

1990 - No. 447

SURVEYORS ACT 1929 - REGULATION

(Survey Practice Regulation 1990)

NEW SOUTH WALES



[Published in Gazette No. 82 of 29 June 1990]

HIS Excellency the Governor, with the advice of the Executive Council, and in pursuance of the Surveyors Act 1929, has been pleased to make the Regulation set forth hereunder. (HO89 A99)

I. R. CAUSLEY
Minister for Natural Resources.

PART 1 - PRELIMINARY

Citation

1. This Regulation may be cited as the Survey Practice Regulation 1990.

Commencement

2. This Regulation commences on 1 September 1990.

Application of Regulation

3. This Regulation applies to every survey made after the commencement of this Regulation.

Definitions

4. (1) In this Regulation:

"AHD" means Australian Height Datum, being a system of control points for height based on a network of levelling measurements which covered the whole of Australia and which was fitted to mean sea level as measured at tide gauges distributed around the Australian coast, over the period 1968–1970;

"alignment mark" means an alignment mark placed in accordance with the provisions of the Public Roads Act 1902 or the Local Government Act 1919 for the purpose of setting out and defining carriageways and footpaths in streets and public places;

"appropriate accuracy" means such accuracy as is reasonably possible of attainment in any particular survey;

"city or suburban survey" means a survey of land:

(a) which is within a zone identified in an environmental planning instrument, within the meaning of the Environmental Planning and Assessment Act 1979, as being residential, commercial or industrial; or

(b) on which development for residential, commercial or industrial purposes is permitted by or under that Act to be carried out;

"country survey" means a survey which is not a city or suburban survey;

"ISG" means Integrated Survey Grid, being a rectangular co-ordinate system drawn on a Transverse Mercator Projection with zones 2 degrees wide, designed for integrated surveys in New South Wales;

"monument" means a natural or artificial object or a point on it or a mark used for the purpose of locating or relocating a boundary or a point in a survey;

"permanent mark" means a permanent mark placed in accordance with the provisions of the Survey Co-ordination Act 1949;

"plan of survey" means a representation or drawing of land surveyed, prepared from particulars recorded in the field book of the survey and carried out for delivery to or lodgment with any public department or person as evidence of a survey, but does not include plans compiled from previous surveys or sketches in illustration of any report or similar document prepared in explanation of or arising from any survey;

"reference mark" means a survey mark of a durable nature placed or situated near and connected by measurement to a corner, angle or tangent point of any survey;

"road" includes any road, street, laneway, pathway or private parcel of land used for community access, either existing or being established by the subject survey (in this definition, "**established**", in relation to a permanent mark shown in the subject survey, has the meaning given to it in the Survey Co-ordination Act 1949);

"State Control Survey" means a comprehensive set of points marked, under the supervision of the Surveyor-General, by monuments of standard form, being points of known horizontal position and height throughout the State;

"urban area" means a part of a shire declared to be an urban area under the Local Government Act 1919.

(2) When, in accordance with this Regulation, a surveyor is required to place a reference mark or replace an alignment or permanent mark, the surveyor is also required to connect the mark by measurement to the survey made by the surveyor.

PART 2 - ADMINISTRATIVE MATTERS

Surveys under supervision of surveyor

5. No requirement of this Regulation is to be taken to prevent any survey being made under the supervision of a surveyor.

Character and extent of supervision by surveyor

6. (1) The character and extent of supervision required to be exercised by a surveyor over a survey made under supervision is as set out in this clause.

(2) The surveyor must:

- (a) personally attend on the ground for such time during the making of the survey, and
- (b) exercise such immediate oversight and personal direction of the work,

as ensures that the surveyor has an intimate knowledge of all aspects of the survey and that the survey has been carried out in accordance with sound professional practice and this Regulation.

Procedure for surveyors undertaking surveys

7. When a survey is undertaken, the surveyor must, in accordance with this Regulation:

- (a) ascertain with appropriate accuracy the positions of monuments relevant to the survey; and
- (b) locate or relocate with appropriate accuracy the boundaries of the land survey; and
- (c) if required, mark the survey; and
- (d) make complete field notes of the survey; and
- (e) if required, prepare a plan of the land surveyed.

Surveyor to record survey marks

8. (1) A surveyor must indicate on the plan of survey

- (a) the nature of any survey mark found or placed by the surveyor which is not a peg; and
- (b) the nature of any permanent mark or reference mark found or placed by the surveyor, or of any object or monument, with the essential measurements from the mark, object or monument to the nearest corner, angle or line mark.

(2) If reference marks are placed at depths other than 80 mm below the natural surface of the ground, the surveyor will indicate such depths on the plan.

(3) If reference marks are found, the surveyor will note on the plan the origin of these marks by reference to the number of the plan on which the marks first occur.

Surveyor to record nature of boundaries etc.

9. (1) A surveyor must show on a plan of a re-survey or subdivision:

- (a) the nature of the boundaries at the time of the re-survey or the subdivision, whether defined by marks, pegs, lockspits, lines, fences, roads, streets, lanes, ways, natural or artificial features, buildings or walls; and
- (b) the width of all walls used in common and the position of the boundary in such walls; and
- (c) the description and relationship to the boundary of any substantial structure within 500 mm of the boundary.

(2) If a wall is on a boundary, the boundary must be described in the plan as "face of wall" or "passing through wall" or by other appropriate words.

(3) A wall must not be described as a "party wall" unless the surveyor is instructed that it is intended to assure or create such easements as are mentioned in section 181B of the Conveyancing Act 1919.

Surveyor to furnish certificate

10. (1) When a surveyor furnishes a plan of survey made personally or under supervision, a certificate in or to the effect of Form 1 in Schedule 1 must be endorsed on the plan.

(2) The required certificate may be incorporated in any other certificate which must be endorsed on the plan in accordance with any other Act or regulations made under any other Act.

Power of entry

11. (1) The prescribed notice for the purposes of section 13 of the Act is a notice in or to the effect of Form 2 in Schedule 1.

(2) The notice must be given prior to entry:

- (a) by delivering the notice to a person apparently in occupation of the land to be entered; or
- (b) in the event that the land to be entered is apparently unoccupied, by attaching the notice to a place of residence or to some conspicuous object on the land.

Surveyor to meet requisitions

12. A surveyor must promptly answer or comply with all requisitions from the Surveyor-General or Registrar-General.

PART 3 - MEASUREMENT AND CALCULATIONS

Location and relocation of boundaries

13. A surveyor must procure all information that is accessible and necessary to locate or relocate the boundaries of any land to be surveyed.

Equipment for measurement of surveys

14. (1) A surveyor must make every survey with appropriate equipment.

(2) Before using any measuring equipment, a surveyor must know the accuracy obtained by use of the equipment in relation to:

- (a) the Australian primary standard of measurement of length, within the meaning of the National Measurement Act 1960 of the Commonwealth; or
- (b) the State primary standard of measurement of length, within the meaning of that Act, that standard being under the control of the Surveyor-General.

(3) Steel and invar bands must be verified at least once every 2 years and immediately after repair.

(4) All electronic distance measuring equipment is to be verified against the State primary standard of measurement, in the form of Pillared Testlines, at least once each year and immediately after service or repair.

(5) The method of verification must be in a manner approved by the Surveyor-General.

Measurement of boundaries and lines

15. A surveyor must measure all boundaries and lines by the most direct method that is reasonable and practicable.

Measurement by remote sensing methods

16. Although the provisions of clauses 14 and 15 may apply, a surveyor may (at the surveyor's discretion) use measurements on images derived from aerial photographs or data from airborne sensors.

Survey of part only of land in document of title

17. If a survey embraces part only of the land in a document of title, the surveyor must connect the part by actual measurement to a monument or to a point having a known relation to a corner of the land in the document.

Easements

18. (1) If a survey includes land which is or is to be subject to or which has or is to have as appurtenant a right of way or other easement, the site of the right of way or other easement must be connected by the surveyor by measurement to relevant monuments.

(2) At the terminals of the easement, and wherever the easement cuts boundaries of separate parcels, the surveyor must redefine the existing parcel boundaries and make measurements from the easement to the nearest parcel corner.

(3) The surveyor must connect by measurement to or place one reference mark near each terminal of the easement and connect by measurement to or place additional reference marks:

- (a) for a city or suburban survey, at intervals not exceeding 400 metres; and
- (b) for a country survey, at all major angles and title boundaries, except that:
 - (i) a reference mark need not be placed within 200 metres of another reference mark; and
 - (ii) there is to be not more than 1 200 metres between reference marks.

(4) If the connections with regard to length of easement are not considered by the Surveyor-General to be reasonably practicable or necessary, the Surveyor-General may in writing set aside the requirements of subclause (3).

(5) In addition, the surveyor must connect from or place and connect to at least 2 permanent marks of the type prescribed by clause 33, suitable for azimuth purposes:

- (a) for a city or suburban survey (if the easement created exceeds 800 metres in length), additional permanent marks in pairs at intervals of approximately 1 200 metres throughout the survey; and
- (b) for a country survey (if the easement created exceeds 1 600 metres in length), additional permanent marks in pairs at intervals of approximately 2 400 metres throughout the survey,

and must provide AHD values as required under clause 33 (1) and (2).

(6) The surveyor must show on the plan by bearing and distance the essential dimensions of the site and must note the site as "easement" or "proposed easement" as appropriate.

(7) This clause does not apply to easements intended to be created in respect of existing tunnels, pipes, conduits, wires or other similar objects which are underground or which are within or beneath an existing building.

Re-survey of property boundaries

19. (1) If a surveyor makes a re-survey, the surveyor must adopt the boundaries as originally marked on the ground as the true boundaries unless there is sufficient evidence to show that the marks were incorrectly placed or have been disturbed.

(2) The extent of any error must be disclosed on the plan of survey and the Surveyor-General must be advised in writing.

Surveys associated with natural boundaries

20. (1) Except as provided by subclauses (2) and (3), for the purpose of determining a natural boundary:

- (a) the traverse lines of the associated survey prepared by a surveyor must:
 - (i) if the survey is a city or suburban survey, be within 20 metres of the natural boundary with offsets at intervals of not more than 30 metres; or
 - (ii) if the survey is a country survey, be within 30 metres of the boundary with offsets at such intervals as may be necessary to accurately determine each change of course or direction of the boundary; and
- (b) any observation made by a surveyor of the bearing and distance directly to a point on the natural boundary must be made at a distance from the point which does not exceed:
 - (i) if the survey is a city or suburban survey, 30 metres; or
 - (ii) if the survey is a country survey, 100 metres.

(2) If remote sensing methods as referred to in clause 16 are used by a surveyor for the purpose of determining a natural boundary, the

surveyor may use discretion as to the distance of the traverse lines of the associated survey from the boundary.

(3) If physical or environmental circumstances prevent compliance with the methods referred to in subclause (1) or (2) for determining a natural boundary:

- (a) a surveyor may use such other methods as will permit the survey determining the boundary to be of the appropriate accuracy; and
- (b) the survey plan must indicate the methods used.

Definition of common boundary between land and road etc.

21. (1) If the common boundary between a parcel of land and an existing road or reservation of stipulated width along a watercourse or other natural feature has not been defined by survey, on redefinition or subdivision of that parcel by a survey the boundary must be defined by right lines or circular curves, or a combination of both, approximately parallel to the position of that feature as originally defined.

(2) The approval of the Minister administering the Crown Lands Act 1989 or, in the case of a public road, of the council of the local government area in which the road is situated, must be obtained to the definition of the common boundary.

Procedure if crooked fence defines boundary

22. If a crooked fence must be used to define a boundary, a surveyor must either:

- (a) survey it and place the angle points of the boundary in such a way that the boundary line does not leave the material of the fence at the surface of the ground. Angle points must be substantially marked by the surveyor, and the nature of the points shown on the plan; or
- (b) treat the fence as an irregular boundary and carry out a survey in a similar manner to that required for determining a natural boundary in accordance with clause 20 - the surveyor must indicate on the plan the age, type and condition of the fence at the date of the survey.

Calculation of areas of land of irregular form

23. Areas of land must be computed by an appropriate recognised method.

Surveyor to check angular work

24. (1) A surveyor who makes a survey which exceeds a length of 10 000 metres on level or undulating country, 8 000 metres on steep country or 6 000 metres on mountainous country must check angular work by astronomical observation or by a complete angular close or by a comparison with the State Control Survey.

(2) Any such comparison must be shown on the plan of survey.

(3) A surveyor must not, for the purposes of subclause (1), interpolate any angular measurement by another surveyor.

Calculation of complete angular close

25. (1) Whenever practical, a complete angular close must be obtained.

(2) The observed angular misclose must not exceed 30 seconds plus $20\sqrt{n}$ seconds, where "n" is the number of traverse angular stations either for the whole surround or between and including stations at which astronomical observations for azimuth have been made.

(3) No misclose is to exceed 3 minutes.

Checking and accuracy of all measurements

26. (1) A surveyor must, if the nature of a survey permits, check all measurements made in a survey by closure of the eastings and northings of the lines in all surrounds in the survey computed to 3 places of decimals of a metre if the survey is in an urban area, or at least 2 places of decimals of a metre for country surveys.

(2) The accuracy of the survey must be such that the ratio of the misclose to the perimeter must not exceed for boundaries and parts of boundaries crossing:

(a) level country	one part in 8,000
(b) undulating country	one part in 6,000
(c) steep country	one part in 4,000
(d) mountainous country	one part in 3,000

(3) The misclose must be determined as $\sqrt{a^2 + b^2}$, where "a" is the error in eastings and "b" is the error in northings.

Measurement and accuracy of lengths

27. (1) A surveyor must, in making a survey, measure all lengths to a standard of accuracy so that the probable error of the measurement does not exceed, for lines crossing:

- (a) level country one part in 12,000
- (b) undulating country one part in 9,000
- (c) steep country one part in 6,000
- (d) mountainous country one part in 4,500

(2) If lines in a survey are so short that the standard referred to in subclause (1) demands precision ordinarily unattainable, the lines must be so measured as to maintain the best possible standard consistent with the nature of the land measured over.

(3) For the purpose of this clause and of clauses 24 and 26, country is to be taken to be:

- (a) level, where slopes do not exceed 3 degrees;
- (b) undulating, where slopes vary between 3 and 10 degrees;
- (c) steep, where slopes vary between 10 and 15 degrees; and
- (d) mountainous, where slopes are greater than 15 degrees.

Identification and re-marking surveys

28. (1) A surveyor may make:

- (a) a survey of a parcel of land for the purpose of re-identifying the boundaries of the parcel, or of locating the parcel in relation to adjoining interests, in such a manner as may be required by the nature of the survey, or
- (b) a survey requiring the re-marking of a parcel of land in such a manner and with such marks in such positions as may be specially required by the person employing the surveyor, but such a survey must not be used for the purpose of any disposition of land or of any interest in land.

(2) The provisions of clauses 6, 7 (a), (b) and (d), 13, 27, 31, 39 and 48 to 53 inclusive, but no other provisions of this Regulation, apply to a survey made in accordance with this clause.

Surveys not requiring strict accuracy

29. (1) A surveyor may make a survey for a purpose not requiring strict accuracy under arrangements with a client, and in such a manner and with such marking as may be agreed on between the surveyor and the client.

(2) A plan of any survey made in accordance with this clause must show monuments as approximately located.

(3) A surveyor making a survey in accordance with this clause must endorse on the plan a certificate in or to the effect of Form 3 in Schedule 1.

(4) No other provision of this Regulation apart from this clause applies to a survey that is made in accordance with this clause.

PART 4 - DATUM LINE

Procedure in adopting datum line

30. A surveyor must, before adopting a line as the datum line of the azimuth of a survey, specially determine the position of the marks defining that line, and the bearing used for the azimuth must:

- (a) be adopted from the plane grid bearing derived from the ISG co-ordinates of 2 established permanent marks if the survey must, in accordance with clause 33 and as required by the Surveyor-General, connect to at least 2 established permanent marks (within the meaning of the Survey Co-ordination Act 1949); or
- (b) be taken from a survey, a plan or description of which is filed or recorded in a public department, or from astronomical observations or satellite observations if paragraph (a) does not apply to the survey.

Surveyor to record datum line etc.

31. A surveyor must clearly indicate in the field notes the datum line of the survey and the origin of the azimuth adopted and must clearly state the datum of levels and the bench marks used to establish that datum.

Method of recording datum line

32. (1) A surveyor must show the datum line of the azimuth of a survey in the plan by distinguishing letters placed at the terminals of the datum line and the nature of the marks defining the datum line must be noted in the plan of survey.

(2) If the azimuth is adopted from the ISG co-ordinates under clause 30, the co-ordinate values of all established permanent marks (within the meaning of the Survey Co-ordination Act 1949) used for azimuth purposes are to be shown in a schedule on the face of the plan.

PART 5 - MONUMENTS AND REFERENCE MARKS

Surveyor to connect isolated survey to a State Control Survey

33. (1) If land being surveyed is within, or contiguous to, a survey area proclaimed under section 11 (2) of the Survey Co-ordination Act 1949, the surveyor must:

- (a) connect from at least 2 established permanent marks in the manner prescribed under section 11 (3) and (4) of that Act, and the connection must be proved by closed survey; and
- (b) if required by the Surveyor-General, place additional permanent marks in accordance with subclauses (3) and (4) and prove the connection to those marks by closed survey; and
- (c) adopt the azimuth of the survey as prescribed by clause 30 and verify the azimuth by angular connection to another established permanent mark, ensuring that the angular displacement resulting from the verification does not exceed 20mm + 10mm/100 metres of the distance to that mark; and
- (d) show on the face of the plan of the survey the connections required by this clause; and
- (e) show on the face of the locality sketch plan values related to AHD of any additional permanent marks placed in accordance with paragraph (b) and the value, nature, origin and location of the 2 established permanent marks used to obtain AHD values for the survey. (AHD values must attain the standard of accuracy of $0.012\sqrt{km}$ metres where km is the length of the section in kilometres.); and
- (f) if the connections required by this clause are not considered by the Surveyor-General to be reasonably practicable or

necessary, the Surveyor-General may in writing set aside the requirements of this clause for them to be shown.

(2) If land being surveyed is not within or contiguous to a survey area proclaimed under section 11 (2) of the Survey Co-ordination Act 1949, the surveyor must:

- (a) connect the survey to 2 existing permanent marks by direct measurement if the 2 marks are within:
 - (i) 300 metres, for a city or suburban survey; or
 - (ii) 1 000 metres, for a country survey,and the connections must be proved by closed survey; and
- (b) if required by the Surveyor-General, place additional permanent marks in accordance with subclauses (3) and (4) and prove the connection to those marks by closed survey; and
- (c) if the 2 permanent marks connected to in accordance with paragraph (a) are established, adopt the azimuth of the survey as prescribed by clause 30 and the azimuth must be verified by angular connection to another established permanent mark, and the angular displacement resulting from the verification must not exceed that prescribed in subclause (1) (c); and
- (d) show on the face of the plan of the survey the connections required by this clause; and
- (e) show on the face of the locality sketch plan values related to AHD of any additional permanent marks placed in accordance with paragraph (b) and, if both marks connected to in accordance with paragraph (a) have AHD values, the value, nature and origin of the 2 established permanent marks connected to in accordance with paragraph (a). (AHD values must attain the standard of accuracy of $0.012\sqrt{km}$ metres where km is the length of section in kilometres.); and
- (f) if the connections required by this clause are not considered by the Surveyor-General to be reasonably practicable or necessary, the Surveyor-General may in writing set aside the requirement made by this clause for them to be shown.

(3) If a survey of land:

- (a) is of a kind referred to in clause 35 or 37 and involves the creation or re-definition of separate parcels of land, the surveyor making the survey must place and connect not fewer

than the following number of permanent marks in relation to the parcels created:

- (i) 5 to 30 parcels - 2 permanent marks;
- (ii) 31 to 100 parcels - 4 permanent marks;
- (iii) more than 100 parcels - 6 permanent marks; or
- (b) is of a kind referred to in clause 18, 36 or 37, the surveyor making the survey must place and connect permanent marks of the type prescribed by those clauses.

(4) A permanent mark referred to in subclause (1), (2) or (3) must be:

- (a) of a type and so placed as to comply with the requirements prescribed for permanent marks in the Survey Co-ordination Regulations 1951; and
- (b) so located as to be suitable for an azimuth of the survey and for re-definition of the survey; and
- (c) so located at road junctions, intersections or angles as to be suitable for subsequent inclusion in State Control Surveys; and
- (d) identified in location by a sketch plan meeting standards established by the Surveyor-General.

Placement of pegs or marks

34. (1) If a surveyor makes any survey other than a survey of a kind referred to in clause 28 or 29, the surveyor must when possible firmly mark each corner (including corners of each parcel of land in a subdivision) with a peg or mark of the type prescribed by clause 42.

(2) If it is not practicable to place such a peg or mark, a reference mark must be placed in accordance with clause 44.

(3) In a country survey, if a fence post is on a corner to which a reference mark has been placed in accordance with clause 44, no further marking of the corner is required.

Placement of new reference marks

35. If a surveyor makes a city or suburban survey for the purpose of a disposition of land or an interest in land, an acquisition or resumption of land under the authority of any Act, a subdivision of land or a redefinition of parcels of an existing subdivision, a primary application

or a cancellation or redefinition of a certificate of title under the provisions of the Real Property Act 1900, the surveyor must:

- (a) connect by measurement from, or place and connect to, a reference mark near each extremity of the boundary of the land where it abuts on a road; and
- (b) place reference marks at intervals of not less than 30 metres and not more than 200 metres throughout the length of the frontage of the survey; and
- (c) place at least 2 reference marks where land does not front a road; and
- (d) connect from, or place and connect to, permanent marks as prescribed by clause 33.

Procedure for country surveys

36. (1) In a country survey, the surveyor must:

- (a) mark definitely and durably all lines which form or are to form the boundaries between parcels held by different owners and between parcels held by the same owner in different rights:
 - (i) with a peg or mark of the type prescribed by clause 42, together with lockspits cut in the direction of each boundary from each corner and angle or, if an obstacle exists at a corner or angle, by a suitable reference mark near that corner or angle; and
 - (ii) on unfenced boundaries, with pegs and lockspits or marks of the type prescribed by clause 42 placed at intervals of not more than 200 metres, or, if each peg or mark is visible from the peg or mark next on either side of it, at intervals of not more than 300 metres,

and ensure that on unfenced boundaries each line is reasonably cleared and all trees with a trunk diameter greater than 100mm remaining after clearing operations within 500mm of a measured unfenced boundary are blazed and, if situated on any boundary, that they are double blazed, unless physical or environmental circumstances dictate otherwise; and

- (b) (i) if the land surveyed is not being subdivided, place 2 reference marks in selected positions suitable for redefinition of the survey, and
(ii) if the land surveyed is being subdivided into separate parcels or comprises separate parcels of an existing

subdivision which are being redefined or are the subject of a primary application or an application for cancellation or correction of a certificate of title under the Real Property Act 1900, place 2 reference marks in respect of each parcel of 4 hectares or more and one reference mark in respect of each parcel of less than 4 hectares so that the total number of marks placed in the survey equals twice the number of parcels of 4 hectares or more plus the number of parcels of less than 4 hectares; and

- (iii) if a boundary (other than a road frontage) exceeds 2 400 metres, place additional reference marks at intervals of not more than 1 500 metres; and
- (iv) if a boundary required to be marked is a road frontage, place reference marks at intervals of not more than 1 200 metres along the boundary and one reference mark at each extremity of the boundary, and
- (c) if a redefined road frontage boundary is more than 800 metres, connect from, or place and connect to, 2 permanent marks of the type prescribed by clause 33, suitable for azimuth purposes, and in pairs at intervals of not more than 2 400 metres throughout the length of any road or right of way fronting the survey, and provide AHD values as required by clause 33 (1) and (2).

(2) Nothing in this clause prevents the use of lockspits in any survey if the surveyor considers it desirable that lockspits should be used.

(3) Subclause (1) does not apply to a surveyor making a survey referred to in clause 18.

Placement of reference marks for roads

37. (1) If a surveyor makes a survey for the purpose of the establishment, redefinition or widening of any road under any Act, the surveyor must place reference marks of the type prescribed by clause 43 in the positions prescribed by this clause and must show the type and location of the reference marks in the plan of the survey.

(2) If practicable, a reference mark must be placed at a suitable distance, not exceeding 10 metres, from the point to which it refers so that the mark is not likely to be disturbed by existing or proposed services.

(3) A reference mark should be placed on the half angle line subtended by adjoining boundaries, on the prolongation of a boundary or so that a right angle is subtended between the road boundary and the reference mark at the point to which the mark refers.

(4) If the survey is a city or suburban survey, reference marks must be placed:

- (a) at the junction or intersection of roads:
 - (i) where a triangle is cut off from the corner formed by the intersection of the road boundaries, so as to refer to either end or both ends of the base line of the triangle; or
 - (ii) where the corner is rounded off, so as to refer to either or both tangent points; or
 - (iii) where the corner is not cut off or rounded off, so as to refer to the point of intersection of the road boundaries; and
- (b) so as to refer to each end, each angle and each tangent point and to the terminals of a series of chords or a regular curve in a road, provided that a reference mark need not be placed within 30 metres of another reference mark and that there is not more than 300 metres between reference marks; and
- (c) in a road, as far as is practicable on the same side of the road, and, if roads are variable in width, connections are to be made to both sides of the road.

(5) If the survey is a country survey, reference marks must be placed so as to refer to each end of the road, to each junction or intersection of any roads and in pairs suitable for azimuth purposes throughout the whole length of the road in selected positions so that the maximum distance between any 2 successive reference marks does not exceed 1 200 metres.

(6) The surveyor must connect from, or place and connect to, 2 permanent marks of the type prescribed by clause 33 suitable for azimuth purposes and must provide AHD values as required under clause 33 (1) and (2), and:

- (a) for a city or suburban survey, if the road is more than 200 metres in length, connect from, or place and connect to, additional pairs of permanent marks at intervals of approximately 1 000 metres throughout the length of road; or

(b) for a country survey, if the road is more than 800 metres in length, connect from, or place and connect to, additional pairs of permanent marks at intervals of approximately 2 400 metres throughout the length of road.

(7) The bearing and distance from a reference mark to the point to which it refers must be clearly stated on the plan of survey.

(8) If any road being established joins or intersects an existing road and reference marks have been placed in the latter road in accordance with this clause or any instrument made under any Act, those marks must be connected by survey with the reference marks placed in the road being established and the azimuth of one series of reference marks must be compared with the azimuth of the other series of reference marks and the comparison shown on the plan.

(9) Subject to subclause (10), a reference mark placed in accordance with the provisions of subclauses (1) and (2) must consist of marks as prescribed by clause 43, unless the mark to be placed is of the type prescribed by clause 43 (1) (d), that is, 2 drill holes are to be placed in the adjacent kerbs if the kerbs are made of concrete, cast in situ and not likely to be disturbed. If there is a cut off or rounded off corner, one such reference mark must be placed relative to each end of the base line of the cut off or each tangent point. If the corner is not cut or rounded off, the reference marks must be placed in the kerb of each road.

(10) Subclause (9) does not preclude the use of other suitable reference marks if the reference marks meet at least the specifications of subclause (9) and have been approved by the Surveyor-General in writing.

Procedure on finding existing corner peg and reference mark

38. If a corner peg and reference mark are found, a surveyor must determine the bearing and distance between them, and if a difference from the original reference is disclosed, the surveyor must decide from other evidence which of the monuments to adopt, and must note details of any difference on the plan.

Procedure if monuments of original survey missing

39. If monuments of an original survey are missing, a surveyor must determine the boundaries and corners of the land being surveyed by measurement in correct relation to boundaries of adjacent parcels of

land and parcels of land on opposite sides of roads, and to fences, and to such other evidences of correct location as may be found after full investigation and inquiry.

Procedure if differences exist between measured and recorded lengths

40. (1) If a measurement discloses a boundary of land surveyed to be different from that indicated in the document of title to such land, the surveyor must verify the length of the boundary and make appropriate entries in the field notes and show in the notes and on any plan of the survey the monuments adopted.

(2) In the absence of monuments defining the land surveyed, the surveyor must indicate whether there is sufficient land available to permit the adoption of the measurement referred to in subclause (1) without causing any encroachment on any road or on any adjoining or adjacent parcel of land.

Surveyor to note nature and position of all monuments

41. (1) The nature and position of all monuments found by a surveyor must be indicated in the field notes and on any plan of the survey.

(2) A monument must not be recorded as missing, lost or destroyed unless a thorough search for the monument has been made and, when it is so recorded, measurements of its probable site must be entered in the field notes.

Marking of surveys

42. (1) The surveyed boundaries of land must be marked in accordance with the principle that the boundaries are to be readily and unambiguously discernible on the ground.

(2) In the case of a survey required to be marked in accordance with this Regulation, the points to be marked must be firmly marked with a peg or drill hole in rock or concrete or other similar material or with a chisel mark or nail in fixed timber, or must be otherwise suitably marked.

(3) In surveys of lots of 4 000 square metres or more, all pegs must be of sound durable hardwood or white cypress pine at least 530mm long and not less than 75mm by 35mm nominal section at the top end.

(4) All pegs must be pointed for approximately two-thirds of their length.

(5) The centre of the top of all pegs must represent the survey point except that, if conditions prevent the correct centring of pegs, a non-corrosive tack or nail must be placed to represent the survey point.

(6) All pegs are to be placed upright in the ground point downwards so that the top is not more than 80mm above the ground level and the surrounding earth must be securely compacted.

(7) If a peg projecting above the surface of the ground could be considered to be hazardous or inconvenient to the public the peg may, at the discretion of the surveyor, be placed flush with the surface of the ground and that fact must be noted on the survey plan.

(8) If the depth of the soil is insufficient to permit the conventional placement of a peg, the peg must be driven to the point of refusal and a cairn of rocks must be built around the peg above the surface of the soil. If sound rock is available under the peg, a drill hole or spike or other suitable mark and wing must be placed in the rock beneath the peg.

(9) If lockspits are required to be used, the lockspits must consist of trenches one metre long, 200mm wide and 150mm deep dug in the direction of the boundary lines and commencing 300mm from each corner or angle, or may consist of stones packed to similar or greater dimensions.

(10) If the class of soil renders trenches ineffective, direction stakes 50mm by 30mm by 300mm may be placed 4 metres distant from and directed to the corner or angle instead of trenches.

(11) If any corner or angle is marked with a drill hole or chisel mark or galvanised iron nail in fixed timber, where practicable wings must be cut in solid rock or concrete or fixed timber 80mm long, 20mm wide and not less than 10mm deep commencing 50mm from and directed to the corner or, if the surface renders it desirable, lines at least 300mm long and 20mm wide may be painted on the surface.

(12) If drill holes, chisel marks or similar marks are to be placed in an ornamental wall or path or similar structure, the size of the mark placed may be reduced at the discretion of the surveyor in order that undue damage is not occasioned to the wall, path or other structure being marked, but only if at all times the marking is readily and unambiguously discernible.

Requirements relating to reference marks

43. (1) If a surveyor is required to place reference marks in accordance with this Regulation, the reference marks must consist of:

- (a) a reinforced concrete block in the form of a truncated pyramid 400mm long, 150mm square at the lower end and 100mm square at the upper end with a galvanised nail or other suitable metal peg or plug not less than 80mm long inserted in the block; or
- (b) a galvanised iron pipe 300mm long and 20mm internal diameter with a rim of not less than 3mm; or
- (c) a galvanised iron spike 100mm long driven into fixed timber with a wing 80mm long cut into the timber and directed to the spike; or
- (d) a drill hole cut into a kerb or other substantial structure 6mm in diameter and not less than 10mm deep with a wing 80mm long and directed to the drill hole; or
- (e) a drill hole not less than 10mm in diameter and 30mm deep cut into bedrock with a wing 80mm long directed to the drill hole where bedrock exists within 300mm of the natural surface of the ground; or
- (f) a wing 80mm long or a broad arrow cut into the sound wood of a suitable tree, facing directly towards the corner and at a convenient height above ground level, the point of the wing or arrow being the reference point; or
- (g) a mark of a durable character or a specific point on a permanent or substantial structure; or
- (h) a permanent mark of such a type and so placed as to comply with the requirements of the Survey Co-ordination Act 1949 in relation to a permanent mark placed under that Act.

(2) The marks referred to in subclause (1) (a) and (b) must be placed vertically with the upper surface of the marks at least 80mm below the natural surface of the ground or, if placed on a boundary on which netting fencing is likely to be erected, sufficiently deep to permit the erection to the fence without disturbance of the mark

Placement of reference marks

44. (1) If this Regulation requires reference marks to be placed, the surveyor must place the reference marks adjacent to a corner, angle or

line mark in selected positions designed to preserve the reference marks from disturbance except that, when a tree or monument is used, the tree or monument should be not more than 30 metres from the corner, angle or line mark to which the tree or monument is connected.

(2) If a reference mark is placed in a roadway, it must be placed either:

- (a) in the adjacent kerb, if the kerb is not likely to be disturbed; or
- (b) at a suitable distance from the existing or proposed alignment or road boundary.

(3) The distance referred to in subclause (2) (b) must be determined at the discretion of the surveyor having regard to the existence of any water, lighting or other service for which provision is or has to be made, except that the line between adjacent marks must be made parallel to the alignment or road boundary, as far as practicable.

Use of broad arrows

45. In any case in which the use of a broad arrow is authorised under the Survey Marks Act 1902, the marking may be used instead of a wing in the placement of a permanent mark in connection with the marking of a survey.

Levels

46. All levels shown in plans must be related to AHD or such other datum as is acceptable to the authority which is responsible for registering the plan.

Bench marks for determining height or depth

47. (1) If a surveyor makes a survey for the purpose of defining a parcel of land or an easement over land, being a parcel or easement limited in height or depth, or both, the surveyor must establish not less than 2 bench marks, at least one of which must be external to the parcel.

(2) The external bench mark referred to in subclause (1) or, if there are 2 external bench marks, at least one of those marks must be:

- (a) a permanent mark placed, adopted or established under the provisions of the Survey Co-ordination Act 1949; or
- (b) if it is impracticable to use a permanent mark that has been so placed, adopted or established as a bench mark, a permanent

mark of such a type and so placed by the surveyor as to comply with the requirements of that Act for a permanent mark placed under that Act.

(3) The value, nature, origin and position of the bench marks referred to in subclause (1) must be clearly shown on the plan of survey.

(4) The accuracy of a survey referred to in subclause (1) must be not less than 0.012 km metres where km is the length of section in kilometres.

PART 6 - FIELD NOTES

Surveyor to make field notes

48. (1) A surveyor must make neat, precise, complete and readily intelligible field notes of every survey in accordance with the usage of surveyors, with indices and cross references set out in a manner which facilitates the preparation of a complete and accurate plan from the field notes without recourse to any other records and without verbal explanation.

(2) If the survey has been recorded in whole or in part by electronic methods, the data must be retained as well as a paper copy of the observations in a manner which facilitates the preparation of a complete and accurate plan from the data without recourse to other records and without verbal explanation.

Surveyor to record facts, readings etc.

49. A surveyor must record in the field notes all the facts, readings and observations immediately they are ascertained by the surveyor.

Surveyor to record astronomical observations

50. If a surveyor makes an astronomical observation in the course of the survey, the surveyor must enter in the field notes the date and the latitude of that station together with full particulars of all observations.

Method of recording bearings

51. A surveyor must observe and record all angles or, if appropriate, bearings in the field notes in degrees, minutes and seconds of arc, and

all bearings must be reckoned and expressed clockwise from zero to 360 degrees.

Surveyor to record landmarks

52. A surveyor must enter in the field notes the names of estates, houses, roads, streets, lanes, rivers, creeks, lakes and the like, and house numbers as far as material to the survey and ascertainable by the surveyor.

Surveyor to sign and date field notes

53. A surveyor must sign, as evidence that the work shown in the field book was performed by the surveyor personally or under the surveyor's supervision as specified in this Regulation, each page or sheet of the field notes and must indicate on each page or sheet the date on which the work recorded on that page or sheet was performed.

Surveyor to disclose doubts, discrepancies etc. in field notes

54. A surveyor must disclose any doubt, discrepancy or difficulty suggested by or encountered in a survey on the plan of survey or in an annexure to the plan or in an accompanying report.

PART 7 - WATER AS A BOUNDARY

Relocation of high-water marks

55. If, since the date of any survey, there has been a change in the position of high-water mark forming a boundary of land to be surveyed caused otherwise than by gradual and imperceptible accretion or erosion, in any subsequent survey the position of mean high-water mark as it was immediately before the change must be relocated after examination of all relevant accessible information.

Relocation of stream banks forming boundaries

56. (1) If, since the date of any survey, there has been a change in the position of a bank of any non-tidal stream forming a boundary of land to be surveyed caused otherwise than by gradual and imperceptible accretion or erosion, in any subsequent survey the position of the bank as it was immediately before the change must be relocated after examination of all relevant accessible information.

(2) The middle line of a stream need not be determined by offsets or marked unless the purpose for which the survey is made so requires.

Determination of high-water mark as boundary

57. (1) High-water mark in a document relating to land must, unless a contrary intention appears, be taken to mean the line of mean high tide between the ordinary high-water spring and ordinary high-water neap tides.

(2) The boundary of land abutting on tidal water must, unless a contrary intention appears, be taken to be the mean high-water mark

(3) Mean high-water mark must be determined by a surveyor with appropriate accuracy.

(4) If it is not reasonably practicable to determine an inaccessible or irregular high-water mark, the surveyor may determine the high-water mark approximately by reference to regular or approximately regular curves or to right lines or to any combination of curves and lines and, in these circumstances, it is not essential to place marks on the mean high-water mark.

(5) If a mean high-water mark is determined, the approval of the Minister administering the Crown Lands Act 1989 (or of a person authorised by that Minister) to the determination and of any other owner of any adjoining land below the mean high-water mark must be obtained.

(6) In seeking the approval of the Minister referred to in subclause (5) to the determination of a mean high-water mark which has changed, a surveyor must give an opinion in the form of a comprehensive report to the Surveyor-General or to a nominated delegate of the Surveyor-General as to the cause of the change and the process by which that change took place.

Determination of landward boundary of reservation fronting tidal waters

58. (1) If the landward boundary of an existing reservation fronting tidal waters has not been defined by survey, on redefinition or subdivision of the adjoining land by a survey, the boundary must be defined by right lines or circular curves, or a combination of both, approximately parallel to the position of mean high-water mark

(2) The approval of the Minister administering the Crown Lands Act 1989 (or of a person authorised by that Minister) must be obtained to the definition of the landward boundary.

Calculation of areas of land abutting on water

59. The area of land abutting on tidal water or on a non-tidal stream must be ascertained by the surveyor with appropriate accuracy and must include all lands to the high-water mark or the bank, as the case may be.

PART 8 - MISCELLANEOUS

Repeal

60. The Survey Practice Regulations 1933 are repealed.

SCHEDULE 1 - FORMS

Form 1

(Cl. 10)

SURVEYORS ACT 1929

SURVEY PRACTICE REGULATION 1990

I,.....
of
a surveyor registered under the Surveyors Act 1929, hereby certify that
the survey represented in this plan is accurate, has been made in
accordance with the Survey Practice Regulation 1990 and was
completed on

(Signature)

Surveyor registered under
the Surveyors Act 1929

Form 2

(Cl. 11)

SURVEYORS ACT 1929

SURVEY PRACTICE REGULATION 1990

To the Occupier of
(here insert reference to land proposed to be entered)

In pursuance of section 13 of the Surveyors Act 1929, notice is given that I, the undersigned surveyor, intend to enter the abovementioned land on (here insert dates of proposed entry) for purposes relating to the making of a survey.

Dated this day of 19

(Signature)
Surveyor

(Address)

Form 3

(Cl. 29)

SURVEYORS ACT 1929

SURVEY PRACTICE REGULATION 1990

I,.....
of

a surveyor registered under the Surveyors Act 1929, certify that the survey represented in this plan (or sketch) was made in accordance with Regulation 29 of the Survey Practice Regulation 1990.

(Signature)
Surveyor registered under
the Surveyors Act 1929

NOTES

TABLE OF PROVISIONS

PART 1 - PRELIMINARY

1. Citation
2. Commencement
3. Application of Regulation
4. Definitions

PART 2 - ADMINISTRATIVE MATTERS

5. Surveys under supervision of surveyor
6. Character and extent of supervision by surveyor
7. Procedure for surveyors undertaking surveys
8. Surveyor to record survey marks
9. Surveyor to record nature of boundaries etc.
10. Surveyor to furnish certificate
11. Power of entry
12. Surveyor to meet requisitions

PART 3 - MEASUREMENT AND CALCULATIONS

13. Location and relocation of boundaries
14. Equipment for measurement of surveys
15. Measurement of boundaries and lines
16. Measurement by remote sensing methods
17. Survey of part only of land in document of title
18. Easements
19. Re-survey of property boundaries
20. Surveys associated with natural boundaries
21. Definition of common boundary between land and road etc.
22. Procedure if crooked fence defines boundary
23. Calculation of areas of land of irregular form
24. Surveyor to check angular work
25. Calculation of complete angular close
26. Checking and accuracy of all measurements
27. Measurement and accuracy of lengths
28. Identification and re-marking surveys
29. Surveys not requiring strict accuracy

PART 4 - DATUM LINE

30. Procedure in adopting datum line
31. Surveyor to record datum line etc.
32. Method of recording datum line

PART 5 - MONUMENTS AND REFERENCE MARKS

33. Surveyor to connect isolated survey to State Control Survey
34. Placement of pegs or marks
35. Placement of new reference marks
36. Procedure for country surveys
37. Placement of reference marks for roads
38. Procedure on finding existing corner peg and reference mark
39. Procedure if monuments of original survey missing
40. Procedure if differences exist between measured and recorded lengths
41. Surveyor to note nature and position of all monuments
42. Marking of surveys
43. Requirements relating to reference marks
44. Placement of reference marks
45. Use of broad arrows
46. Levels
47. Bench marks for determining height or depth

PART 6 - FIELD NOTES

48. Surveyor to make field notes
49. Surveyor to record facts, readings etc.
50. Surveyor to record astronomical observations
51. Method of recording bearings
52. Surveyor to record landmarks
53. Surveyor to sign and date field notes
54. Surveyor to disclose doubts, discrepancies etc. in field notes

PART 7 - WATER AS A BOUNDARY

55. Relocation of high-water marks
56. Relocation of stream banks forming boundaries
57. Determination of high-water mark as boundary
58. Determination of landward boundary of reservation fronting tidal waters
59. Calculation of areas of land abutting on water

PART 8 - MISCELLANEOUS

60. Repeal

SCHEDULE 1 - FORMS

EXPLANATORY NOTE

The objects of this Regulation are to repeal the Survey Practice Regulations 1933 and to restate most of their provisions in an updated and reorganised form as a consequence of a review of the former Regulations conducted by the Cadastral Development Unit of the Department of Lands.
