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rifle ranges on OS maps; with a case study from
Wester Ross”

Nevis Hulme

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The representation of Rifle Volunteer Force rifle ranges on OS maps; with a case study from Wester Ross

Nevis Hulme

This study came about following posts on the forum *ordnancemaps*¹ from which it became apparent that little analysis had been done on the topic and, having a number old rifle ranges in my local area, it seemed an interesting one to pursue. This work is based on the first and second editions of the 1:10,560 (six-inch) and, where published, 1:2,500 (25-inch) maps. The original intention was to study all of the rifle ranges in the old county of Ross and Cromarty but, as the work proceeded and more were located, it was decided to limit the study to the layout of ranges and how these changed over time, the location of ranges in Ross and Cromarty and to look in detail at the Wester Ross ones as a case study.

Those interested in further information on the history of the volunteer force will find a general overview on Wikipedia.² Detail specific to Scotland is found in Major-General J M Grierson's *Records of the Scottish Volunteer Force 1859-1908*³ and it is from this that the history has been taken. Grierson writes in detail of the uniforms worn by each battalion and supplies the number of rifle ranges attached to each. A rough count of his figures for Scotland would suggest that there were around 320 rifle ranges in Scotland. He also states which ranges are shared between battalions although this did not apply in Ross and Cromarty. It seems that few records remain for the volunteer force in Ross and Cromarty.

Background to the establishment of rifle ranges

The growing threat from the expansionist foreign policy of the French from 1848 and the perceived weakness of Britain's defences led to demands for the re-establishment of volunteer forces in this country. The Government, initially reluctant, agreed to their formation in 1859. The creation of the Scottish Volunteer Force led to the establishment of rifle ranges in each locality where corps⁴ were formed.

The first volunteer companies in the county of Ross and Cromarty were formed in 1860 and, on 30 September 1861, were incorporated into the 1st Administrative Battalion, Ross-shire Rifle Volunteers, with its headquarters at Dingwall, the county town. Within this there were, by 1867, nine companies as given in *figure 1*.

¹ <https://groups.io/g/ordnancemaps/topics>: Names on maps (5th April 2021 on) and Butts and Targets (6 April 2021 on).

² https://en.wikipedia.org/wiki/Volunteer_Force

³ <https://electricScotland.com/history/scotreg/volunteer.htm>: Ross and Cromarty is covered on pp. 275-278.

⁴ The use of this term here refers to a group of c.100 troops of all ranks rather than how it is used as a major part of an army of 20-60 thousand personnel.

1st Ross-shire Rifle Volunteers		
Company*	Headquarters (date raised)	Headquarters moved to
1st / A	Invergordon (1860)	Tain (1869)
2nd / B	Dingwall (1860)	-
3rd / C	Avoch (1860)	Fortrose (1876)
4th / D	Knockbain (1860)	Munlochy (1876)
5th / E	Alness (1861)	Ullapool (1865)
6th / F	Alness, raised as subdivision (1861)	Invergordon, increased to one company (1871)
7th / G	Evanton (1866)	Dingwall (1887), detachment at Alness
8th / H	Moy (1866)	Fairburn on the Brahan estate (1887)
9th / I	Gairloch (1867)	-
*numerals: original designation; letters: designation from (probably) 1880		

Figure 1: Ross-shire Rifle Volunteer companies.

All companies had headquarters named after towns or villages with the exception of 4th Company (Knockbain) and 8th Company (Moy). Knockbain is a parish and the reason for this name being chosen is not understood. Sixteen years after its creation, this company was relocated to Munlochy, in the same parish. It is not known where the headquarters had been previously, there being no other obvious location; it may have simply been a change in name rather than location. Certainly, Munlochy had a rifle range by 1873 before the move. Concerning the 8th Company, no other reference than Grierson has been found for the location of its headquarters, Moy being little more than a number of farms. All reports about the company, for example in the local Ross-shire Journal from at least 1883, refer to the company as Brahan. Grierson has it later as H company Fairburn (Brahan) stating, incorrectly, that Fairburn is on Brahan Estate.

In addition to these companies, there were a number of Artillery Volunteers operating in Ross and Cromarty, included here as they too had rifle ranges. The 1st Cromarty Artillery Volunteers, formed in 1860, became attached to the 1st Inverness-shire Artillery Volunteers as its 8th Company in 1863. 1st Ross (Stornoway), 1860, and 2nd Ross (Loch Carron), 1866, were each raised as a corps of one battery. They both eventually also became attached to the 1st Inverness-shire as its 9th and 10th Companies, respectively, in 1880.

The Ross-shire Rifle Volunteers were said to have fourteen ranges.⁵ When those of the Artillery Volunteers and the Inverness-shire Rifle Volunteers (the Windhill range) are added, the expected number rises to eighteen. In many cases, it is not clear to which company each range belonged while some were probably shared. Further, the location of rifle ranges changed over time. For these reasons, it was decided to name the rifle ranges based on their locations rather than attempt to link them to rifle volunteer companies. Having lived and worked all my life in both the east and west of the county, I have used names that I think reflect those may have been used by the local companies for the ranges. The names could be argued over: for example, it may have been that the Arcan range was called Marybank or the Achilty one may have been known as Contin, especially by those

⁵ Grierson, p. 278.

from further afield who may have been familiar only with the names of villages. The Barbaraville and Windhill ranges were similarly problematic to name. Rosskeen and Redcastle would have been familiar names as they remain to this day.

Name of ranges within their battalions*	Grid Reference of targets
1st Ross-shire Rifle Volunteers	
Opinan	NG749723
Gairloch	NG803753
Poolewe	NG865799
[Kinlochewe (not mapped) ^A	NH023613]
Ullapool	NH128953
[Achlochan, Coigach (not mapped) ^A	NC022073]
Braemore	NH194788
Achility	NH450574
Arcan	NH499542
(Conon: a private range)	NH528534
Brahan	NH513558 (two targets; average grid ref.)
Dingwall ^B	NH558587
Redcastle	NH579489
Evanton	NH623653
Munlochy	NH652526, moved to NH654527
Contullich ^C	NH6370? (still to be located)
Rosskeen	NH681689
Fortrose	NH714566
Barbaraville ^D	NH759725 and NH759730
Tain	NH801832 (multiple targets; average gride ref.); original target NH802832
1st Inverness-shire Rifle Volunteers	
Windhill (on Lettoch Farm)	NH538482
1st Inverness-shire Artillery Volunteers	
Stornoway ^E	NB440336
Lochcarron	NG899394, moved to NG912419
Cromarty	NH801672

*names of ranges selected for reference purposes with those in bold detailed in this article; battalions names have been abbreviated.

^A See Postscript for more on these.

^B The Ross-shire Journal name this as the Guie Ranges from 1905 to 1907, Guie being an old name for that area.

^C This range is only known from the Ross-shire Journal's reports from 1895 to 1899 used in October by the Alness Company for its annual shooting competition.

^D Named Polnicol, the farm on which it was located, in the Ross-shire Journal in 1900 and 1906. The target was in the sea and, although now more dilapidated, can be seen at <https://hbsmr-web.esdm.co.uk/Monument/MHG30259>. It appears to have a Ralston Dual Canvas Target Frame but how it was operated is unknown.

^E Lewis, of which Stornoway is the main town, was part of Ross and Cromarty until 1975.

Figure 2 : Grid references of the rifle ranges in Ross and Cromarty.

The rifle ranges connected to these companies have been listed in *figure 2* (along with a few others about which there is uncertainty). *Figure 3* shows the distribution of the ranges about the county. One rifle range has been included despite it having little connection with Ross and Cromarty. When the first edition was surveyed, this range was on the Inverness-shire side of that county's boundary with Ross-shire, midway between Muir of Ord and Beauly. When the counties of Scotland were rationalised in 1890, the boundary was changed and the rifle range came within the county of Ross and Cromarty.⁶ This rifle range has been called Windhill (*wind* as in *movement of air*) after a nearby group of houses. It is stated in the Ordnance Survey Name Book (OSNB) that the range was connected with Beauly Rifle Volunteers although it is not indicated as a volunteers' range on maps.⁷ At the time of the first edition, there was a rifle range on the southwest side of the village of Beauly, presumably also used by this company.

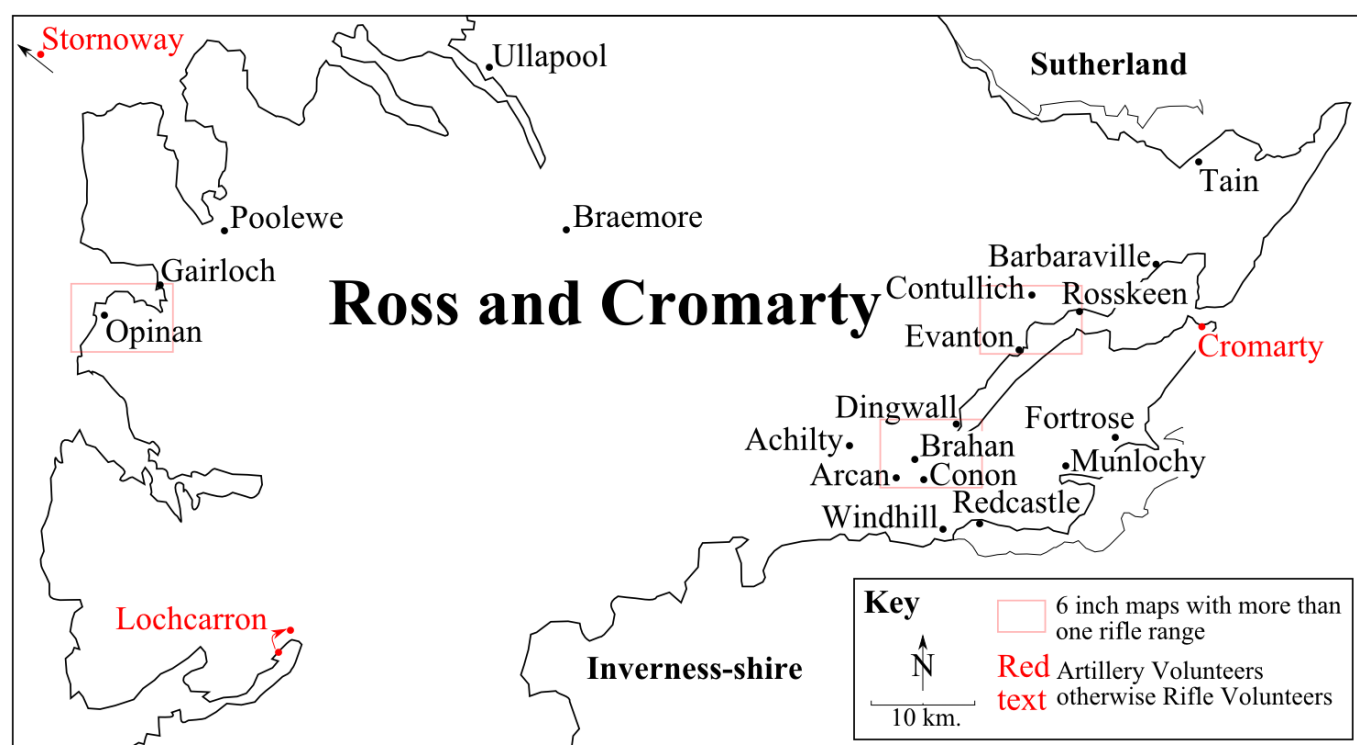


Figure 3 : Map of the rifle ranges in Ross and Cromarty.

All of the companies in the county had been established by the time the OS had completed its first survey of the county in 1876. Two changes in headquarters took place in that year but this was after those particular places had been surveyed; this may have had a bearing on what is shown on maps.

⁶ Local Government (Scotland) Act 1889. The change also saw the multiple parts of Cromarty-shire and an enclave of the county of Nairn merged with Ross-shire to form Ross and Cromarty which existed as a local government county until reorganisation in 1975.

⁷ The OS maps are inconsistent in naming rifle ranges; some are called Volunteers' ranges and others are not.

The structure of rifle ranges and the weapons used on them

The land on which the rifle ranges were constructed had to be obtained by the volunteers and all costs involved with the creation of rifle ranges was down to them. There was support from landowners in some cases and this was probably significant especially in more rural areas.

Figure 4 shows the main elements of early rifle ranges established by the Rifle Volunteer Companies. The firing points (FPs) were marked with pegs having been accurately measured from the target. There is indication that at least some were substantial platforms. Firing up to a distance of 300 yards was from a standing position with a kneeling position adopted for greater distances. Neither of these methods of shooting would have necessitated additional work at the FPs so in many cases their locations, even if undisturbed, are unlikely to be distinguishable today.

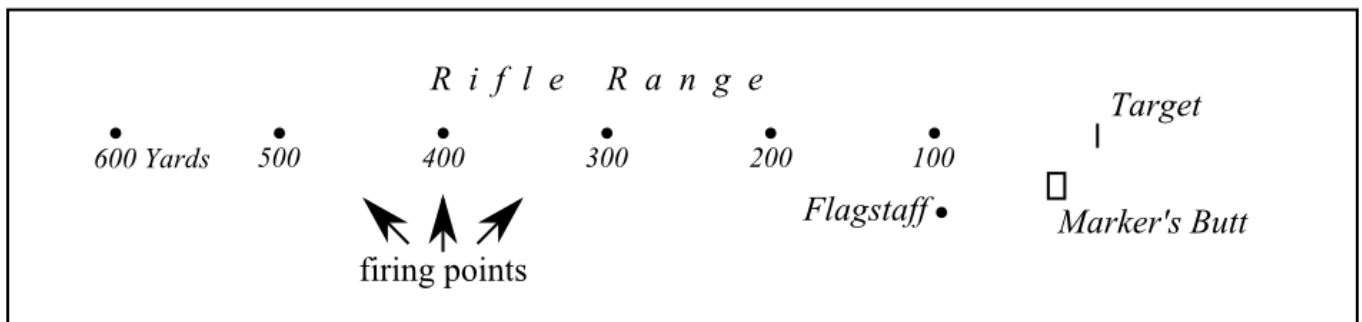


Figure 4 : Main elements of an early rifle range, with firing carried out left to right.

The Marker's Butt was a structure in which at least one person was positioned to record the score of those firing at the target. The minimum requirement for this was given in the 1859 regulations⁸ and shown in figure 5. The C-shaped marks on maps, adjacent to the label Marker's Butt, would suggest that it is this structure that has been mapped. From the way some marker's butts were mapped, however, it would seem that some were more substantial roofed structures. The regulations⁹ also refer to another butt: 'About eighty yards in rear of the marker's butt [presumably, between the 100 yd firing point and the target] a smaller butt, capable of holding two men, is to be made on every practice range, for the purpose of signalling ricochets that may hit the target.'¹⁰ These, both marker's and ricochet butts, may have been iron screens if the ground was unsuitable for the usual construction. In addition to these, there were sometimes butts, mounds of earth or of more solid materials, constructed to capture stray bullets. They were also built in front of targets, possibly as a more primitive form of marker's butt. As will be seen, there was a great deal of variety on the ground, on the maps, or on both.

⁸ Regulations for Conducting the Musketry Instruction of the Army, HMSO 1859, plate 7.

⁹ *ibid.*, p. 52.

¹⁰ It is not known how often bullets struck the ground then hit the target but it must have been sufficiently common for personnel to be assigned to this duty and a method specified for their recording on the relevant forms.

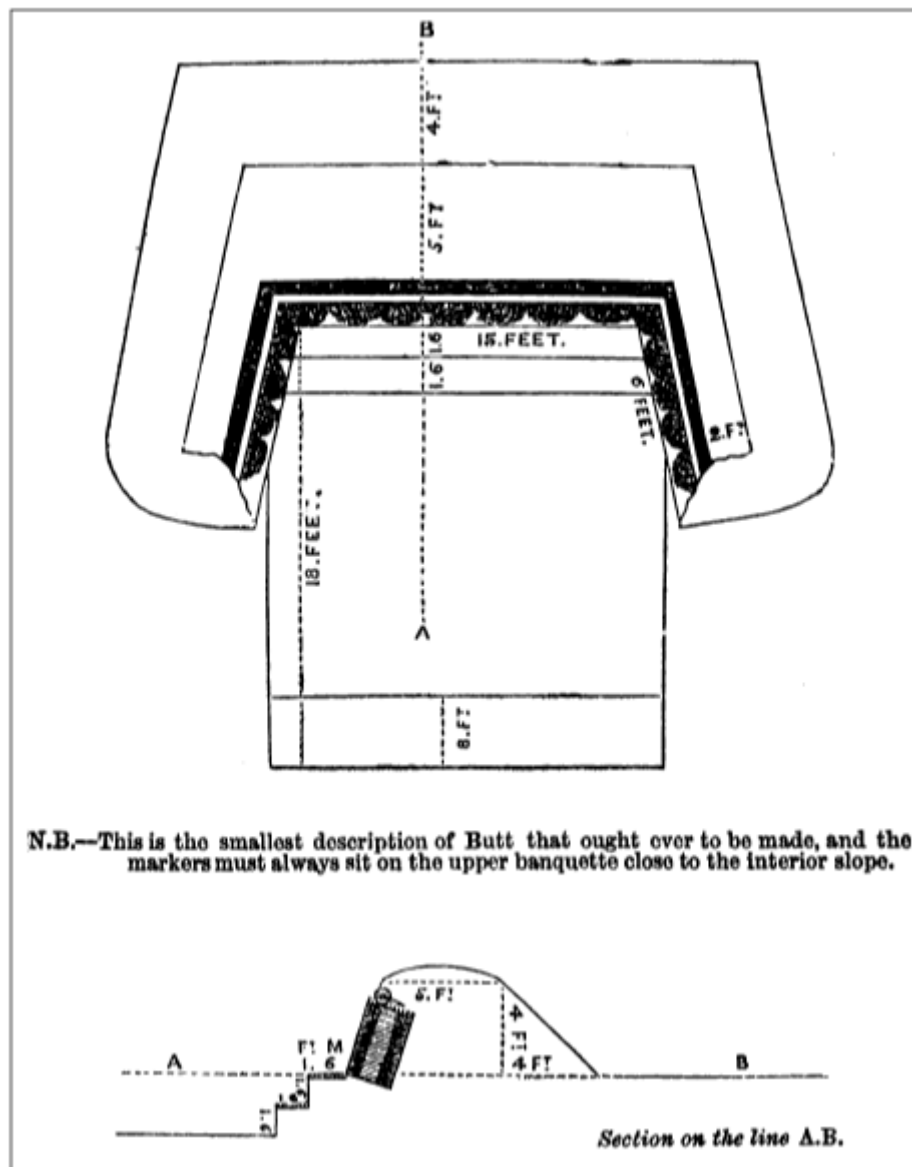


Figure 5 : Marker's Butt as specified in 1859.

The regulations as given in the original edition of *Regulations for the Volunteer Force, War Office* (1861) stated in clause 174: 'The Rifle Practice Ground of a Volunteer Corps must afford a range of at least 200 yards, but it is desirable that the range should extend to 900 yards.' In 1878, clause 791 of the regulations stated: 'The Rifle Practice Ground of a Volunteer Corps must afford a range of at least 300 yards, but it is desirable that the range should extend to 800 yards.' Elsewhere in the latter the requirements for obtaining proficiency of firing badges are given with a range of 800 yards required for a volunteer to show ability for a First Class badge.

A little detail of the weapons used on the rifle ranges is important to understand changes that took place in the design, and so mapping, of the ranges. When the Volunteer Force was established in the 1860s, the most modern weapon available was the Enfield Pattern 1853 rifle-musket, known in short as the P53. This may still have been in use at the time many of the rifle ranges in Ross and Cromarty were mapped although the Martini-Henry rifle, introduced in 1871, had succeeded it. The Martini-Henry had an effective range

of 400 yards with a maximum range of 1900 yards. Both these weapons were .577 calibre.¹¹ From 1888, this Martini-Henry was being replaced by the Lee-Metford rifle which had an effective range of 800 yards and maximum range of 1800 yards. The Lee-Metford itself was being phased out from 1895 in favour of the Lee-Enfield. The Lee-Enfield had an effective range of 550 yards with a maximum range of 3000 yards.¹² Both of the two more modern weapons, the Lee-Metford and the Lee-Enfield, used .303 calibre cartridges. It is probable that older weapons continued in use by the Volunteer Force for many years after they had been replaced in other branches of the army. It was, however, the change in calibre and, more importantly, type of bullet that was important for the design of rifle ranges.

The targets in use with the .577 rifles were 'six feet in height and two in breadth, constructed of iron of sufficient thickness to be rifle-bullet proof.'¹³ The introduction of .303 weapons, with their different design of projectile, increased the risk of ricochet and iron targets had to be abandoned. In addition, the layout of the rifle ranges, particularly the target end, changed.

The iron targets were replaced, probably from 1888 or the years thereafter, with canvas on which was adhered the paper targets themselves. Systems were devised to raise and lower the targets while those operating them were safe behind a secure concrete and earth structure built to exact specifications. The marker's butt became integrated with the target. The score was recorded when the target was lowered, with the target replaced when it became too holed. The most common target system used appears to be the Hythe Pattern Target Frame (*figure 6*) of which the remains are still to be seen around the country. This target frame was positioned behind a butt in which the marker and those working the targets could operate. The form of this butt varied in construction but the basic components shown in the diagram were those generally in use at the end of the nineteenth century. The butt was constructed so that it was not possible for a bullet to strike the metalwork of the target frame and ricochet into those in the butt or elsewhere. This meant that the butt was higher and wider than the target frame. The frame of the target itself was made of wood from which ricochets did not occur. The retaining wall was made of local stone where available or, otherwise, of concrete. It was finished on the inside with concrete and was protected by an earth mantlet¹⁴ from which stones were to have been removed to reduce the occurrence of ricochet.

¹¹ The calibre of a weapon is a measure of the internal diameter of the barrel bore, given in these cases in inches. Unlike modern notation for decimals, it is represented without an initial zero and said, e.g. point three o three.

¹² For more on these weapons, see the relevant pages in Wikipedia. The Lee-Enfield, probably best known for its WW1 role, continued in use in the British Army until at least 1957 and is still in use around the world.

¹³ Regulations for conducting the musketry instruction of the army, HMSO 1859, p.51

¹⁴ A mantlet is a protective wall for stopping projectiles. The term has been in use since mediaeval times when portable versions of wood or wicker were used. A modern example of the term is the gun mantlet of steel that protects where the barrel of a tank meets the turret.

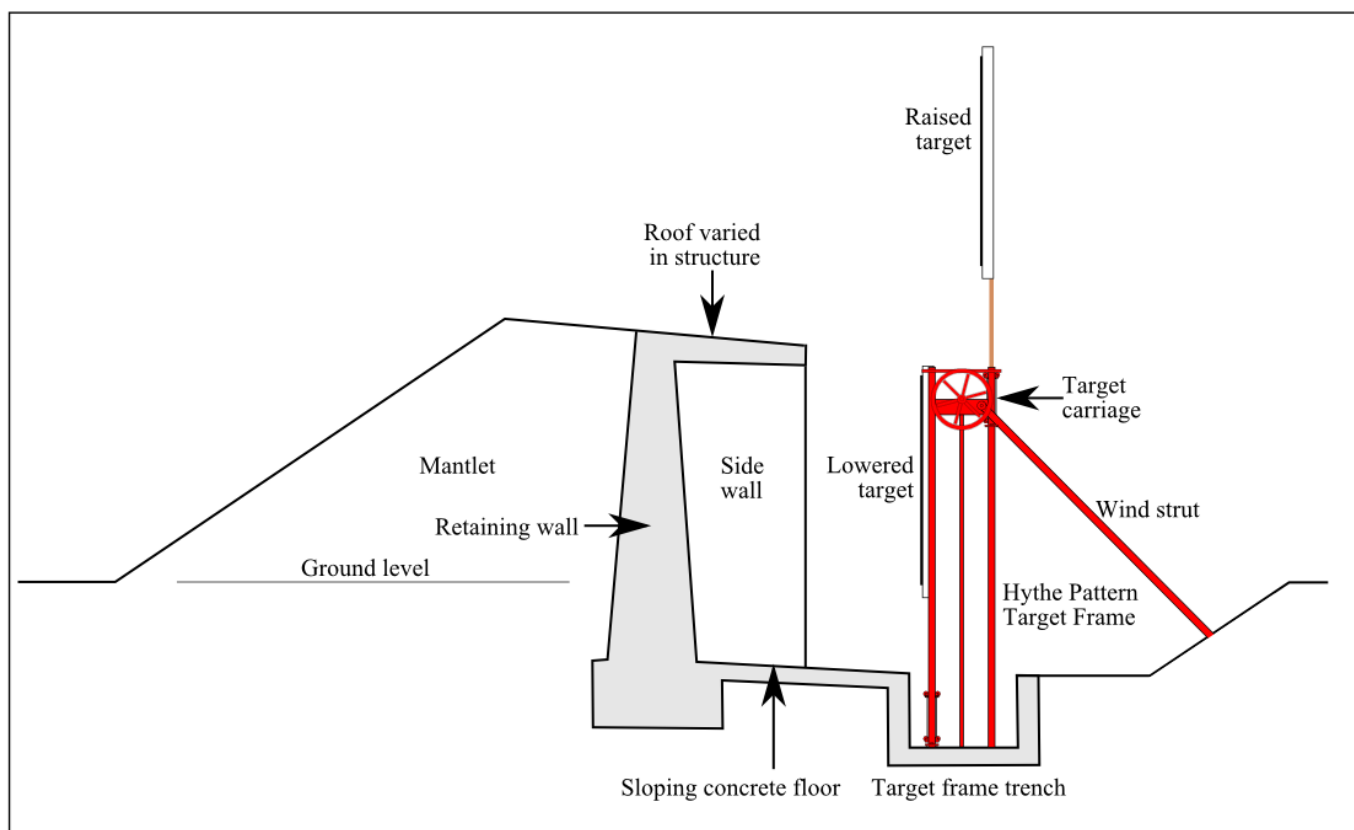


Figure 6 : A simplified cross-section of a typical butt and target after the introduction of .303 rifles.

Volunteer rifle ranges were discussed in the House of Lords in 1899¹⁵ during which it was stated that more than 300 ranges (throughout the UK probably) had been closed on safety grounds. The Lee-Enfield rifle, with its much longer range, was not mentioned but the closures were put down to two factors. One was the expansion of the population and building on what had previously been waste ground. The other was more rigorous inspection of the ranges. It was claimed that the ranges were as safe for the Martini-Henry rifle as for the .303 ones so it could have been said that this was an early example of 'health and safety gone mad'. The Lee-Metford, it will have been noted, has a shorter maximum range than the Martini-Henry. The Lee-Enfield would have been a greater concern.

OS instructions for their representation and inclusion in OSNBs

The earliest instructions given to OS field examiners known to exist date from 1905.¹⁶ The references relevant to rifle ranges in these are as follows.

Rifle Ranges are included in the list connected with 'The descriptive names of the following objects are written on the [map] traces, but they are not described in the name sheets unless they have a special proper name.' Butt (Rifle Range), Flagstaff (FS) and Target are included in the following: 'To the following objects descriptive names, or their contractions as given below, are written on the traces, but no description is given in the name sheets.'

¹⁵<https://hansard.parliament.uk/Lords/1899-07-17/debates/c99e11fc-9c5b-4dbf-90a9-bf84bf4bd9fc/Volunteer>.

¹⁶ <https://www.bhsaccess.org.uk/uploads/instructions-to-field-examiners-os.pdf>. For discussion of these earlier instructions, see <https://groups.io/g/ordnancemaps/topic/86019700#1315>.

There appears to have been no strict rule regarding rifle ranges when the Ordnance Survey Name Books (OSNBs) were compiled for the First Edition maps, circa 25 years before those instructions. There are nine rifle ranges in Ross and Cromarty entered out of the fourteen ranges thought to be in existence when the compilation of OSNBs was being carried out. It is worth pointing out that some ranges appear only on the first edition maps, some only on the second edition and some on both.

Most of the entries in the OSNBs give little more than the users of the range (e.g. '8th Company of the Ross-shire Volunteers') and, as with most OSNB entries, its situation in relation to other features (eg 'situated a little to the east of Dingwall'). In some cases, the length of the rifle range is given and, in one case, that of Munloch, details of its structures (targets, flagstaff and marker's butt). There is a great deal of inconsistency in the information given where the range is included in the OSNB.

The following is an attempt to explain why five of the rifle ranges that existed at the time of the first edition survey were not included in the OSNBs. Two of them, Fortrose and Rosskeen, are shown as no more than Rifle Butt or Butts. While there would have been a range associated with these, there must have been no indication on the ground, ie no FPs (firing points) present, so there was no rifle range as such to enter. The capability of volunteers depended on their ability to hit targets at different distances. For this reason, it was a requirement that the measurement of FPs from the target was carried out precisely. This would not be a task carried out each time the range was used so the absence of FPs is difficult to explain.

The three remaining rifle ranges require more careful examination to explain their omission. Those of Evanton and Gairloch were surveyed, at the 1:2500 scale, under the supervision of Lt Fawkes. He was not responsible for any of the others so it may be that he made the decision to omit rifle ranges from the OSNBs. The Conon range, a private one, is not in the OSNBs despite it being on the same map as the Dingwall and the Arcan ranges, which are included so the only reason for its omission could be that it was designated as a private range. Cpt Coddington, who directed the surveying, did, however, include another private rifle range in Inverness-shire, on the north side of the River Beaul, north of Beaufort Castle (NH508436). It may be that it was only included in the OSNB¹⁷ because there was a feature of interest adjacent to it that had been entered. While these explanations may work for Ross and Cromarty, they may be less convincing when applied elsewhere.

An analysis of the Volunteer Force rifle ranges of Wester Ross

The first rifle ranges examined were those in my home parish of Gairloch. Their representations on maps were regarded as the standard but it soon became apparent that this was not the case. The following will look at each range in Wester Ross in turn, grouped by the associated volunteer company.

¹⁷ <https://scotlandspplaces.gov.uk/digital-volumes/ordnance-survey-name-books/inverness-shire-os-name-books-1876-1878/inverness-shire-mainland-volume-49/8>; a wooded hill with possible embankments from after the Battle of Culloden.

Conventions

Unless otherwise stated, all maps are Ross-shire and Cromartyshire (Mainland) maps. The sheets are referred to as, eg sht LVI (6in.) and LVI.4 (25in.). Dates given are survey dates with those dated 18xx being first edition maps and those 19xx second edition. The measure Yards is abbreviated to yd; this is indicated on maps as *Yards*, *Yds* and *Y^{ds}* but these distinctions are not included in the analysis. Firing point(s) is abbreviated, as already indicated, as FP(s); their locations are generally indicated with dots or short lines, referred to as *dashes*, at right-angles to the line of the range.

After the name of the rifle range, the grid reference of its target is given in brackets followed by the six-inch map on which the target is located. Should the range extend beyond this map, the other six-inch map is given after a semicolon. The numbers of the 25-inch maps are not generally given as these can easily be found from the National Library of Scotland (NLS) website on which switching between the two scales is easily achieved. Unfortunately, the 25-inch First Edition is not currently accessible by this means. The NLS site offers many ways of searching but to search for first edition maps when on the Map Images page make sure that the *Category* is set to *Scotland* rather than *Great Britain*.

I Company rifle ranges (in Gairloch parish)

The Gairloch company was established in 1867, the latest of all the Ross-shire Volunteers. Dixon's guide to Gairloch,¹⁸ gives details of its establishment and those people with responsibilities. It is clear that the laird of Gairloch Estate played a significant part, both as captain and supporting the provision of the volunteers' requirements, including drill halls and armouries. It is stated "The company is worked in three separate sections, viz the headquarters section at Achtercairn [the northwest part of Gairloch village], the "south-side" section at Opinan [a crofting township southwest of Gairloch village], and the Poolewe [a village northeast of Gairloch] section ... There are rifle ranges at each of the three centres.' The ranges of the outlying sections of Opinan and Poolewe only appear on second edition maps (1902). It is not clear when the sections were established; they definitely existed in 1886 when Dixon wrote his book but probably could have been formed anytime from after the first survey in 1875.

All the maps showing these ranges, where names have been printed, give Lt Fawkes as the surveyor. This officer appears as the surveyor on both first and second edition six-inch maps showing the Gairloch rifle range. Lt Fawkes was the surveyor in 1875; his name appears in the OSNBs but he is unlikely to have been involved in the revision of 1902. This was 27 years later and, were he still in the Royal Engineers, he would no doubt have been promoted. For this reason, we can only depend on the names given for the first edition maps when comparing the mapping.

1. Gairloch (NG803753, LVI.4; XLIV.16)

The 1875 maps indicate the line of the rifle range from its maximum length (700 yards) to the target as a straight broken line.¹⁹ This could not have been the true line of the range

¹⁸ Dixon, J.H., 1886, *Gairloch and guide to Loch Maree* (Edinburgh), p. 297.

¹⁹ The term *broken* is used throughout for any line indicating the length of a rifle range although it is not always clear if the line is pecked or a closely-spaced line of dots.

because this would have required some of the FPs to be on the beach near the low water mark. While the six-inch map shows the *Target* as an open circle at the end of the line for the rifle range, the 25-inch labels (figure 7) the *Targets* (plural) and shows an indistinct dot, again at the end of the line for the range. The *Butts* are shown on both maps as a reversed-C and probably represent the type of butt shown in figure 5. Its location suggests this, because: it is to one side and at an appropriate distance from the target. It is not clear why the label is plural as only one symbol appears to be present.

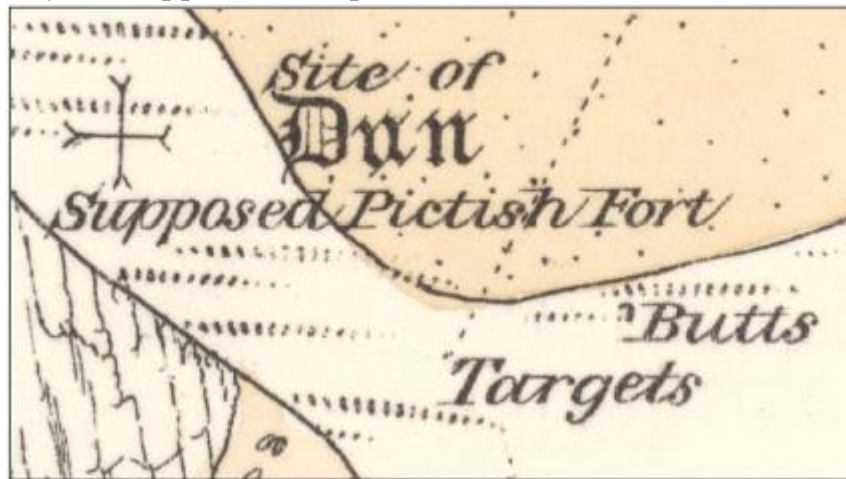


Figure 7 : Detail of the target end of Gairloch Rifle Range, First Edition 1:2,500 LVI.4.

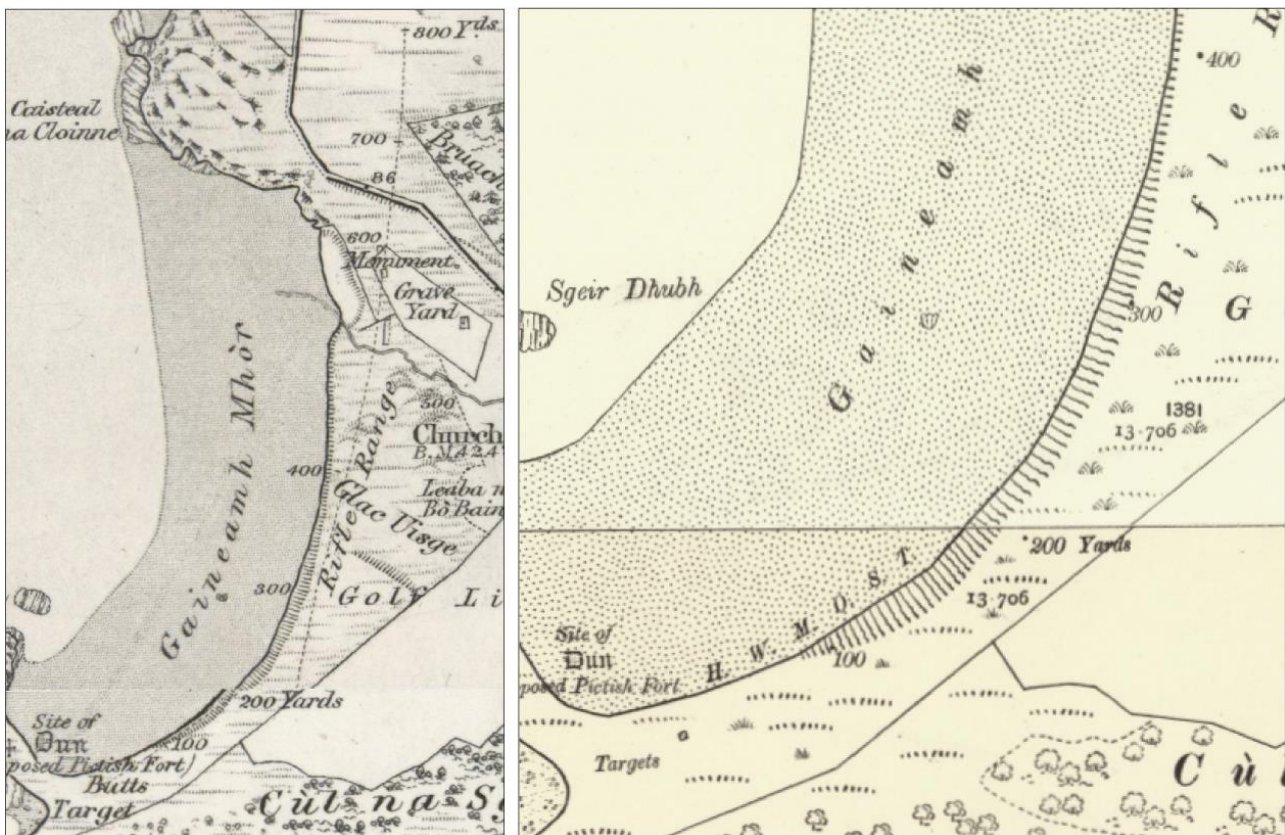


Figure 8 (left) : Gairloch Rifle Range, Second Edition 1:10,560 sheets LVI and XLIV. The break between the two maps is clearly visible.

Figure 9 (right) : Detail of the target end of Gairloch Rifle Range, Second Edition 1:2,500 LVI.4 and XLIV.16.

The 1902 6-inch (*figure 8*) has a non-straight broken line for much of the range's length to 200yd which is at the southern margin of sht LVI. The line is not continued on the adjoining sheet (XLIV) which would suggest a lack of joined up inking. Both second edition maps give every FP from 100yd to the extended distance of 800yd at 100yd intervals. Those 100 to 400yd are shown along the seaward side of the sand-dunes forming a gentle curve. The 500yd FP is displaced inland because a burn would prevent sight of the target were it on the general line of the range. The location of the 800yd FP is questionable; the land drops to the north from the 700yd FP making it impossible to see the target. This sighting problem is also seen in Opinan, discussed later.

FPS are indicated with dashes on the 6-inch but dots are drawn on the 25-inch. The latter map has no indication of the line of the range other than *Rifle Range* written as on the 6-inch. The 6-inch. shows the words *Target* and *Butts* in the same positions as on the first edition but *Target* appears to be under the *Butts* in a different position from the first edition. The 25-inch second edition (*figure 9*) does not include the word *Butts* although it does have the label *Targets* with a hatched square nearby. This represents the structure still to be seen at the southern end of Gairloch's main beach (*figure 10, below*).

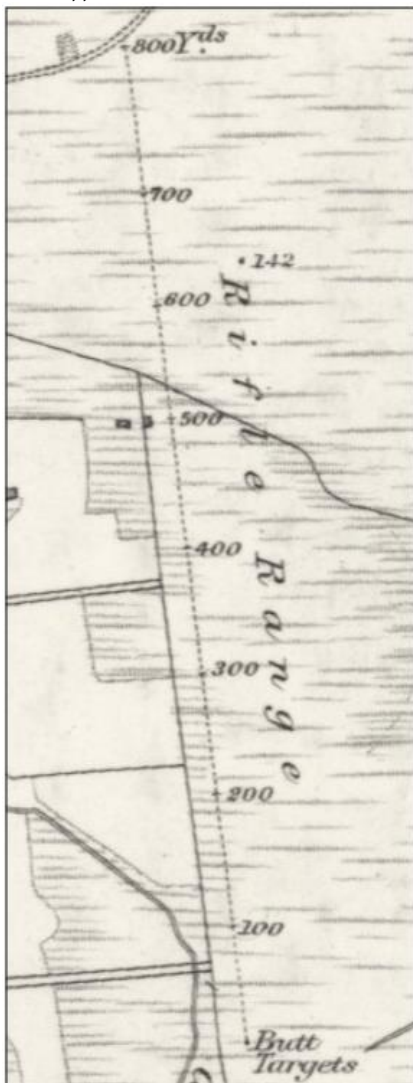


Figure 10 : The Gairloch Rifle Range butt and target which mirror the structures shown in figure 6. (The plastic containers were probably recovered from the shore and have sat there for years.)

The target and butt take the form shown in *figure 6* with the Hythe Pattern Target Frame still in reasonable condition. The frame is seven feet wide with much of one target carriage in place, the other lying in grass growing on the floor of the butt. The butt roof is of concrete topped with soil to reduce the chances of ricochet. The roof of this butt may have been at greater risk of causing ricochets because some of the more distant FPs were well above the height of the butt.

This rifle range is not shown as having a flagstaff (and neither do the two other ranges in the parish). A plan of the nearby fort (see *figures 7-9*) published in 1924²⁰ shows a flagpole which would presumably be associated with the rifle range; this is the only reference to one that has been found.

2. Opinan (NG749723 mapped but actually NG751724, LVI, 2nd edition only (no 25-inch.))



The only evidence of this on a map is given on the OS 2nd Edition, surveyed in 1902 (*Figure 11 (left) : Opinan Rifle Range, Second Edition 1:10,560 sheet LVI*).²¹ For some reason, the crofting townships south and west of Gairloch were not mapped at 25-inch unlike others in the parish.²² The rifle range is labelled *Rifle Range* and its extent shown with a straight broken line. The FPs are marked every 100yd with dashes from 800yd, immediately adjacent to the public road, to 100yd. The range ends with a dot labelled *Butt* and *Targets*.

When Roy Wentworth was collecting place-names in the area in 1984, he was given the name Cnoc a' Phòla, *the knoll of the pole* (NG753722), said to be where a flag-pole stood. Neither of his informants, long-standing residents of the area, made any reference to the rifle range in relation to this. The location, on a prominent hill behind the target was entirely appropriate for placement of a flagpole for the range.

On examination of the range, I found that the target was c.170 metres east of the position given on the map; there was no sign whatsoever of it having been where it is mapped. When the range was surveyed in 1902, a butt of the type shown in *figure 6* would have been in use and its relocation a serious undertaking in terms of expenditure. The rifle range in the mapped location would have posed a threat to a croft house just over 100 metres to the target's south-southwest. The location would have been safer although the house would still be within the danger zone of a modern rifle range.

²⁰ Thomson, William (1924) An account of several antiquities in Gairloch Parish in Proceedings of the Society of Antiquaries of Scotland, volume LVIII, p. 138

²¹ GSGS 3906 Sheet 20/88 N.E., printed 1941, does show the range but it is just a reduced copy of the 1:10,560 2nd edition.

²² See <https://groups.io/g/ordnancemaps/topic/82556752#1110> where this was raised.

The range, either on the line shown on the map or from the existing target, is across very wet ground that, even in dry conditions would have made accessing the FPs from 100 to 500yd difficult (*figure 12* shows conditions on an early January day). This area is part of A' Lòn Buidhe, *the yellow moist flat*, which is virtually level. It has a height range of a mere 3m. There are clear signs of drainage channels running north-south with a more substantial cross-channel, shown on the 1st edition map, roughly east-west. These can be seen on satellite images. It is probable that drainage in the 1800s would have been more carefully maintained than nowadays but, with its peaty soils on level ground, it would often have been wet and the going difficult. These conditions were not regarded as suitable, certainly in 1910²³ and probably before, for obvious reasons.

The range would have been unusable around the middle of the day in winter because the direction of fire was south. When the range was visited around midday in early January, it was very difficult to walk towards the target along the line of the range because the sun was just above the hill behind the target. Having to negotiate the wet ground made it all the more demanding. Seeing the target to shoot would not have been possible. A further problem with the range was that anyone at the 800yd FP could not possibly have been seen the target because of the lie of the land. Taken with evidence from the Gairloch range, this may suggest that not all mapped FPs are to be trusted.

The distances on the map between the FPs vary. Regulations stated that FPs were to be accurately measured so if what the surveyors were recording was actually on the ground, this range was of a poor standard. For example, using the map scale, the 400yd FP is c.21 yards and 800yd FP is c.49yds too far from the target. This is not the only rifle range where similar errors have been found.



Figure 12 : View looking north down the Opinan Rifle Range.

²³ Musketry Regulations part II Rifle ranges and musketry appliances, HMSO, 1910, chapter 2. See ***Concluding remarks.***

The butt (*figure 12*) does not have a solid wall on its left side (when looking down the range). On that side, there is only a metal support for the concrete roof with an extended back wall to the left of the support. The reason for this is unknown but it would have made for a reduced sense of security for those stationed there at times of live firing. The mantlet does not extend to the top of the butt let alone exceed its height as would have been expected to prevent ricochets off the metal of the target frame. Although more than a hundred years have probably elapsed since use of the range ceased, it is difficult to explain what has become of the mantlet. There appears no reason for sufficient erosion over this time and its isolated location would not have encouraged reuse of the material.

The target frame trench was found to be full of water. This c.10ft long trench and the remaining submerged metalwork would suggest that a Hythe Pattern Target Frame had been used here.

3. Poolewe (NG865799, XLV, 2nd edition only (Target not mapped at 25-inch.))

On the 6-inch, the rifle range (*figure 13*) is labelled *Rifle Range*. FPs are marked every 100yd with dashes from 600yd to 100yd. The FPs are evenly spaced although the 600yd FP was measured as being c.1.5 per cent too far on the map from the target. The extent of the range is shown with a straight broken line and ends with a (smudged) dot adjacent to which is a hatched square labelled *Target*. It is thought that the line of the range is drawn to the side of the target where the target structure is shown roofed. In cases where the target is shown unroofed, the line ends within the target thereby probably showing the true line of the rifle range. The bulk of this range is mapped at 25-inches except for the target itself; with the FPs shown as dots on a broken line on this map.

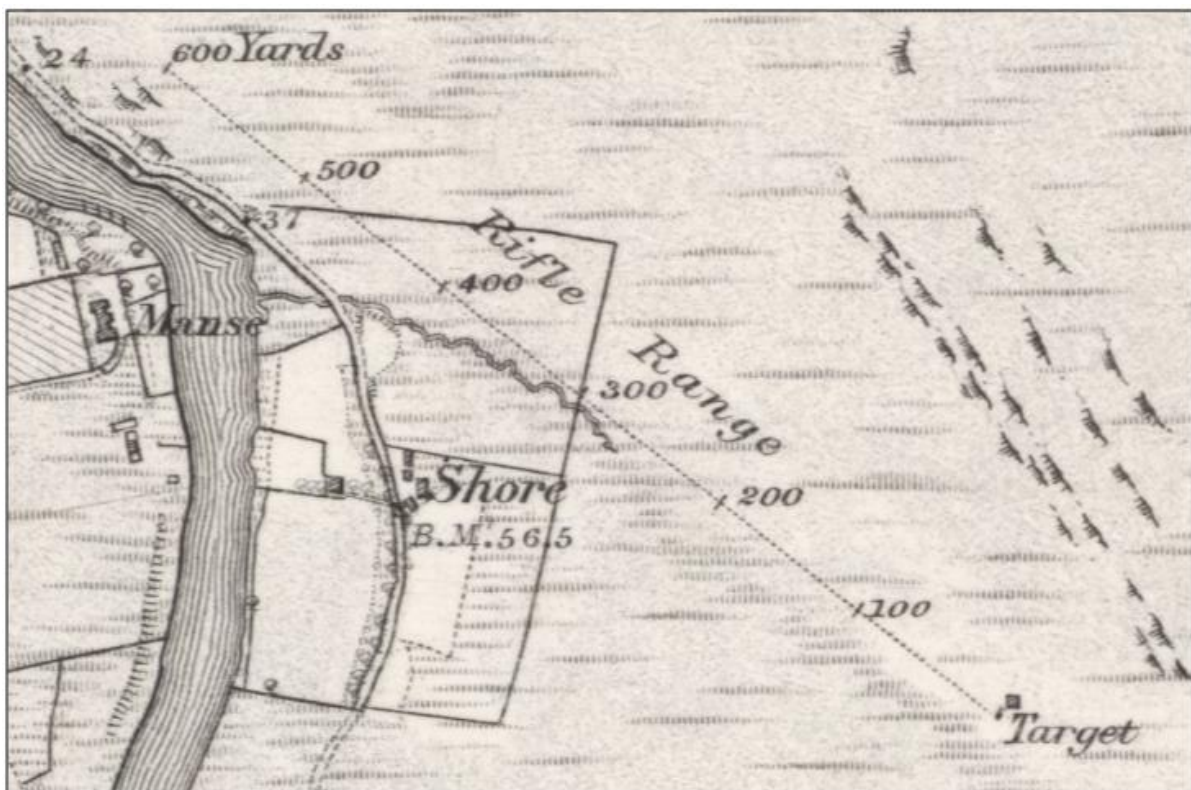


Figure 13 : Poolewe Rifle Range, Second Edition 1:10,560 sheet XLV.

This range was not provided with the Hythe target system but instead used a windmill type (*figure 14*). Windmill target frames ²⁴ have been seen in literature for other rifle ranges but it is not known the source of this particular one. The roof of this butt was made of corrugated iron which has long since crumbled away. The mantlet (*figure 15*), like that of the Opinan range, does not reach the top of the butt and, as with Opinan, it is difficult to explain this.



Figure 14 : Poolewe Rifle Range butt with windmill target.



Figure 15 : Poolewe Rifle Range butt and mantlet.

²⁴<https://nfknowledge.org/contributions/long-bottom-rifle-range/#map=10/-1.74/50.92/0/24:0:0.6|39:1:1|40:1:1>

Despite only being mapped in the 20th century, it is very likely that this range was used prior to the introduction of .303 weapons as the remains of a metal target lie next to this structure; this would date the range back to the time that Dixon wrote his book (1886) and, of course, possibly even as far back as just after the OS first surveyed the area in 1875. It is also possible that .577 weapons continued to be used into the 20th century by the Poolewe detachment as the target, with its metal frame, would not have been suitable for .303 bullets.

E Company rifle ranges (Lochbroom parish)

As will be seen from *figure 1*, Ullapool became the headquarters of the 5th Company of the Ross-shire Rifle Volunteers in 1865. There appears to be no rifle range in the area at the time of the first survey (1875) despite this being ten years after the raising of the company.

The two 6-inch maps showing these ranges give the same surveyor, Lt Fawkes, but as these are second edition maps; we do not know (as discussed earlier), who was involved with the revision work portrayed. The mapping of the Braemore range is very similar to those in Gairloch parish but the one for Ullapool is quite different.

1. Ullapool (NH128953, XIV.9, 2nd edition only)

Both the 6-inch and 25-inch second edition maps label the length of the rifle range with the words *Rifle Range* but there is no broken line alongside. Neither shows any FPs although the 25-inch does have two structures roughly east of the 'e' of *Range* (*figure 16*). The targets are shown similarly on both maps; all appear to be circles rather than the square or rectangular butts expected for this date. One of these on the 25-inch is shown hatched. The layout of the would suggest the butts in front of metal targets used before the introduction of .303 bullets.

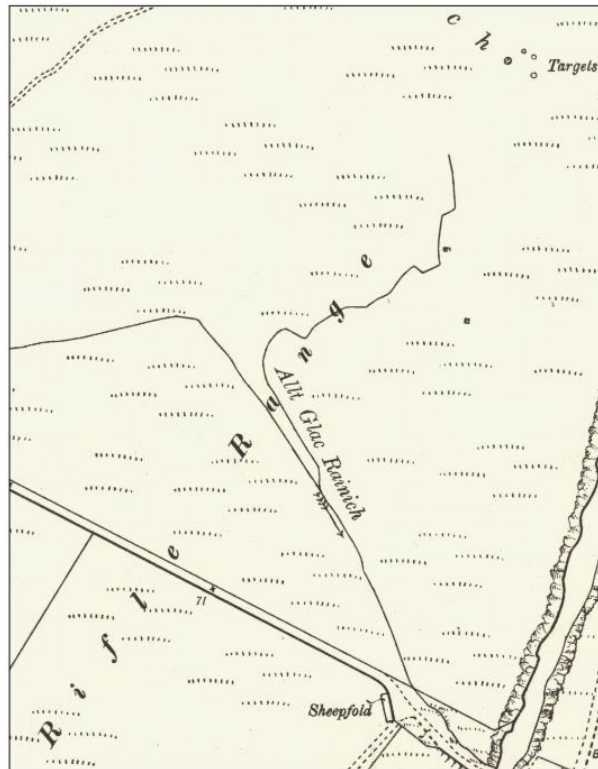


Figure 16 : Ullapool Rifle Range, Second Edition 1:2,500 sheet XIV.9.

The site of this rifle range has not been visited but the area of the targets has been built upon and it is unlikely there is anything extant.

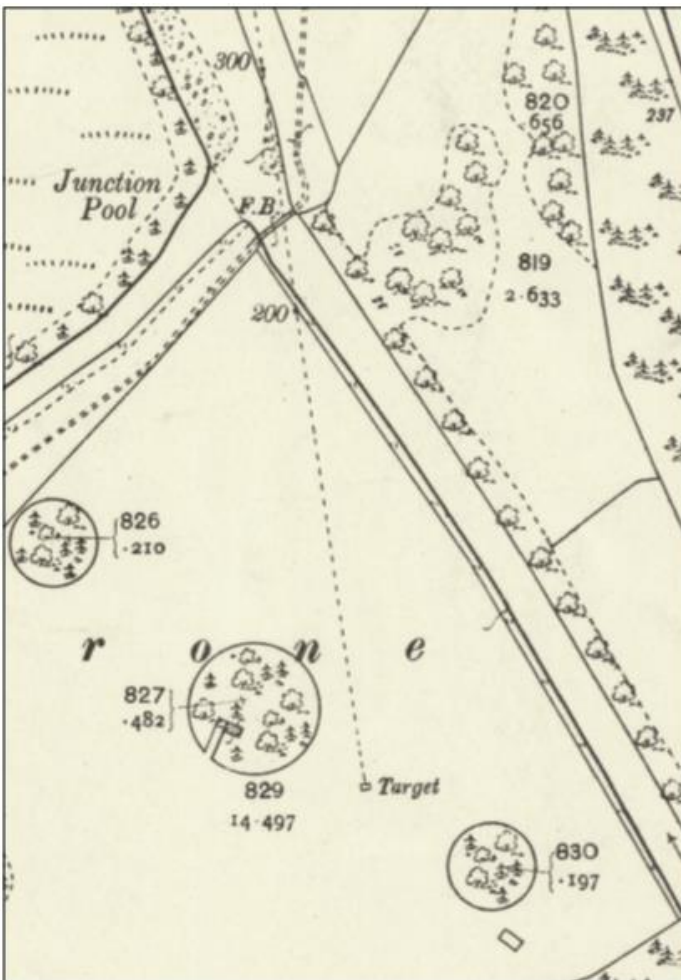
2. *Braemore* (NH194788, XLVIII.4, 2nd edition only)

On the 6-inch, the rifle range (*figure 17*) is labelled *Rifle Range* with FPs marked every 100yd with dashes from 600yd to 200yd. Its extent is shown with a straight broken line and ends a little short of the target which is shown as an unroofed rectangle labelled *Target*. The location of the target must have been carefully planned as the 300yd and 200yd FPS are immediately adjacent to the river which the range crosses. The 25-inch map is the same as the 6-inch but FPs are shown with dots, as is usual, and the broken line of the line of the

range ends in the target itself.

There are no other structures on the map associated with the rifle range but examination of the site revealed a structure, similar to a butt, c.75yd beyond the target (i.e. further south) and in line with the range. Further study of this is required but it could be an earlier target that had to be abandoned if the line of the rifle range needed to be changed.

There are a number of interesting historical points relating to this rifle range. The Braemore Estate was purchased in 1865 by Sir John Fowler who is probably most well-known for his work on the Forth Rail Bridge. He went about constructing bridges on the estate and it is one of these that would have eased access along the rifle range. After his death and that of his eldest son, the estate passed in 1899 to his second son, also John, and a captain in the Seaforth Highlanders. It is only speculation, because the rifle range may have existed long before this time, but it



may be that this connection with the army led to the establishment of a rifle volunteer section on the estate. It may also be that this was not connected with the volunteers but was a private range. Lastly, it is unusual that so much of the land in this area was mapped at 25-inches when only areas of population were produced at this scale in the Highlands. Even then, some areas were omitted, eg Opinan referred to earlier. Some of the Braemore maps do not even have one building. It may well be that Sir John Fowler paid for this work to be carried out.²⁵

(Above : *Figure 17 Detail of the target end of Braemore Rifle Range, Second Edition 1:2,500 sheet XLVIII.4.*

²⁵ A Bell, 2020, *Fowler's Bridges*

Concluding remarks

Reference to the *Musketry Regulations for 1910*²⁶ show, that in terms of the nature and slope of the ground, the rifle ranges examined failed to meet basic requirements. Admittedly, the regulations date from many years after the establishment of these ranges but it is likely that similar stipulations applied prior to 1910. It is not known when the rifle ranges were abandoned or it may have been that they were closed following the review in 1899 mentioned earlier. Possibly, the continued use of older rifles reduced the danger and so permitted continued use of the ranges. Another possibility is that they were disused but the OS did not label ranges as such. It is also not known to what extent training continued in the areas studied after the merging of the volunteer force with territorial force in 1908.

This study has extended into unexpected areas and raised many questions that others may be able to answer or add to with further research. There is scope for considerable further analysis of this whole topic. It is hoped that this article will provide a basis for others who may wish to pursue this and to add, or correct, the information included here. Lastly, as I do not have a military background, I apologise if I have made errors with the use of terminology.

Postscript

During the work to write this article, new information kept cropping up repeatedly. For example, other ranges and targets were discovered in unexpected places. Some *Targets* marked on maps are thought to be where estate workers and guests would set the sights of rifles for deer shooting but there are far fewer of these than would be expected. Two ranges, coming to light well into the work and shown in *figure 3*, are said to date from the First World War and appear on no maps. Nothing has been found about the Kinlochewe range other than its target is named by Wentworth.²⁷ The target is a windmill type, possibly suggesting an earlier date than that understood. The other range is known only from its recently restored Hythe Pattern target.²⁸ The Ross-shire Journal does mention a Coigach contingent of the volunteer force in its 5 July 1875 edition so it may well be that the rifle range is actually older than believed.

This article has only looked at the rifle ranges in Ross and Cromarty and largely Wester Ross. A look at the Longman Rifle Range (NH670470) in Inverness, in the adjacent county of Inverness-shire, revealed yet another variation with multiple marker's butts on the first edition which were replaced by multiple targets on the second. A few of these may remain despite most of the land having been built on for industrial and retail use.

A related aspect that could be pursued are the artillery batteries established at the same time as the rifle ranges. Their locations were often distinctively drawn showing the footprint of the slabs on which the cannons stood. A search of the OSNB²⁹ revealed an unexpected 'small private battery, mounting six small cannon' on Raasay, an island next to the island of Skye.

Acknowledgements

I would like to thank Janet Maclennan and Richard Oliver for their assistance with this work. The maps and reference books available on the website of the National Library of Scotland (NLS) have been invaluable. The reproduction of OS maps here is with the permission of the NLS.

²⁶ Musketry Regulations part II Rifle ranges and musketry appliances, HMSO, 1910, chapter 2.

²⁷ Wentworth, R. Gaelic Place-names of Beinn Eighe National Nature Reserve, SNH, 1998; name 120.

²⁸ <https://canmore.org.uk/site/115376/achlochan-rifle-range>

²⁹ <https://scotlandspplaces.gov.uk/digital-volumes/ordnance-survey-name-books/inverness-shire-os-name-books-1876-1878/inverness-shire-skye-volume-15/10>