Early Regulations for the Survey and Marking of Crown Land in New South Wales

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Abstract

Existing literature on early survey regulations and practice in New South Wales is reviewed. At the present time the earliest formal regulations known to exist for the survey and marking of Crown Lands in New South Wales are dated 1854. Regulations governing the practice of licensed surveyors, dated 10th April 1848 and Instructions for marking Crown Land by Government Surveyors, dated 9th July 1853, are introduced. Instructions for the Interior Survey of South Australia, dated 1840, are discussed.

Introduction

An understanding of the methods used to carry out and mark early surveys is fundamental knowledge for the cadastral surveyor. This assists him to competently carry out his professional duties, particularly regarding the redefinition of old boundaries. Most investigations into the history of our survey system have concentrated on the first sixty or seventy years after the colonisation of New South Wales. The interest in these investigations has mainly been directed to the methods and equipment used to carry out boundary surveys, the associated accuracy of these surveys, the methods of marking the surveyed boundaries on the ground and the regulations governing the carrying out of surveys. Virtually all research has been concerned with surveys carried out for the alienation of Crown lands in rural areas. Little attention has been given to the survey methods used for private subdivisions during this period. This is understandable, since the majority of survey effort was directed to making land available for settlement in the early years of the colony.

Most of the comments on early survey methods in New South Wales are equally applicable to Victoria and Queensland, and even Tasmania since Victoria and Queensland did not become separate colonies until 1851 and 1859 respectively, and because many of the early Tasmanian surveyors came directly from New South Wales. Therefore from a historical point of view, investigations into early surveys in New South Wales are particularly interesting.

Existing Research

The best descriptions of the early survey system in New South Wales are without doubt the reports of two investigations into the Surveyor General’s Department in 1855 and 1858. The first is the report of a Royal Commission appointed to inquire into the Surveyor-General’s Department (Legislative Council of New South Wales, 1856) and the second is the report of the Select Committee on the Management of the Survey Department (Legislative Assembly of New South Wales, 1859). The role of the Select Committee was primarily to report on whether the Survey Department had introduced the recommendations of the Royal Commission. The proceedings, minutes of evidence and appendix of
the Select Committee alone run to 210 pages. Basically these investigations were into the administration of the Survey Department under the then Surveyor-General of New South Wales, Sir Thomas Mitchell.

Another interesting insight into the survey system in New South Wales during this early period is a book written by G. E. Audley (one of Mitchell's assistant surveyors) in 1866. Audley gives a very detailed overview of survey practice during Mitchell's period as Surveyor-General. He discusses the accuracy of the magnetic compass, the circumferentor, of measured lines and computed areas. He places particular emphasis on Mitchell's famous feature survey of the 19 counties. Of interest he refers to a textbook for Surveyors-General of Colonies published in 1841 — from a historical point of view it would be a valuable publication to obtain.

The only other book which makes numerous references to early survey methods is Hallmann (1973). This book contains the most extensive research to date on historical survey matters in N.S.W.

The greatest source of readily available information relating to early surveys in New South Wales are the many articles and letters to the editor in The Surveyor and The Australian Surveyor, journals of the Institution of Surveyors, New South Wales, Inc. and of The Institution of Surveyors, Australia, respectively. Articles or letters relating directly to survey methods and regulations in N.S.W. include those written by Picket (1891), Truscott (1894), Campbell (1894), Hall (1895), Weingarth (1913), Richards (1925), Willis (1940), Beaver (1953), Bayliss (1956), Barrie (1976), Toms (1976) and Beaver (1980).

Early Regulations

Most of the insight into the early methods of survey has been from surveyors describing "how it was in the early days". This applies to most of the references mentioned above including the report of the Royal Commission in 1855. Few official records have been found of the early regulations governing the survey of original Crown grants in New South Wales.

Hallmann (1973, p.31) states that the earliest set of regulations "so far sighted were those published in 1864 by the Surveyor-General for the guidance of licensed surveyors employed by his Department". Beaver (1980), however, points out that two circulars were prepared in 1836 by the Surveyor-General for the advice of his surveyors. The first circular was expanded by the latter which was subsequently published in full in The Surveyor by J. B. Richards (1925). Richards claims that "This circular would appear to be the origin of the existing practice of marking corners". This statement is substantiated by a despatch from Lord Glenelg to Sir Richard Bourke, the Governor at the time, dated Downing Street, 21st September 1836 (Historical Records of Australia, Series 1, Volume 18, p.560). An extract regarding regulations for assistants in the Survey Department is as follows:

"As it is very desirable that the dispatch of business in Major Mitchell's Department should be facilitated as much as possible, I would suggest for your consideration the propriety of your framing, in concert with that office, a Code of Regulations for the guidance of Assistants in the several branches into which his Department is subdivided, in order to avoid the delay of frequent reference to Head Quarters for Instructions."

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Even though this dispatch would have been received in N.S.W. at some time after the 1836 circular was published by Mitchell it is reasonably certain that the circular would have been prepared in response to dispatches by Governor Bourke to Lord Glenelg on the administration of the Sydney Department. Mitchell or his deputy would have seen these despatches and would have pre-empted Glenelg's directive — this was a common occurrence during this period because of the length of time for dispatches to get from New South Wales to England and to return. The 1836 circulars, however, are not drafted in the manner of present regulations which are virtually inflexible directives. The early instructions were a "request" to improve the marking and identification of corners — they are more of a plea.

An 1853 regulation is alluded to by W. D. Campbell in a letter to the editor of The Surveyor in 1894, but to date such a regulation has never been sighted (Beaver, 1980, p. 190). Therefore the earliest official regulation of surveys in the true sense, to date, has been that published in 1864.

Subsequent research has now uncovered the "Instructions for marking Crown Land by Government Surveyors" dated 9th July, 1853, as well as a very detailed circular on survey practice, to all licensed surveyors dated 10th April, 1848. (Reference should be made to Beaver (1979) regarding the difference between government and licensed surveyors). Both circulars appear in the appendix to the Minutes of Evidence of the Select Committee of Management of the Survey Department in the Votes and Proceedings of the Legislative Assembly of N.S.W. during the session of 1858-9 (Volume II, p.158). The circulars were admitted as evidence of the regulations governing survey practice at the time of the inquiry.

Due to their importance historically as the earliest recorded formal survey regulations in the State of New South Wales, they have been reproduced in full in appendices one and two. The author of the 1848 instruction, Mr S. A. Perry, was the Deputy Surveyor-General for the whole period of Mitchell's term as Surveyor-General. It appears that these regulations were drafted by Perry while Mitchell was on leave in England in 1847 and 1848 — Perry was Acting Surveyor-General during this period. Interestingly, Mitchell was very critical of Perry's ability, as can be seen from the following:

"Perry, during Mitchell's prolonged absence in England in 1847-8, had carried on the proper duties of the position of Surveyor-General: but Mitchell on his return had violently criticised Perry's official conduct of the departmental functions. Fitzroy (the Governor of the time), had tried personal reconciliation without success, but Mitchell had continued his attacks on Perry, and sought his replacement. Fitzroy, in forwarding the papers to Grey (the Secretary of State for Colonies at the time), said that the attacks by Mitchell were so insulting and so obviously intended to degrade Perry in the opinion of his subordinates, that he felt bound to state that Perry, during Mitchell's frequent absences, had always been a loyal and efficient officer, and that Mitchell himself had, on occasions, given proof of his confidence in Perry's abilities."

— (Cumpston, 1954, p. 202)

The author of the 1853 Instructions, Mr J. Thompson, was evidently the Acting Deputy Surveyor-General under Mitchell at the time.
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These regulations are not the earliest official survey regulations published in the Australian colonies. In 1840, E. C. Frome, the third Surveyor-General of South Australia, published Instructions for the Interior Survey of South Australia. They are very detailed and comprise 22 pages of instructions. As well as comprising a number of regulations relating to the survey and marking of boundaries (see Appendix 3), the regulations relate to many other matters which give an interesting insight into the life of the early colonial surveyors. For example, the regulations cover such matters as:

1. enforcing the men to attend prayers on Sunday;
2. quarrelling, drunkenness and gambling;
3. government surveyors undertaking "private" work;
4. treatment of aborigines;
5. plans, journals and reports required from officers in the field;
6. camp equipment and rations;
7. salaries;
8. use of cart and horse;
9. use of arms; and
10. treatment of sheep attached to party as part of the rations.

Edward Charles Frome was the superintendent of instruction of junior Royal Engineers at Chatham when the South Australian colonization commissioners appointed him as the third Surveyor-General of South Australia. He arrived in South Australia from England in September, 1839 (Australian Dictionary of Biography, p.418). It is reasonable to expect that these Instructions which he prepared, formalised to some extent the existing survey practice in the Colony of South Australia at the time of his arrival. It is also be expected that this existing practice was influenced by Charles Sturt who was the second Surveyor-General of South Australia for the two years prior to Frome. Sturt's experience in boundary surveys for settlements was largely gained as an assistant surveyor under Thomas Mitchell in New South Wales. Cumpston (1955) claims that Sturt arrived in Sydney in 1827, and carried out feature surveys (p.70) and surveys for pastoral runs as early as 1835 (p.222). It could therefore be assumed that due to Sturt's background, Frome's 1840 Survey Instructions could well have been strongly influenced by survey practice in New South Wales in the late 1830's and hence their value to this discussion.

Conclusion

The period between 1836 and 1864 is critical in the development of survey practice in New South Wales. It is during this period that the present survey practices had their beginnings. Prior to 1836 very little appears to have been formalised while the 1864 regulations lay down strict procedures which are not unlike those adopted at the present. The 1848 and 1853 regulations therefore fill an important gap in our knowledge of early survey methods in Australia.

It appears, however, that most development or formalisation of procedures occurred between the 1836 and the 1848 circulars. As mentioned, the 1836 circular was a "request" to improve marking and identification of corners, whereas the 1848 circular states that "The work to be performed by the licensed surveyors is to be in strict accordance with the existing practice in the Surveyor-General's Department". This suggests that the practices described in this circular were formalised at some time prior to 1848. Further research may well bring to light official documentation showing the development of regulations for the survey and marking of Crown Lands over this twelve year period.

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The directions include the marking of "Building and Suburban Allotments within Town Boundaries" and the marking of "Boundaries of Land measured beyond the limits of Towns." The directions describe with diagrams the method of blazing trees, the marking of corner trees and reference trees, and the marking of corners. Interestingly at corners: "triangular trenches are to be cut with a spade or pick a foot in depth, and not less than three feet in length and at the apex of the triangle, which indicates the corner, a stake not less than two feet six inches long is to be driven eighteen inches into the ground." The 1853 regulations required the stake to be eighteen inches long. The 1864 regulations required trenches to be rectangular.

These directions were sent to each government surveyor by the Surveyor-General at the time, Lt. Col. George Barney, with a covering letter which included the comments: "... I have to request that you will, in future Surveys, adhere strictly to these directions, which supersede the instructions contained in the Circular Letter of 8th July, 1853." The 1853 instructions referred to here are those reproduced in the preceding article.

The assistance of Mr Arthur Wakeman, of the Crown Lands Office, is acknowledged in this further research.

Appendix I
(Circular).

Surveyor General's Office.
Sydney, 10 April, 1848.

Sir,

The work to be performed by the licensed surveyors is to be in strict accordance with the existing practice of the Surveyor General's Department, which is as follows, viz.:

1. On directions being received by the licensed surveyor (and which shall have been sent through the regular post), to measure any portion or portions of land applied for to purchase, or as a grant to any public body, or to be appropriated for any public purpose, he is to proceed without loss of time to the survey and measurement, which are to be performed in the usual manner by taking angles with a theodolite, bearings with a circumferentor, and measurement of the lengths of the several boundary lines with a Gunter's chain, verified by comparison with the standard measure. In general the boundaries are to be upon the cardinal points of the compass, with magnetic bearings. Whenever a departure from this rule becomes necessary, either from the windings of a watercourse or road, or from peculiar features in the ground, the reasons for deviations must be made apparent in the plan of the work, and stated in the report which accompanies it. The margins of all lakes, lagoons, and swamps, and also the tracks and courses of continuous mountain ranges, must be measured with the chain.

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and the bearings from each change of station must be noted in the field-book, and furnished in the description. The features of the ground, showing what part is hilly, and the forms of the hills, and what part is level, must be carefully delineated.

3. Every measured portion must be firmly marked at each corner, by driving in stakes where the soil will admit of it, or by cutting into rocks, whenever they may occur, at the corners. The marks in the rocks are to be broad arrows, crosses, triangles or squares, and each licensed surveyor is requested to preserve uniformity in his own marks, so that they may be easily described and recognized. Marks made by former surveyors are to be noted, but not to be interfered with. Surveys made under these instructions are to be connected with former surveys by means of the marks above referred to, from which measurements with the chain, and bearings of the compass needle, or angles taken with the theodolite, are to be made.

4. The documents in the office, to which access will always be afforded, are to be consulted with reference to previous surveys, in the neighbourhood of which any fresh measurements are made.

5. In extensive and continuous chaining, conspicuous marks on the trees are to be made, of a sufficient height to render them distinguishable from a distance.

6. In laying out a series of country or suburban lots, a way of access must be preserved to each, by marking roads of a chain wide at the back of any range of allotments fronting a river, and leaving a road of half a chain wide between every fourth or fifth allotment, so that the lands at the back may have access to the river or creek for water. It is not essential that each allotment should contain the same area, indeed the windings of a stream will cause the areas to vary, and which is rather desirable than otherwise.

7. The scale on which plans are to be drawn is for country lots 4 inches, and for general survey of features 2 inches to the mile. Town and suburban lots 1 inch to the chain. Plans for towns and villages 1 inch to the chain; on the corner of each plan there must be a reference to the marks or marked trees upon the ground, which show the corners of the surveyed lands.

8. The surveyed lines and stations, with their lengths and compass bearings, must be shown on the plans in red color, and a proof line, run diagonally, must also be shown in the same color.

9. Boundary lines must be black, as well as the outlines of existing tracks or features, if surveyed. If merely sketched they must be shown in black dots, as indicative of uncertainty. The field-books of licensed surveyors are the property of the Government, and are to be handed over on the discontinuance of the license. Copies of them to be furnished whenever called for.

10. Every plan and description, or set of plans and descriptions, transmitted to head-quarters, is to be accompanied by a letter of transmission and concise report, each description being on a separate half-sheet of foolscap paper, and to be complete in every particular, dated, signed, and prepared in the manner in use in the office.

11. Payments will be made upon the certificate of the Surveyor-General (or officer conducting in his absence the business of the department), that the work has been examined and found to be correct. If otherwise, the work will be returned for re-survey, if necessary, or for explanation.

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12. Payments for surveys of lands promised to be granted to public bodies or institutions — such as for churches, schools, and ministers’ dwellings, of whatsoever denomination — is to be obtained from the parties for whose benefit the grant is proposed, but for general cemeteries, payment will be made in the same way as for other public work.

13. The schedule of fees, of which a copy was forwarded in my circular No. 48-92, of 29th March last, will constitute the whole remuneration of licensed surveyors. No account for travelling or other contingent expenses will be entertained.

14. Licensed surveyors are requested to reside in their respective districts.

I have, &c.,

S. A. PERRY.

To the Licensed Surveyors.

Appendix 2

Instructions for marking Crown Land by Government Surveyors.

In survey of farms in forest country the trees should be marked within view of each other as near the boundary line as possible; the mark or blaze should be in the shape of a horse-shoe, about breast high; where the tree is big enough to admit of it, the mark should be at least six inches wide; and cut into the wood from one and a half to two inches deep; along the boundary line the trees should be marked on two sides facing in the direction that the line runs; at each corner of the farm or allotment the nearest suitable tree should be marked on four sides, with the horse-shoe mark, and a large piece of bark taken off the tree, on which a broad arrow, at least six inches long, should be marked deeply in the wood, and if the allotments of which the tree forms the corner are numbered, such numbers should be cut deeply in the wood in the horse-shoe mark, on the side of the tree facing the allotment to which such number applies. A large stake (of split stuff, cleared if possible), should be driven into the ground one foot at least, and left about six inches above the surface at the exact corner, and the bearing and distance of the numbered tree taken from the stake, and noted on the plan. If farms are marked in a plain country where there is no timber, a trench should be cut at every five chains along the line, and a cross cut in the earth, at the corner of each farm; a post-hole hoe will be found to be the most convenient tool for making such marks.

In marking out towns the sides of each of the sections or blocks should be lock-spitted all round about six inches deep, and at the corner of each allotment a tangent line about half a yard long should be lock-spitted; when it is a double section, the dividing line of the allotments should be lock-spitted, or crosses made at the corners of the allotments.

In the general survey of the country, or in a survey made to connect any measured portions, where it extends over more than one mile, roman numbers should be marked at the end of every mile, giving the distance from the starting point, as these numbers are of great service in taking up the survey at any future period, and are particularly useful on public roads or along the course of streams or ranges.

JOHN THOMPSON,
Acting D. S. General.

Surveyor General’s Office,
9 July, 1853.

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Appendix 3

Selected regulations relating to the survey and marking of Crown lands from "Instructions for the interior survey of South Australia" by E. C. Frome, dated 1840.

SECTION 1 — DUTIES IN THE FIELD.

Regulation 3. Irregular sections, having broken fronts, need not, where it entails the loss of time, and consequently, additional expense, be made to contain exactly the amount of eighty acres; but they should not be laid out in blocks of less extent, land not being sold in smaller quantities. The excess, must, in these cases, be noted on the diagram, as also the lengths of the sides of the sections, and measures of the angles (when not right angles), and explained by reference on the plan.

Regulation 4. In a very hilly country, where many of the occupation roads, if laid out in the geometrical manner just described, would perhaps be inaccessible, the sections may be marked on the ground without reference to them, leaving in each an excess of about three acres, to be reserved for such cross-roads as may subsequently be found necessary and practicable.

Regulation 8. In marking the boundaries of sections on the ground, all natural features crossed by the chain are to be noted in the field book, on the outline plotted from which is to be afterwards sketched the contours of the hills — the different lines proposed as best adapted for main roads — the general direction of native paths — native wells — and every other object tending to mark the nature and resources of the country. This plan will be forwarded to the office of the Surveyor-General, accompanied by the field books, and a diagram showing the construction lines of the work, and the contents, lengths of sides, and measure of angles, of all irregular figures.

Regulation 13. The corners of sections must be marked by strong pickets, with their numbers, and also of those contiguous to them, painted on their heads; and they should be occasionally connected by measurement with some remarkable tree, or other permanent object, and trenches cut in the direction of the angles formed by the boundary lines of the section. The lines between these corner posts should also be clearly traced out by pickets, for the benefit of settlers.

Regulation 14. Every surveyor should be provided with a standard measure, by which to lay down at each station marks for the daily comparison of his working chains, the errors of which must be noted in the field book, and allowed for.

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