road, where the A/Tk ditch is doubled, and there are two road blocks about 270m apart, the eastern (RB31) covered by a pillbox (serial number South 9, QUARRY – now destroyed). To the N there is a cross-ditch, running SSE–NNW joining the eastern and western from ditches just S of RB57 to RB11.

Kettlebridge to Annsmuir Illus 17

The western barrier continues through what are now the western suburbs of Kettlebridge as a continuous length of A/Tk wall some 325m long, 1m high and 1m thick, built against the edge of the railway embankment (Illus 18). At its southern end it comprises concrete on top of a masonry wall, but then becomes wholly concrete. It is intact apart from minor works undertaken in relation to modern houses. To the NE the houses of Rumdewan provide the barrier N of RB62, although there is one section of A/Tk wall blocking a gap in the terrace. Within Kingskettle there are two road blocks, one movable and a permanent block (RB80) on a disused track under the railway, which survived until railway works removed the bridge during 2009; from photographs kindly provided by National Rail, this appears to have been similar to RB 79 – a concrete wall partly blocking the bridge but allowing pedestrian access.

The eastern A/Tk barrier (illustrated on the boundary of Illus 15 and 17) meantime strikes NE across open countryside with blocks on the two minor roads crossing it. RB78 is on a little-used farm track and, as a consequence, survives in moderately good condition (Illus 19). It is a horizontal-rail type block: the northern brick-shuttered concrete block, with three sockets for the rails is in very good condition. The southern block, which has three vertical slots, is a little less well preserved.

As the eastern A/Tk ditch strikes N towards Annfield there is a dog-leg extension to the E, apparently protecting the flank of and approach to a pillbox, hitherto unrecorded, on the edge of the field in a strip of woodland. This pillbox (serial number South 10 ANNFIELD) is a very fine but heavily overgrown and flooded brick-shuttered concrete hexagonal pillbox. One angle-iron picket nearby provides some evidence that there had been barbed wire around it. There was an infantry emplacement in the wood to the S.

Behind (W of) the pillbox the A/Tk ditch cuts down the hill towards Kingskettle where a pair of roadblocks (on an unclassified road and the A914) are covered by a strongpoint in a garden (pillbox serial number South 6, LOANFOOT). A well-preserved pillbox is built into the southern corner of the garden, invisible from outside, apart from three loopholes in the garden wall. Its position in a garden means that it is in excellent condition. There is also a loophole in the NE corner of the wall, made from a pre-cast pillbox loophole identical to those used in the adjacent pillbox (Illus 20).

The arrangement of A/Tk ditches around Kingskettle, Kettlebridge and Ladybank seems designed to provide



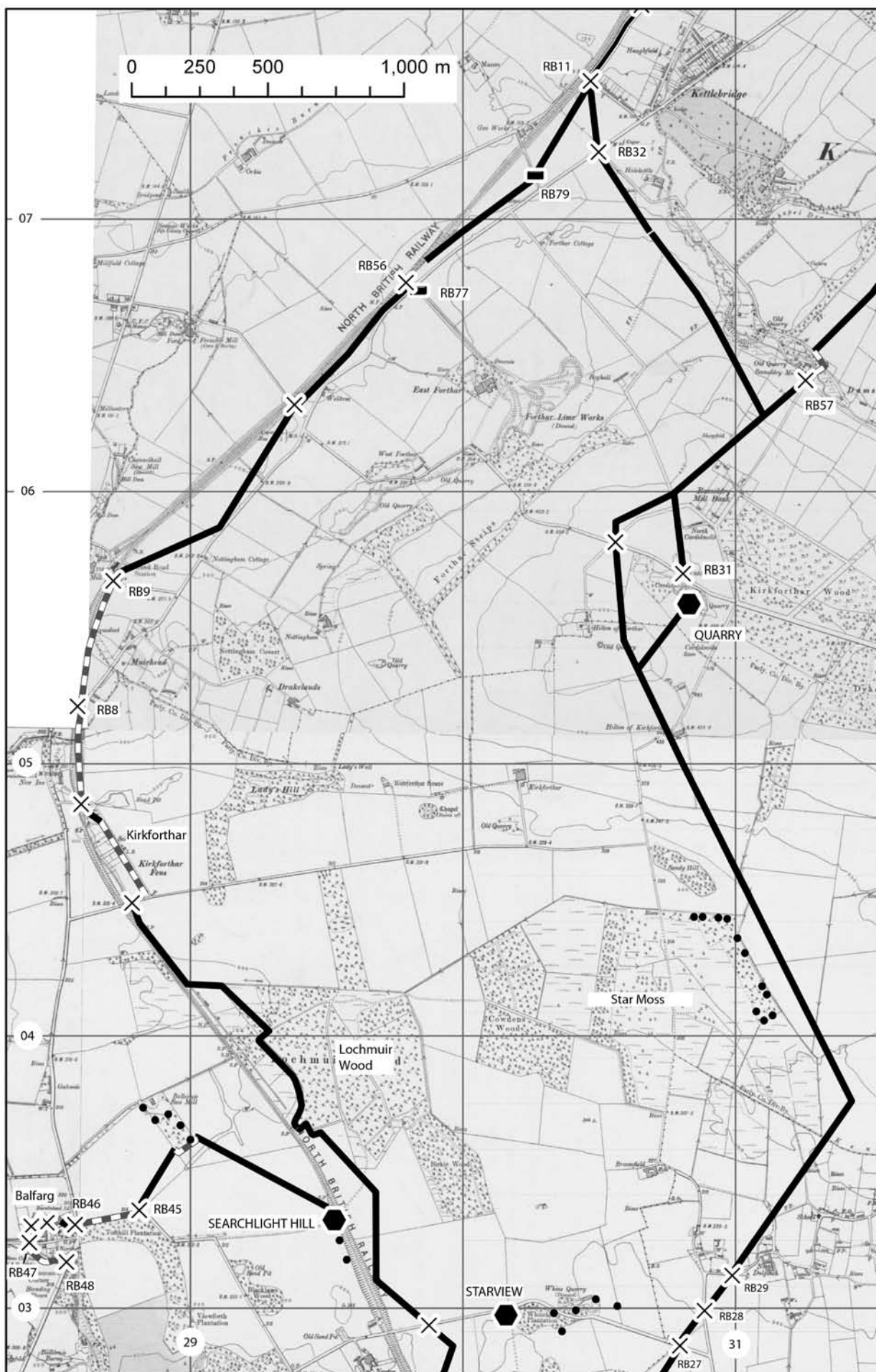
Illus 14 Firing position in the southern wall of St Drostan's Cemetery, Markinch (location, Illus 13), the lintel formed by tram rail sections.

defence in depth on one of the main potential routes for an invader. The eastern and western lines of ditch run close together N of Kingskettle, meeting an E/W running watercourse, which is marked as an existing barrier on the War Office map. The watercourse joins the eastern and western lines of ditch, and runs E also to a further line of A/Tk ditch E of the original eastern A/Tk line.

On the westernmost line of ditch, at RB81, the northern block supporting the horizontal rails survives. North of it the nature of the barrier is not clear: the map suggests A/Tk blocks but only a couple of very small blocks survive, inadequate to stop a tank. At Ladybank there is a complex group of road blocks around the goods yard and beyond them on the main road to the E. Where the easternmost barrier meets the main railway line at Rail Block E there is a fine brick-shuttered pillbox. This is pillbox serial number South 11, SWEETHOPE (Illus 7).

The two lines of A/Tk ditch cross the main railway line. Surprisingly, parts remain of both rail blocks. At the western (Rail Block D) a section of A/Tk wall lies in scrub woodland to the S of the line. The wall has metal fittings along its upper NE edge. To the S, on the upper edge of the railway cutting, is an A/Tk cube at the point where the A/Tk ditch ends. At Rail Block E there are four A/Tk cubes, set in pairs on the N and S sides of the track (Illus 21).

Illus 15 (right) *The portion of the Scottish Command Line from Balfarg/Star Moss to Kettlebridge, showing the substantial gap between the forward and rear A/Tk ditches. Notable features are the second of the westward extensions to block the main road, at Balfarg, and the cross-ditch south of Kettlebridge, blocking the main road at RB32. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1920), reproduced by permission of the Trustees of the National Library of Scotland.*



To the N of the railway the A/Tk ditches zig-zag N and NW across what was at that time heath/scrub, now occupied by forestry plantation and Annsmuir golf course. Both ditches survive in very good condition in the forestry (Illus 22).

The eastern A/Tk ditch is 1.8m deep with a low counterscarp bank and an asymmetric profile. Over 500m of it survives in the woodland, before it disappears into what is now the golf course. The ditch originally ran to and past what was to become Annsmuir prisoner-of-war camp. To the N the barrier was provided by existing woodland and a short length of A/Tk ditch on the approach to the main road (now the A92). The block on the road (RB38) is covered by a pillbox in the wood behind. This pillbox is serial number South 12 MELVILLE (Illus 23).

Long stretches of the western ditch survive N of the groundsman's sheds of the golf course. The ditch is asymmetric, but the steep side is, unexpectedly, on the eastern side. A small portion of the ditch survives on the western side of the road, but sand extraction and forestry have removed most of the ditch there.

Collessie Illus 24

Like Kingskettle the village of Collessie is contained within a 'cell' formed by the eastern and western A/Tk barriers and cross-ditches. The main routes past the village to the E and through the village were blocked.

The south-eastern approaches to the village are covered by a hexagonal brick-shuttered pillbox (CASK HILL, serial number South 13; Illus 25) built on the edge of a field, and now incorporated into a garden, where the box now acts as a workshop/shed, with its internal ricochet wall removed. This is one of the variant Type 24 pillboxes, Command Line type (b), with a pair of loopholes for Bren Gun and Boys A/Tk Rifle.

On the eastern line of the barrier N of Collessie is a rare feature – a length of about 125m of dragon's teeth or 'pimples', cast in situ and not joined together (unlike the smaller sets found associated with road blocks on the Line) (Illus 26). It joins two sections of A/Tk ditch where the bedrock rises to the surface, presumably forming an impediment to the digging greater than could be overcome economically by blasting, which was used in other parts of the Line. There are five lines of dragon's teeth, the two rearmost (at the W, on the right of the photograph) being higher and more massive. At the dog-leg the blocks are arranged to provide a greater depth of defence. The arrangement of five parallel lines conforms to the design set out in CRE's advice on A/Tk obstacles dated 14 August 1940 (TNA WO166/122).

Collessie to Lindores Loch Illus 27

As the A/Tk barrier heads into hillier ground N of Collessie it still continues as a double line, the western running close to, or formed by the railway. RB86 is unusual in having been formed by wire. The eastern



Illus 16 *The pillbox at SEARCHLIGHT HILL (serial number South 5; Illus 15), showing the face camouflaged by stone at the west end of the railway bridge, overlooking the railway cutting. It is a Type 24 Bren Gun pillbox with an overhanging rectangular concrete roof which is clearly visible.*

barrier is formed by a ditch. The two join just SE of Lindores Loch.

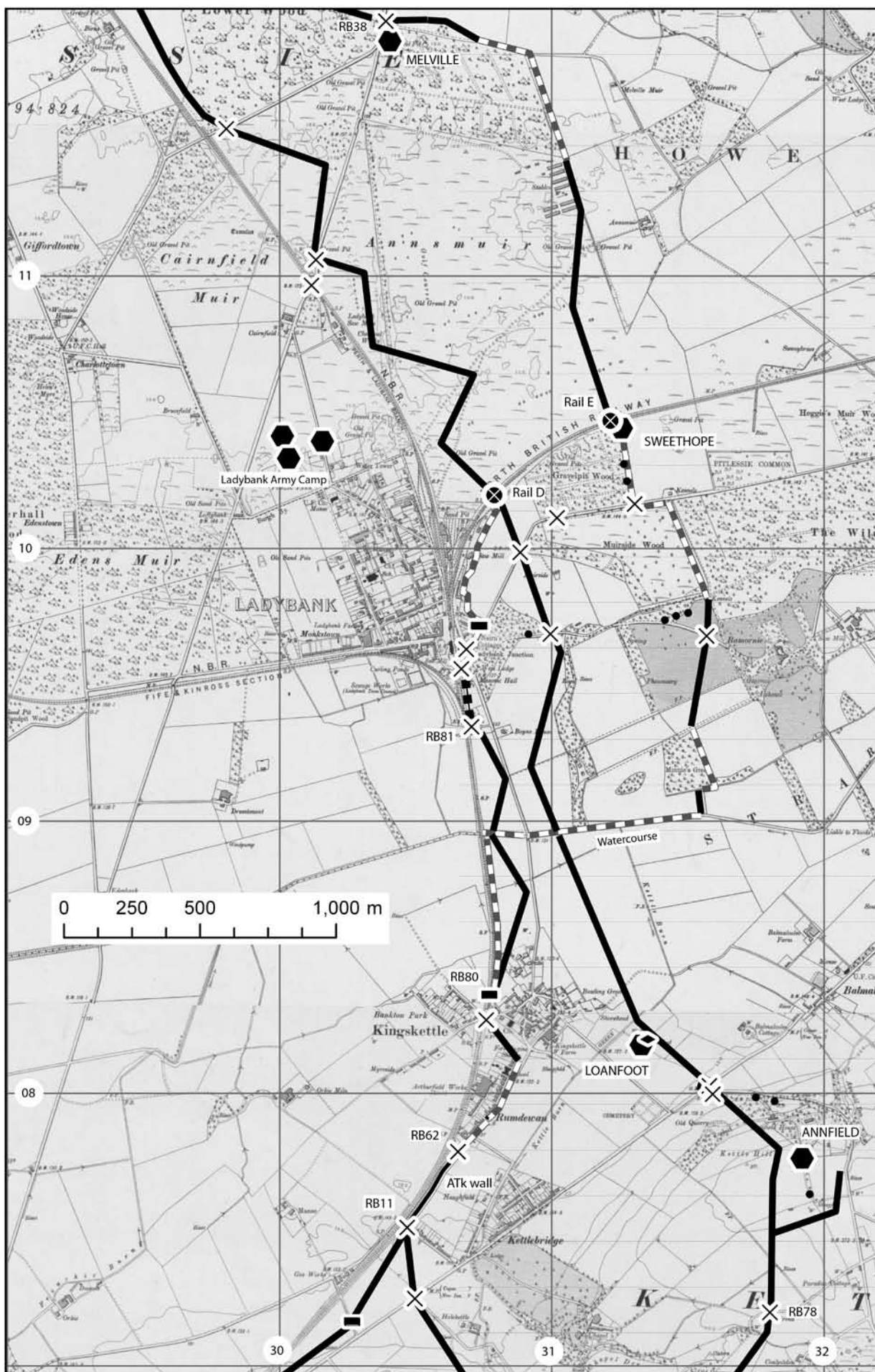
Lindores Loch to Newburgh Illus 28

At the N end of the loch the barrier is formed again by parallel ditches, which cross (and block) a minor road and the railway, in a deep cutting. A pillbox (now demolished) was built to cover a roadblock at Den of Lindores (serial South 14 SKYLINE). To the hamlet of Burnside a single ditch and the high, often stone-faced, railway embankment form a formidable barrier. Near the northern end of this section, and now half-buried in embankment material, there is a hexagonal brick-shuttered concrete pillbox (South 15, FORT) (Illus 29).

The barrier bifurcates at Denmylne. Beyond the pillbox the western A/Tk ditch runs at right angles away from the railway to the main road (RB22), along what was then the edge of Newburgh; concrete A/Tk blocks on the shore closed off the western barrier.

The eastern barrier loops E and then N from the main road, formed at first by the quarry and by woodland. A track behind the quarry was blocked (RB89) by a massive brick-shuttered concrete A/Tk wall, which survives in good condition. The barrier runs N either using existing obstacles or, across the floodplain, as an A/Tk ditch. At the edge of the estuary the barrier is closed off by A/Tk cubes, of which two remain in position.

Illus 17 (right) *The portion of the Scottish Command Line from Kettlebridge to Annsmuir, showing the complex barrier east of Ladybank. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1920 and 1921), reproduced by permission of the Trustees of the National Library of Scotland.*





Illus 18 Part of the 325m-long A/Tk wall in Kettlebridge.



Illus 21 Concrete A/Tk cubes flanking the location of Rail Block E on the Edinburgh–Dundee main line (Illus 17).



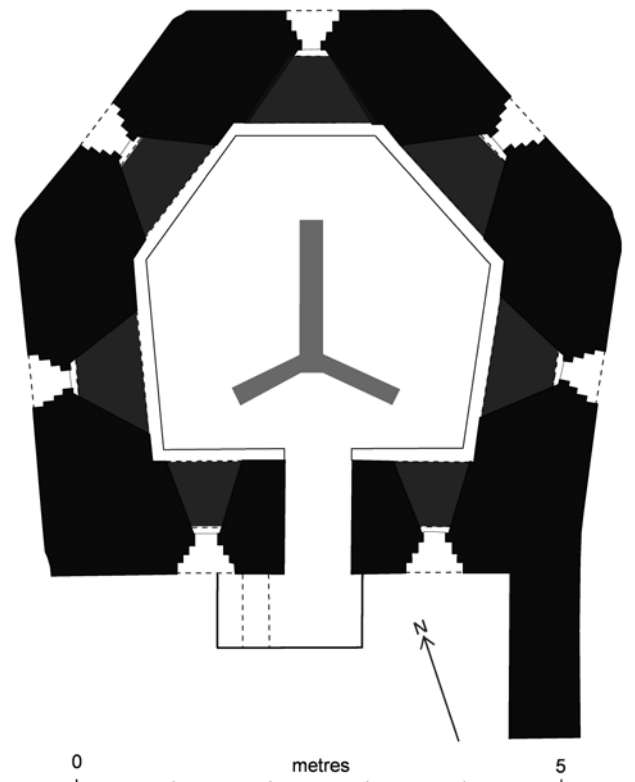
Illus 19 One side of the horizontal rail block RB78, surviving on a farm track. The block is made of concrete poured into brick shuttering.



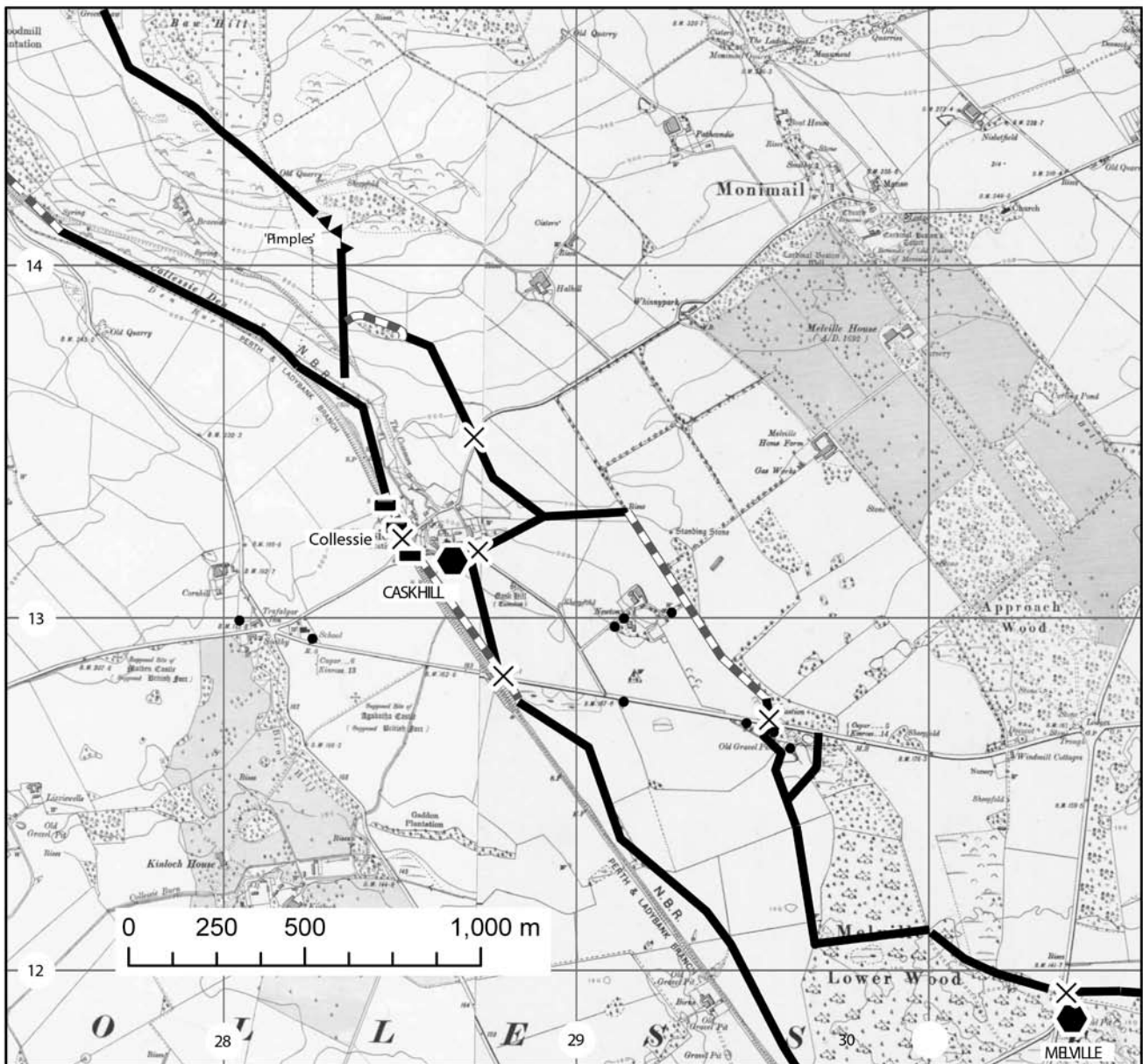
Illus 22 The western A/Tk ditch surviving in woodland at Annsmuir (Illus 17). The western (left) side is steeper as would be expected.



Illus 20 A pre-cast loophole of the same kind as is used in many of the pillboxes is set into the SE corner of the garden wall at Loanfoot, close to the pillbox with the same name.



Illus 23 Plan of the MELVILLE pillbox (serial number South 12; Illus 19 and 24), a hexagonal Type 24 for Bren Gun covering road block RB38. The entrance faces south and has a covering wall on the east side.



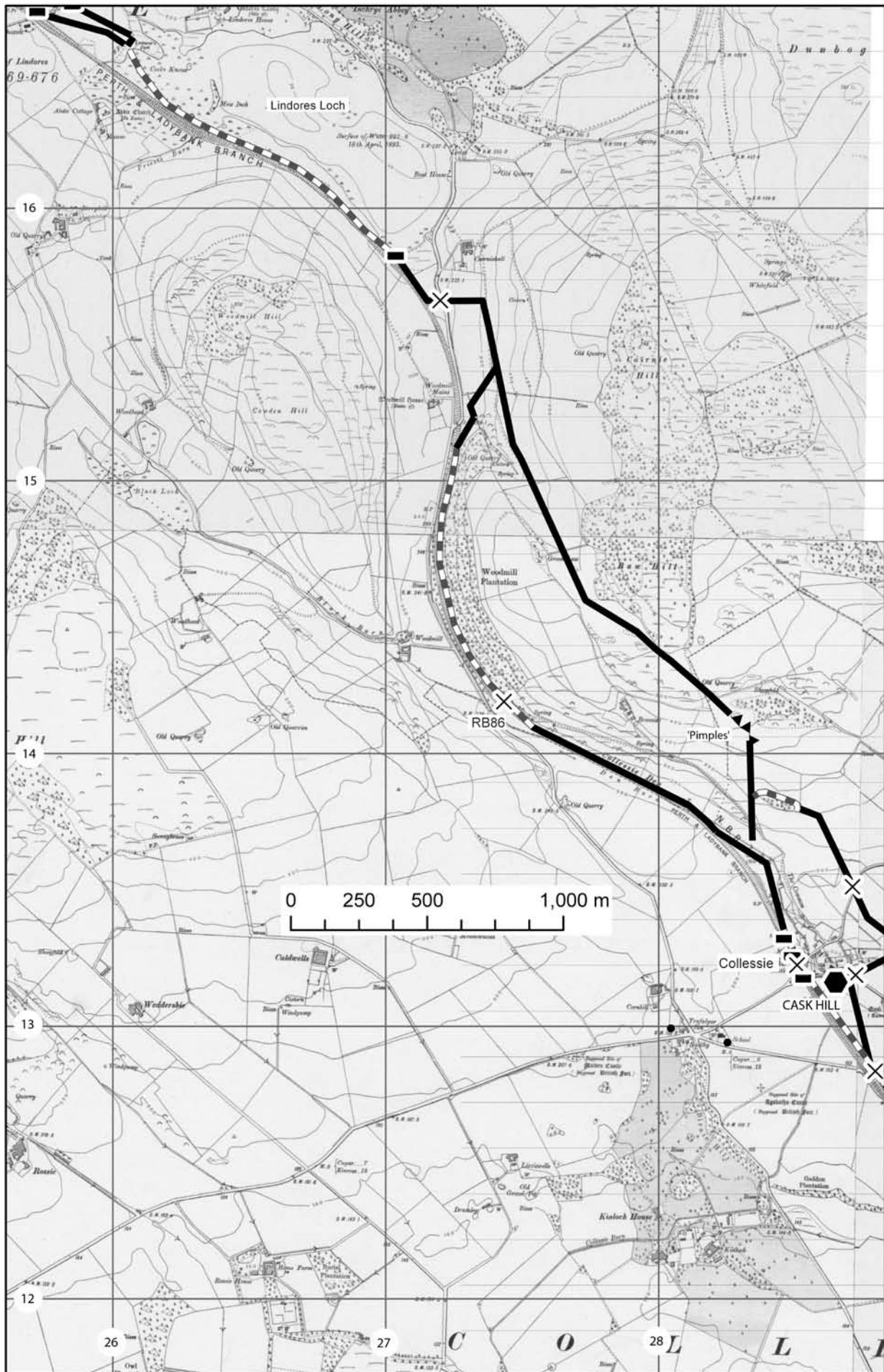
Illus 24 The portion of the Scottish Command Line at Collessie, showing the complex arrangement of ditches around the village. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1921), reproduced by permission of the Trustees of the National Library of Scotland.



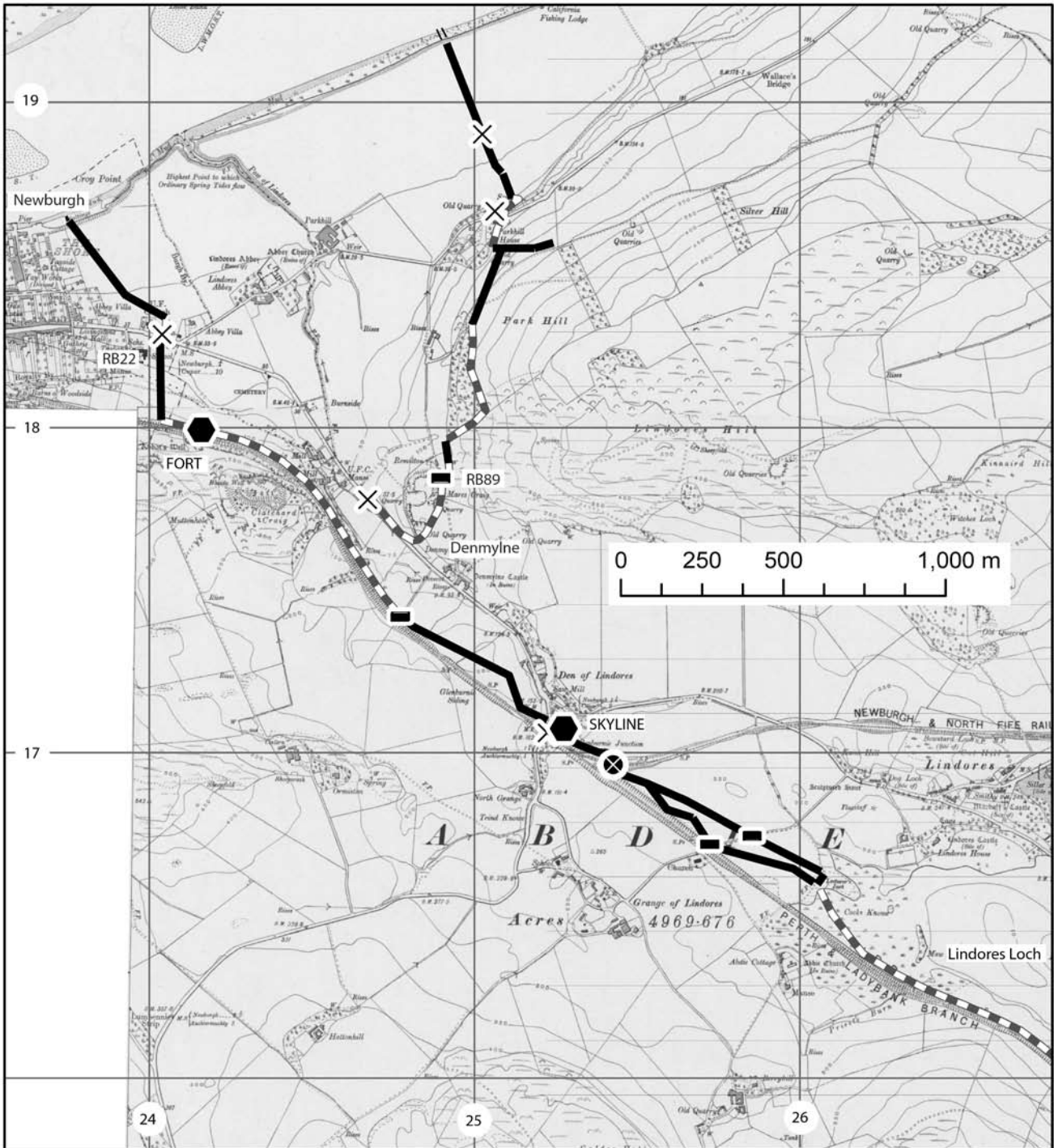
Illus 25 The CASK HILL pillbox (serial number South 13; Illus 24), set on the edge of Collessie village and faced with stone on the south side to disguise it as part of the field wall. This is one of the Command Line variant Type 24 pillboxes, where there are two loopholes on one wall to accommodate a Bren Gun and Boys A/Tk rifle side by side.



Illus 26 To the north of Collessie a well-preserved section of 'pimples' provides the A/Tk barrier over an area of bedrock, between sections of A/Tk ditch. The two rearmost rows (right) are larger.



Illus 27 The portion of the Scottish Command Line between Collesie and Lindores Loch. In the northern parts of the Fife section the railway embankment is more often used as part of the A/Tk barrier. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1920 and 1921), reproduced by permission of the Trustees of the National Library of Scotland.



Illus 28 The northernmost portion of the Fife sector of the Scottish Command Line between Lindores Loch and Newburgh. The A/Tk barrier is doubled at the coast. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1920 and 1921), reproduced by permission of the Trustees of the National Library of Scotland.



Illus 29 The FORT pillbox near Newburgh (serial number South 15; Illus 28) partly buried under slip from the railway embankment behind it.

Northern (Perthshire) Sector

The Command Line resumes on the N bank of the Tay 8.5km WNW, below Kinfauns village, in Perthshire. The northern sector presents a formidable barrier to an enemy approaching Perth from the NE along Strathmore or from Dundee. It comprised a forward defence running from Kinfauns, across the hills to Perth/Scone Airfield, N to Guildtown and thence W to the eastern bank of the Tay S of Stanley at a point the army called 'BLUFF' (Illus 4). The ditch resumes on the western side and runs W to and past the railway line. From this point S to Perth the western bank of the Tay and the railway line were also used as parallel A/Tk barriers, with the riverbank raised or reinforced where necessary. From the same point northwards the river bank forms a barrier to and beyond Stanley, and along the railway embankment to the W. North of Stanley the A/Tk ditch resumes, running parallel to the Perth–Inverness railway, to Murthly. The Tay was also intended to form a barrier from Stanley to the N, with the demolition of all bridges planned.

The northern sector of the Command Line is not so well-documented as the S, but there is a very useful report of a reconnaissance of the W bank of the Tay in July 1940, setting out the work needed to make an adequate barrier along the western bank of the river and along the railway line (TNA WO166/3845). There is no numbered list of roadblocks in the northern sector, and to ease cross-referencing between text and maps I have allocated numbers where I have to refer to a block, running on from the numbers for the southern sector.

Kinfauns to Muirend Illus 30

The A/Tk ditch runs from the Perth–Dundee railway line (which had a movable block – Rail Block G) across the main road (also with a movable block – RB90) across a field and up to a steep hill. There were two pillboxes – serial North 1 KINFAUNS GARAGE and 2 KINFAUNS WOOD. The former has been demolished but the latter, one of the rectangular medium-machine-gun double-embrasure pillboxes, with a good field of fire over the road and railway, survives in good condition (Illus 31). Vertical aerial photography shows a large complex setting of trenches and firing positions just to the W of the drive to Kinfauns Castle (Illus 32). Given the presence of a rifle range immediately to the W it is possible that these were practice trenches from an earlier period.

Where the hill and wood no longer provide an adequate A/Tk barrier, the ditch resumes S of Binns Farm, running across improved pasture and along the sides of Deuchny Wood. The road block at Binns (RB91) is covered by a pillbox, now partly buried (North 3, BINNS FARM). West of Knowehead there is a well-preserved length of ditch covering an easy gradient between two areas of woodland. Thereafter a woodland strip provides a barrier for about 1km, although two small gaps are blocked by short lengths

of A/Tk ditch (Illus 30, SSW of Muirend pillbox).

To the NE significant lengths of A/Tk ditch survive, with a road block (RB92) noted by Polish troops (PISM A.VI.31/5) covered by an extant but now heavily overgrown pillbox (North 4, MUIREND).

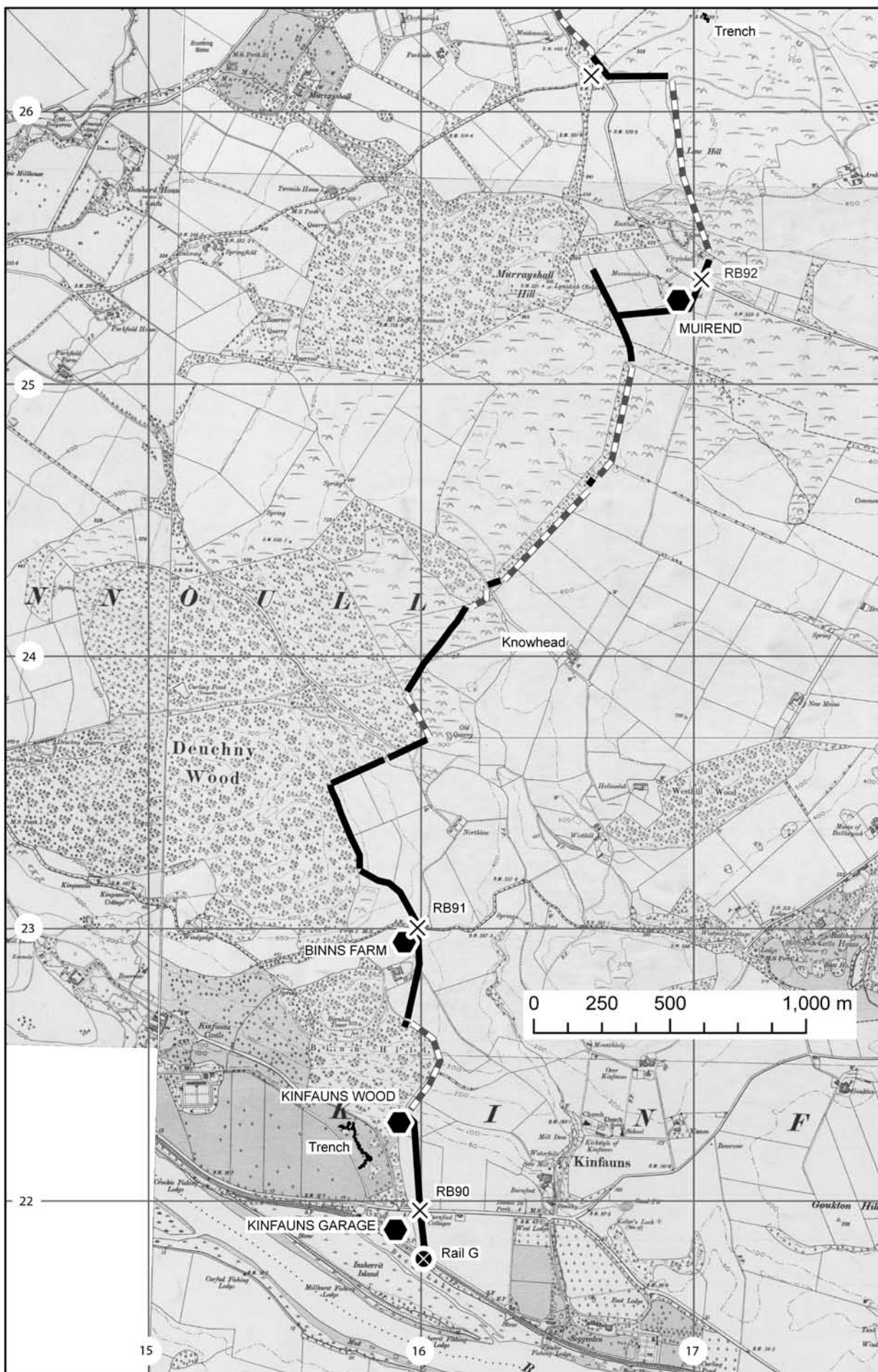
Muirend to Friarton/Ardgilzean Illus 33

Between Muirend and Perth/Scone airfield the A/Tk barrier is provided by Law Hill, existing barriers and significant lengths of A/Tk ditch. This section contains seven pillboxes, three of which are included on Command Line documents, and four of which are airfield defence pillboxes, which nevertheless would have assisted the blocking of the A94 from Forfar to Perth. Pillbox North 5 HANGAR VIEW (Illus 34 and 35) is a rectangular double-embrasure medium machine-gun pillbox with extensive views over the main road and airfield; 625m to the NW there is a pair of pillboxes, one North 7 (SAWMILLS) a Type 24 variant with double embrasure for Bren Gun and A/Tk Rifle. Paired with it is a Type 28 pillbox – North 6 (CIRCLES) – for 2pdr A/Tk gun and, in a separate chamber, a Bren Gun (Illus 9 and 36). The four airfield pillboxes identified by RCAHMS from RAF 1943 aerial photographs comprise three Type 24 Bren pillboxes to N, SW and SE and a Type 27 (with integral anti-aircraft mounting) amongst the hangars.

The A/Tk ditch runs to the SW of the airfield from the main road to Muirward Wood, which provides the barrier for c875m. The ditch zig-zags to South Friarton farm, with a short doubled section.

The A/Tk ditch resumes to the W, in Lethendy Plantation, where a short section survives. The ditch (now filled in) runs across the valley to Ardgilzean Plantation. Interestingly, one of the planned minefields also bars this valley, about 240m behind (W of) the ditch. One of the striking features of the next section to the N is a 150m length of A/Tk 'pimples'/dragon's teeth, very similar to those N of Collessie – five parallel lines set in a quincunx pattern, the two western lines higher than the others (Illus 37).

Illus 30 (right) *The Command Line in Perthshire comprises a forward line, on the eastern side of the Tay, and rear lines, along the Tay itself and the railway to the west. This map shows the southernmost section of the forward line from Kinfauns to Muirend. The trench complex illustrated in Illus 32 lies just to the west of the Kinfauns Wood pillbox. A second, W-shaped trench is visible on RAF aerial photograph 106G/UK33 3140 (25 April 1946) at the north of the map, east of the A/Tk line. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1901, 1902 and 1938), reproduced by permission of the Trustees of the National Library of Scotland.*





Illus 31 *The rectangular double-embrasure medium machine-gun pillbox in KINFAUNS WOOD (serial number North 2; Illus 30), overlooking the blocks on the main Perth to Dundee road and railway.*

Ardgilzean to River Tay Illus 38

The A/Tk barrier, comprising both ditch and existing barrier, zig-zags N and then W round Druids' Seat Wood, just SW of Guildtown. Where the ditch meets the farm road to Loanfolds there was a road block (RB101); dragon's teeth survive immediately to the W and a very well preserved length of A/Tk ditch runs into the woodland. Near the western end of this section there are three or four surviving timber revetting uprights with galvanised wire. The A/Tk ditch ends on the bluff above the Tay.

Strathord Station southwards to Perth Illus 39 and 40

The ditch resumes on the western bank of the Tay, a little to the S, where a pillbox (serial number North 8, GOWRIE) faces towards the presumed site of a road block to the NW (RB103), and thence across fields (now quarried away) to the railway line (which had a movable block - Rail Block H) at the former site of Strathord Station, and across it to a public road to the W, ending at the Ordie Burn.

From the GOWRIE pillbox southwards to Perth the barrier is formed first, by a mill lade running along the side of the Tay, then the western bank of the Tay raised or reinforced by A/Tk wall; there were blocks at the mouths of watercourses. A second line of A/Tk barrier was formed to the W by the railway embankment, reinforced where necessary by A/Tk ditch and with road and rail blocks where necessary.

The reinforcement of the bank was necessary as the river can be very shallow in this section. Occasional lengths of galvanised wire are visible on parts of the river bank N of the mouth of the Almond. Just N of the Almond Derder's Ford (which carried the Roman Road over the Tay) was blocked on the western side. North of it a line of A/Tk cubes ran out into the Tay (Illus 41). The Almond itself was blocked by A/Tk cubes. A further line of cubes (surviving) blocked the burn at the N edge of the North Inch and yet another ran out into



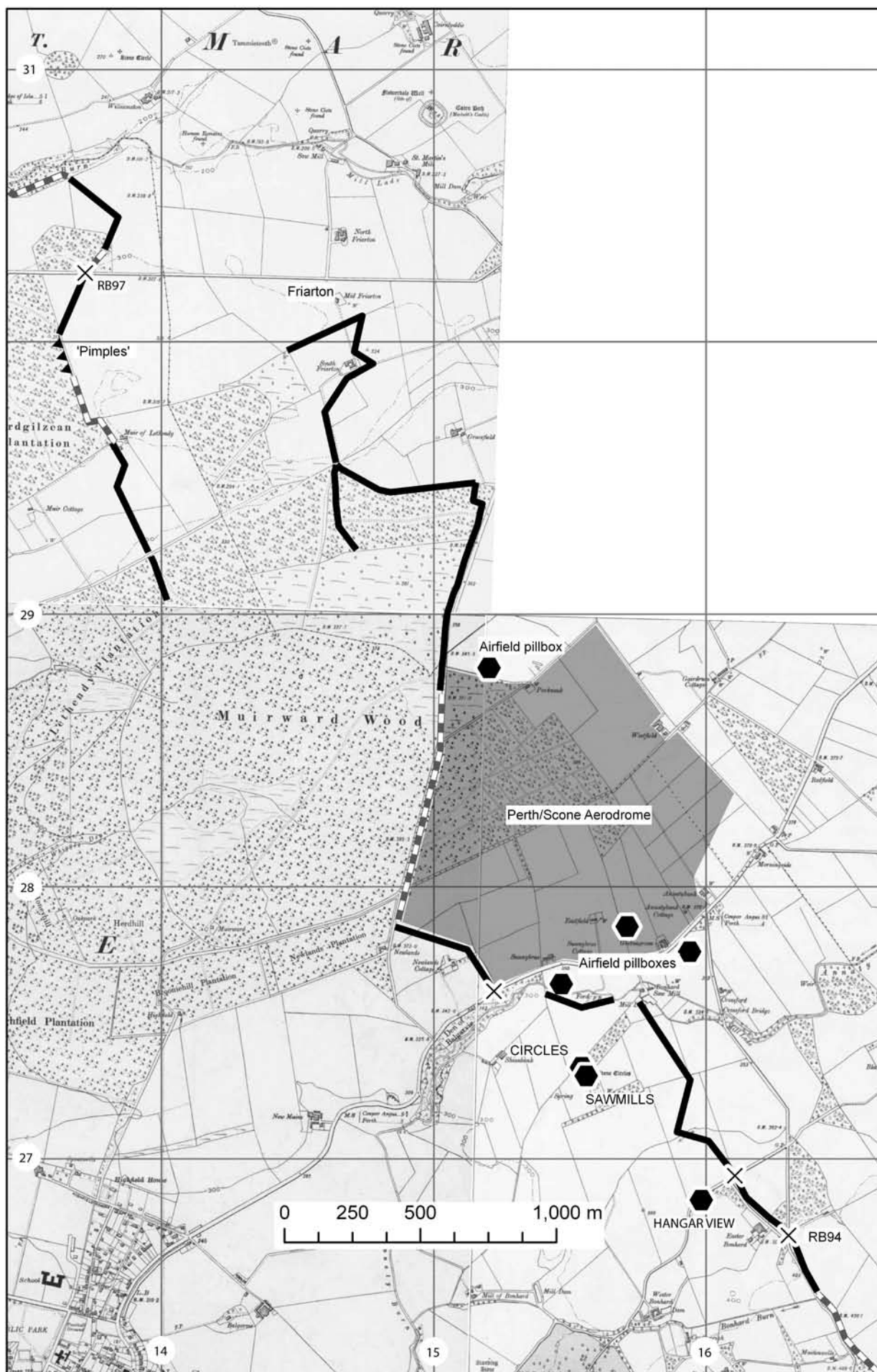
Illus 32 *Trench complex to the west of the drive to Kinfauns Castle, visible on RAF vertical aerial photograph RAF/106G/UK33 4009 (25 April 1946). Its location is marked on Illus 30. There are two further examples in the northern sector of the Command Line. It is possible, however, that this example, close to a rifle range, is an earlier practice trench (RCAHMS/aerial. rcahms.gov.uk).*

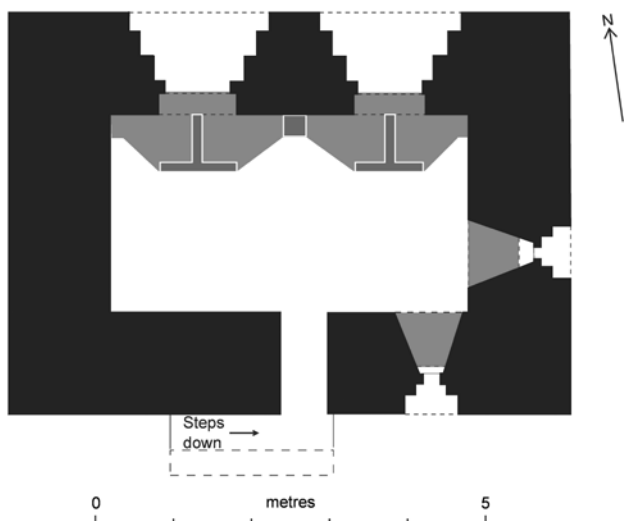
the Tay just N of the Perth Bridge. Little of all this has survived construction of flood defences.

Strathord Station northwards to Charleston Wood Illus 42

The A/Tk barriers to N of Stanley are provided by the western bank of the Tay and the railway – either in an embankment or a cutting, with road blocks as necessary. The steep bank of the Tay and the retaining walls of Stanley Mills provide a formidable barrier as far as Burnmouth Ferry. From there the A/Tk barrier turns W and is formed by the steep side of a lane to the former main Perth to Aberdeen rail line, just N of Stanley Junction. The western barrier formed by A/Tk ditch for its last c400m, runs past Stanley Junction. From here the barrier runs beside the Perth–Inverness railway. There were two rail blocks (K and L). Just N of the latter the concrete blocks to hold the horizontal bars of a roadblock survive (RB129), although the northern one has been moved.

Illus 33 (right) *The middle section of the forward line north and east of the Tay, from Muirend to Friarton/ Ardgilzean. The 'pimples' illustrated in Illus 37 are located in the top left part of the map. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1901 and 1938), reproduced by permission of the Trustees of the National Library of Scotland. The final extent of Perth/Scone airfield has been added as a tone.*





Illus 34 Plan of the rectangular double-embrasure medium machine-gun pillbox at HANGAR VIEW (serial number North 5; Illus 33). This is the best-preserved of this type of the four surviving on the Command Line (see Illus 35 for internal view).



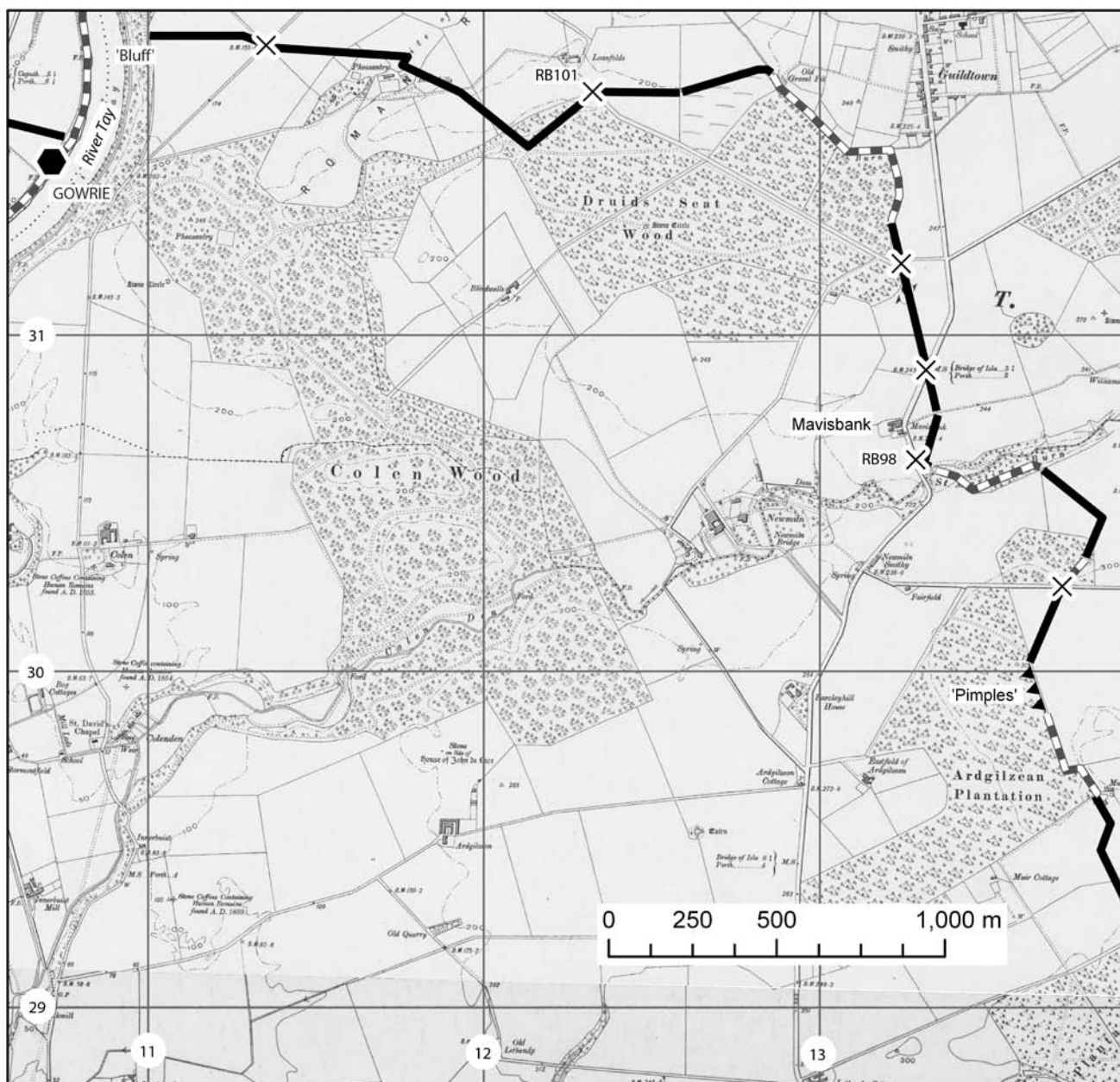
Illus 35 In the interior of the HANGAR VIEW pillbox the heavy timber shelves survive on which the Vickers machine guns would have been set.



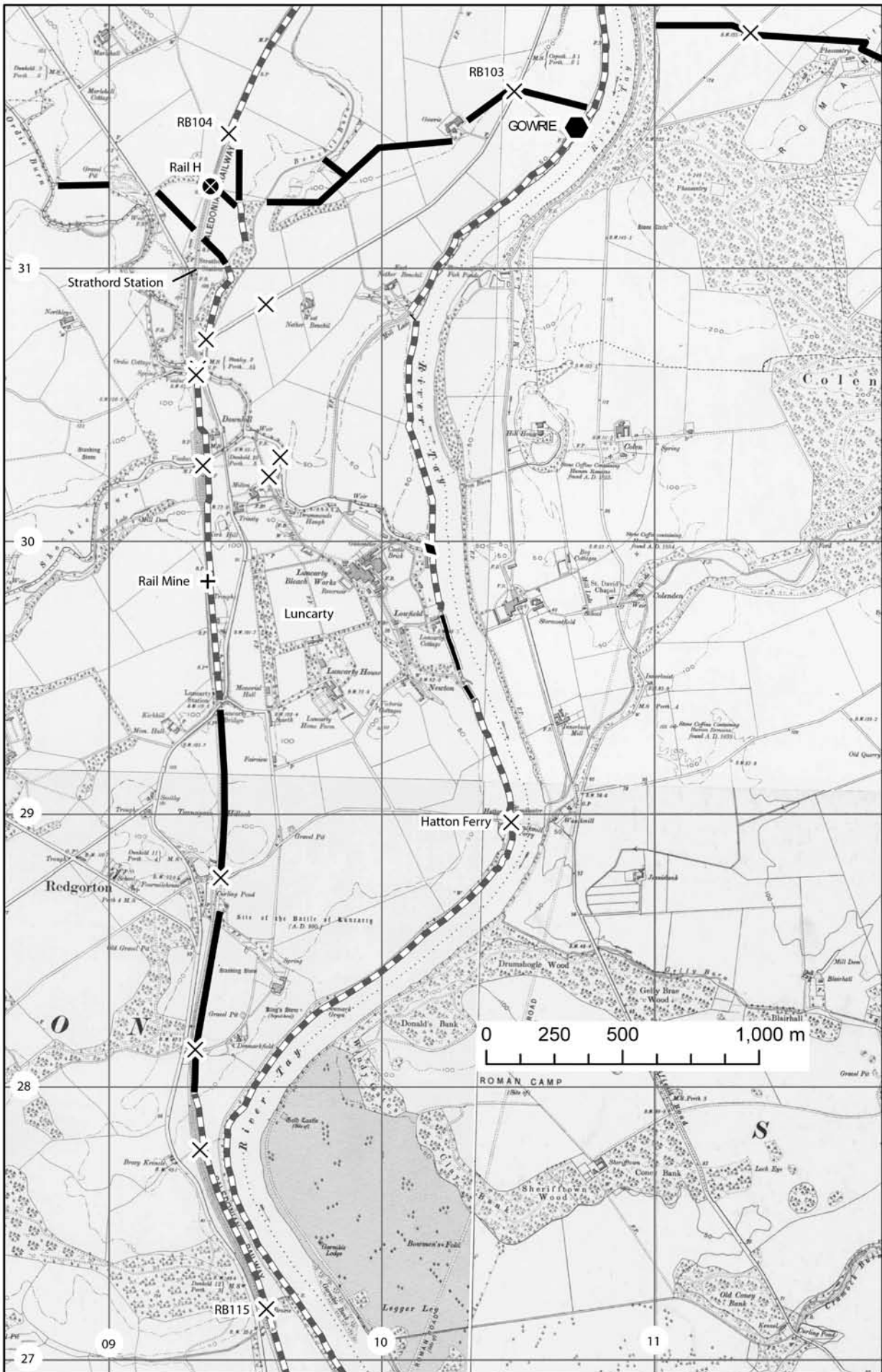
Illus 36 The embrasure of the Circles A/Tk gun chamber, remaining traces of camouflage paint on the concrete. The aperture through which the gun would be wheeled from the rear is visible.



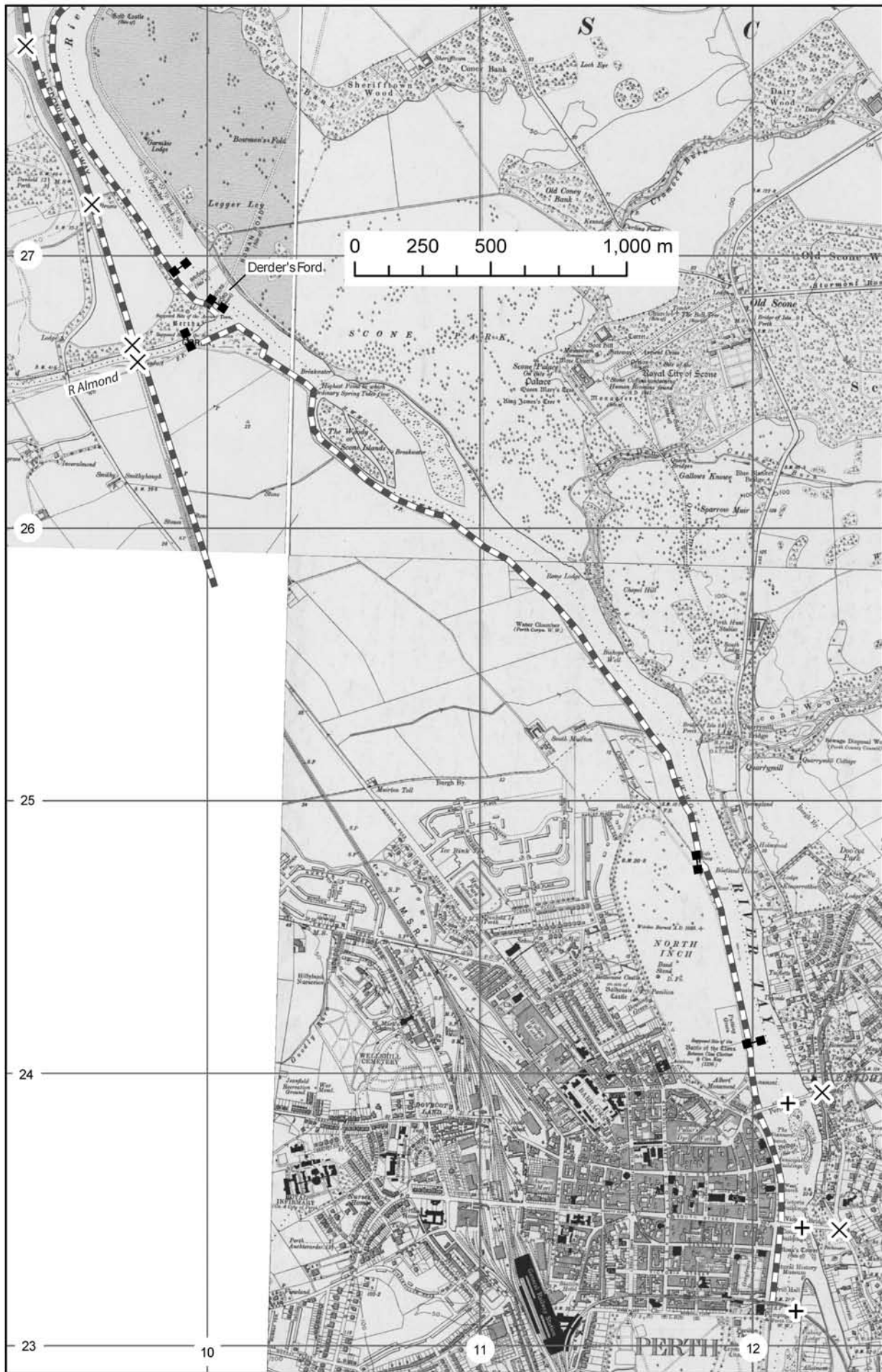
Illus 37 The five parallel lines of 'pimples' or dragon's teeth at the edge of Ardgilzean Plantation.



Illus 38 The north-western section of the forward line from Ardgilzean to the eastern bank of the River Tay at the point the Army called 'Bluff'. The surviving portion of the A/Tk ditch is immediately to the west of RB101. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1901), reproduced by permission of the Trustees of the National Library of Scotland.



Illus 39 The Command Line in Perthshire comprises a forward line, on the eastern side of the Tay, and rear lines, along the Tay itself or to the west. At the GOWRIE pillbox the A/Tk barrier is provided by the bank of the Tay, raised where necessary, and the railway embankment, except where it was too low, and sections of A/Tk ditch were dug. The railway and river are linked by an E-W line of A/Tk ditch. The railway is also blocked here. The map background is Ordnance Survey Second Edition 1:10,560 mapping (1901), reproduced by permission of the Trustees of the National Library of Scotland.



Illus 40 South of the area illustrated in **Illus 39** the A/Tk barrier is provided by the bank of the Tay, raised where necessary and, to just north of Perth, by the railway embankment. Derder's Ford and the River Almond were blocked by lines of A/Tk cubes and a further line of concrete cylinders runs into the Tay north of Derder's Ford (see **Illus 42**). The map background are Ordnance Survey Second Edition 1:10,560 mapping (1901 and 1938), reproduced by permission of the Trustees of the National Library of Scotland.



Illus 41 *Line of concrete cylinders running in to the Tay north of Derder's Ford (see Illus 40).*

Charleston to Murthly Illus 43

The A/Tk ditch survives largely intact from just N of Charleston farm for a considerable length in the woodland, with very well preserved horizontal roadblocks in the southern (RB130) and northern (RB131, Illus 44) parts of Black Wood. From that point to the Tay, N of the former Perth District Lunatic Asylum, the ditch zig-zags across fields. Only a small length, at 'Nineveh', is still open. Vertical aerial photography reveals a complex trench/firing position to the S of the Murthly–Kinclaven road (Illus 45). The final feature marked on Illus 43 is the planned demolition of Caputh bridge.

Sections not mapped

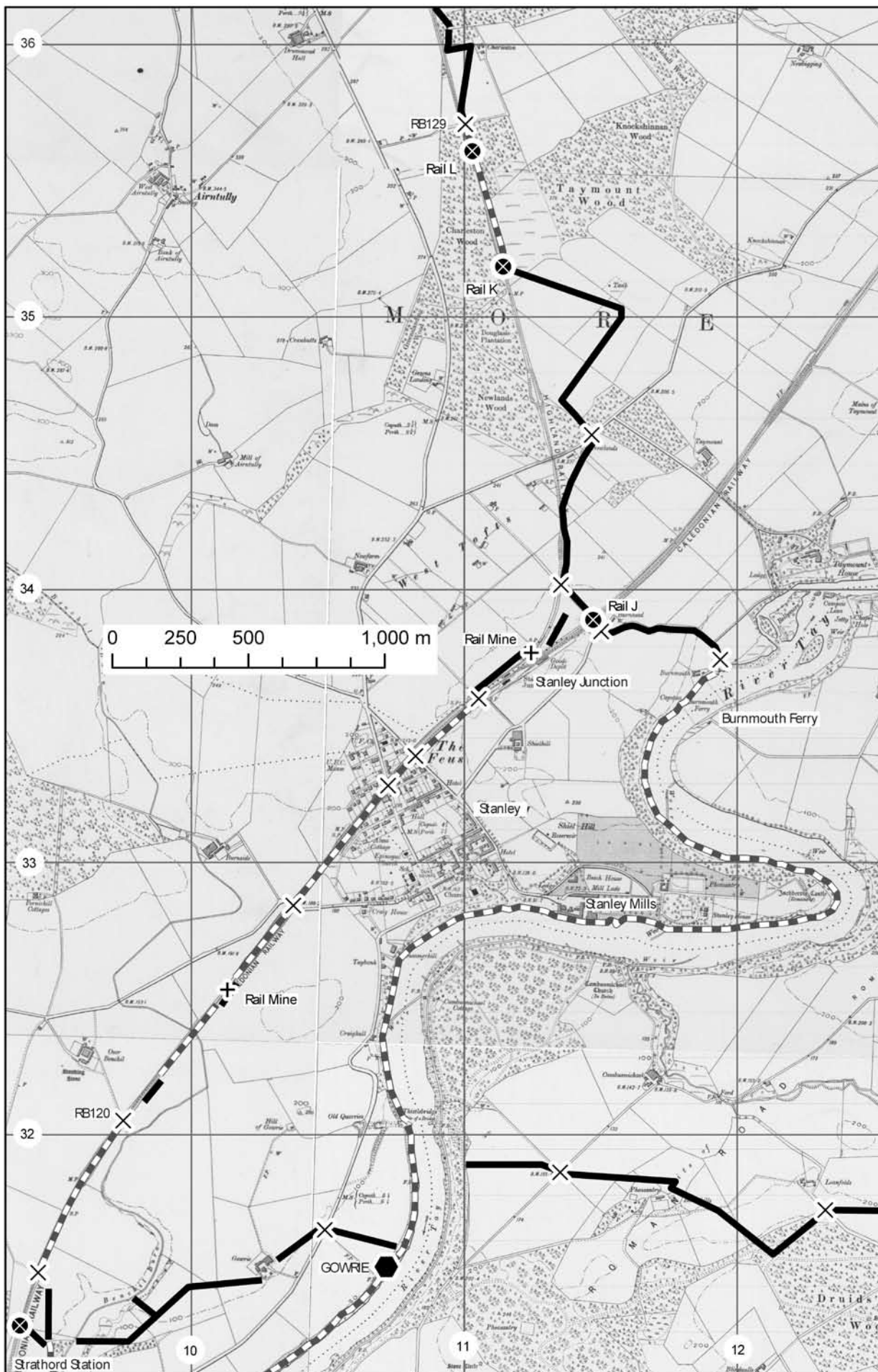
North of Burnmouth Ferry the Tay seems to have been considered an adequate barrier and plans were made to demolish all road bridges and block all rail bridges, as follows (Illus 1): Ballathie (rail), Kinclaven (road), Caputh (road), Dunkeld (road), Dalguise (rail), Ballinluig (road and rail), Clunie Bridge, Pitlochry (road), Garry Bridge (Killiecrankie) – later replaced by plans to crater the road through the Pass, and Tummel Bridge (both road bridges – later replaced by plans to crater the roads to N and S of the bridges). The Polish forces had, as already noted, much more comprehensive plans for tactical demolitions.

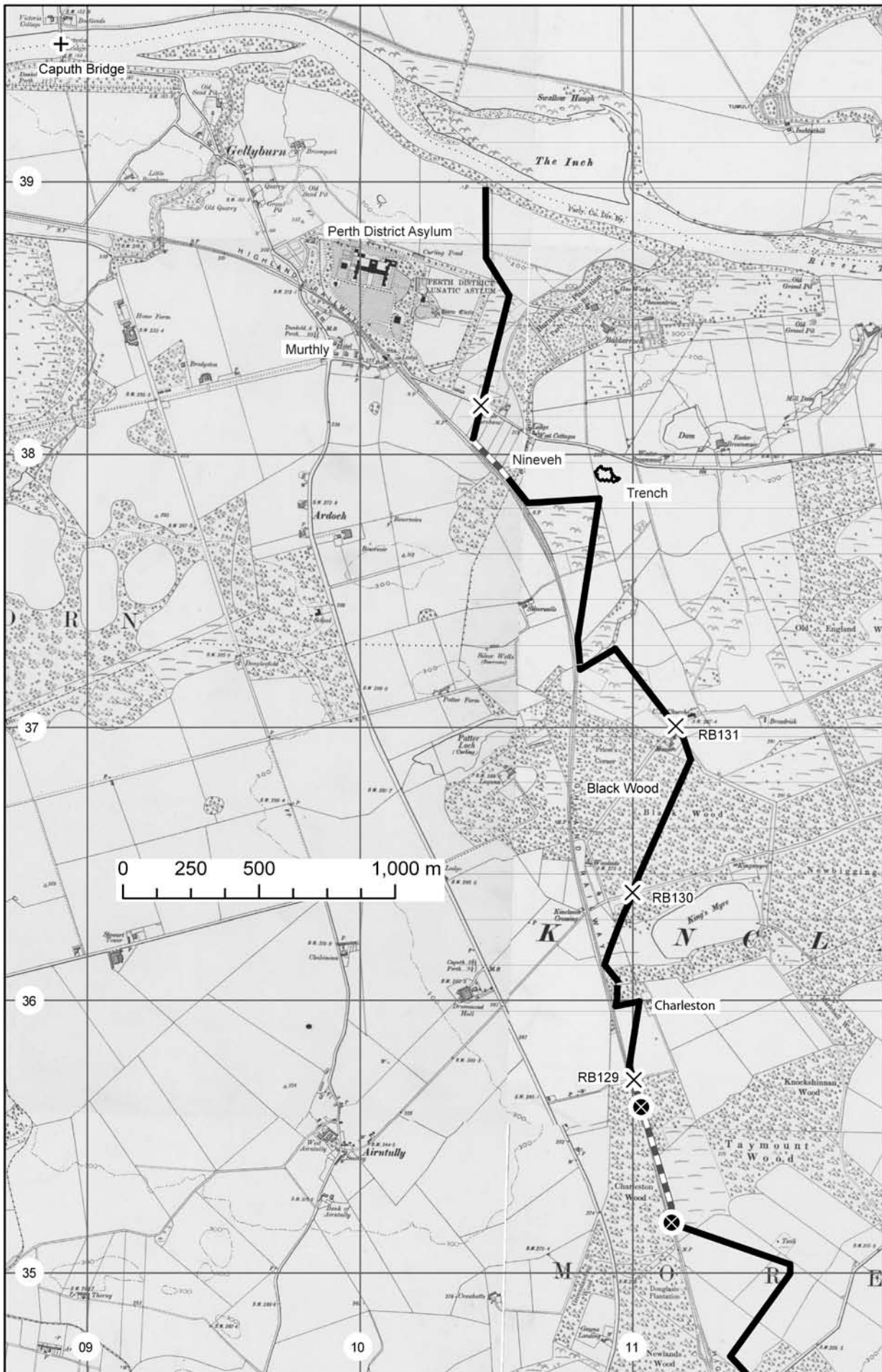
Vertical aerial photographs reveal a further trench/firing position complex in a field immediately to the E of the village of Birnam, apparently covering the main Perth–Inverness road to the S, and the Dunkeld–Caputh road on the NE side of the river (Illus 46).

Would the Command Line have worked?

It has been noted that on D-Day, after several years to prepare, the much more formidable German defences on Juno Beach were overwhelmed by Canadian forces in two hours (Saunders 2004). Would the stop-lines have worked? They were intended at first to help immobile regular army units hold up highly mobile enemy forces while the limited British mobile reserves were gathered. Even before they were completed the emphasis of British army policy had changed to a more mobile response and fixed defences became more and more the responsibility of the Home Guard, freeing regular army units for a mobile counter-attacking role. In the months after Dunkirk the size of the regular army available for defence increased and its equipment and mobility improved. Even in the summer of 1940 I have noted above that 15 Brigade was already deploying its troops to meet its objectives without really using the Command Line. In the summer of 1940 the domestic British defence position was never as vulnerable as that of France and the low countries, with a land border with Germany. The scale of enemy forces that might have landed and been supplied would almost certainly have been seriously challenged by the stop-lines, even in the summer of 1940. By 1941, with an increasingly effective regular army and Home Guard, and the vulnerable beaches of Fife and Angus defended by a committed and professional Polish I Corps, the real chance of any substantial German assault on Scotland had passed.

Illus 42 (right) *North of the GOWRIE pillbox from Strathord to Charleston the barrier is formed, to just south of Stanley Junction, by the railway embankment, and to Burnmouth Ferry by the bank of the Tay, raised where necessary. The railway and river bank are linked by lengths of A/Tk ditch. The barrier follows what is now the main railway line, mainly as an A/Tk ditch. The map background are Ordnance Survey Second Edition 1:10,560 mapping (1901 and 1902), reproduced by permission of the Trustees of the National Library of Scotland.*

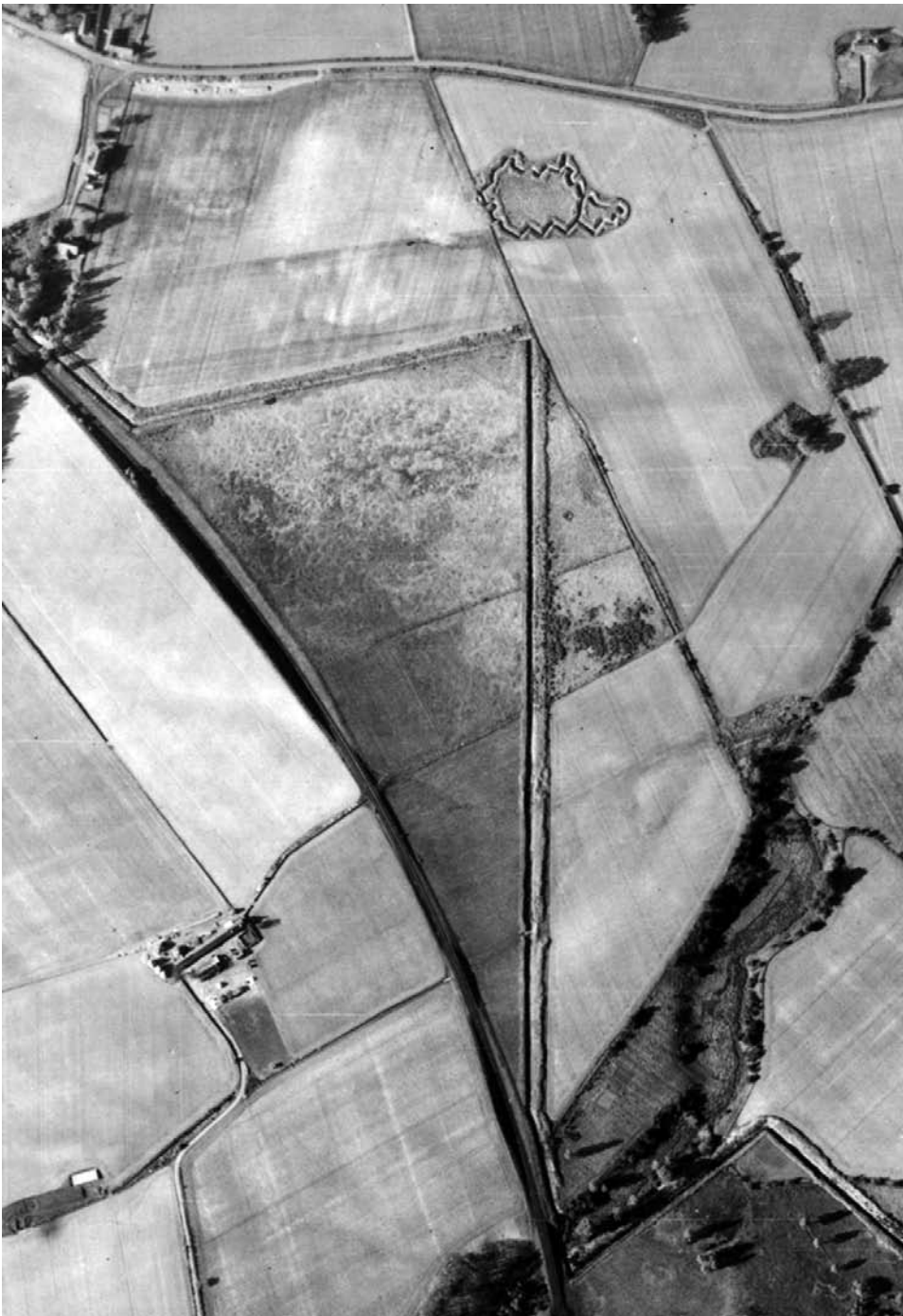




Illus 43 The A/Tk barrier continues as a ditch from Charleston to the steep bank of the Tay just NE of what was then the Perth District Asylum. The A/Tk ditch is well preserved from just north of Charleston to just south of RB131. RB 130 and 131 (see Illus 44) are also well preserved. The trench complex illustrated in Illus 45 is just east of Nineveh. The map background are Ordnance Survey Second Edition 1:10,560 mapping (1901 and 1902), reproduced by permission of the Trustees of the National Library of Scotland.



Illus 44 Road block RB131. In this type of horizontal rail block the three rails are rested on steps within a single vertical slot. The holes on the eastern side are formed by pipes around which the concrete was cast – their purpose is not known.



Illus 45 The A/Tk ditch between RB131 and Nineveh, showing on RAF photograph 106G/UK51 4229 (6 May 1946). The firing position at Murthly, lying east of the ditch, is clearly visible near the top of the photograph (RCAHMS/aerial.rcahms.gov.uk).



Illus 46 The northernmost of the four visible firing positions just east of Birnam, near Dunkeld. Extract from RAF photograph RAF/106G/Scot/UK51 3368 (6 May 1946) (RCAHMS/aerial.rcahms.gov.uk).

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Abstract

To repel an expected German invasion anti-tank (A/Tk) 'stop lines' were built to prevent armoured forces advancing rapidly, giving time for counter-attacks to be developed. The Command Line was the most important in Scotland. The S sector ran from Dysart on the Forth to Newburgh on the Tay and comprised a single or more often a double line of A/Tk ditches where existing barriers did not exist. The N sector comprised a forward and a rear line; the former line blocked the E approaches to Perth. The rear barrier was formed by the W bank of the Tay from Perth to Stanley, with a second line using the railway embankment. From Stanley an A/Tk ditch ran to Murthly. Wherever the A/Tk barrier crossed a road or river there were movable or permanent road-, rail- and river-blocks. There were 21 pillboxes of various designs (two of them unique to the Scottish Command Line).

Keywords

anti-invasion defences
anti-tank ditch
pillbox
Second World War
stop-line

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