SURVEYOR-GENERAL’S DIRECTIONS
Issued Pursuant To Regulations 25(2) and 27 of the Survey Regulations 2007

Direction 1 - Accuracy of Surveys

1.1 Application of this Direction
This Direction details the standards of accuracy required for cadastral surveys, and action required of surveyors where differences with published coordinates of permanent survey marks (PSMs) and state survey marks (SSMs) do not meet standards of accuracy.

1.2 Definitions
In this Direction:

Adelaide City means land within the City of Adelaide.

High density urban means urban area land parcels that are less than 1000m² in area.

Low density urban means urban area land parcels that are 1000m² or greater in area.

Map Grid of Australia means, for surveys conducted prior to these Directions commencing operation, MGA94 (see below) and, for surveys conducted after commencement of the operation of these Directions, MGA2020 (see below)


Rural area means locations that are not included in urban areas or Adelaide City.

Urban area means locations where land parcels are generally less than 5000m² in area that are not included in Adelaide City.

1.3 Tolerances

1.3.1 Polygon Misclosure
The horizontal perimeter misclosure of surveyed polygons on plans shall not exceed 0.02 metres plus one part in 20 000 of the perimeter distance.

1.3.2 Marks and Improvements
The difference in the horizontal position, and the difference in the vertical position, of survey marks, reference marks and improvements placed or connected in the survey, and the position of those survey marks and improvements as determined from measurements shown on the plan must not exceed in:

- Adelaide City: 0.03 metres
- High density urban: 0.03 metres
- Low density urban: 0.05 metres
- Rural areas: 0.10 metres.
Where survey marks, reference marks or improvements are adjacent to a boundary between different accuracy zones the tolerance of the higher accuracy zone shall apply.

1.3.3 Coordination or Heighting of Permanent and State Survey Marks

The difference in the horizontal or vertical position of permanent and state survey marks and the position of those marks as determined from the MGA2020 coordinates or heights provided by the surveyor, relative to the existing coordinated Permanent or State survey marks, must not exceed in:

- Adelaide City: 0.015 metres
- Urban areas: 0.02 metres
- Rural areas: 0.05 metres.

1.3.4 Connection to Coordinated and/or Heighted Permanent and State Survey Marks

If the distance difference or lateral displacement (caused by the angular or bearing difference) between their survey and the MGA2020 coordinates of the permanent or state survey marks in the geodetic dataset published by the Surveyor-General, or the height difference between their survey and the heights of the permanent or state survey marks in the geodetic dataset published by the Surveyor-General, exceed on surveys in:

- Adelaide City: 0.03 metres,
- Urban areas: 0.05 metres, or
- Rural areas: 0.10 metres

Surveyors must:

(a) verify their survey by some other means,
(b) identify the permanent survey mark(s) whose coordinates or heights appear to be the cause of the above relative tolerances being exceeded,
(c) not adjust their survey to the permanent survey mark coordinates or heights identified as the cause of the above relative tolerances being exceeded,
(d) re-coordinate and/or re-height the permanent survey mark(s) identified as the cause of the above relative tolerances being exceeded, and
(e) report the permanent survey mark coordinates and/or heights, as relevant, identified as the cause of the above relative tolerances being exceeded, in a manner specified in Surveyor-General's Direction 4.

The requirement to report permanent survey mark coordinates and/or heights in (e) above may be ignored if the published positional uncertainty (PU) for a PSM's or SSM's coordinate and/or height, as relevant, exceeds 0.03m in Adelaide City, 0.05m in urban areas, or 0.10m in rural areas.
Direction 2 - Survey Marks

2.1 Application of this Direction
This Direction details the PSM (permanent survey mark), SSM (state survey mark), reference mark and survey peg requirements for cadastral surveys whose plans, excluding plans for information purposes, are lodged in the Lands Titles Registration Office. The requirements may include both placed and existing marks connected, and provision of information to the Surveyor-General.

2.2 Definitions
In this Direction:

Map Grid of Australia means, for surveys conducted prior to these Directions commencing operation, MGA94 (see below) and, for surveys conducted after commencement of the operation of these Directions, MGA2020 (see below)


Urban area means locations where land parcels are generally less than 5000m² in area.

Rural area means locations outside urban areas.

2.3 Permanent and State Survey Marks
PSMs shall be identified by the symbol  

Three types of survey mark have been gazetted as PSMs pursuant to Section 49(3) of the Survey Act 1992:

- below ground PSMs
- above ground PSMs
- stainless steel pins, at least 50mm long and 5mm in diameter, with inscribed washer suitable for permanent installation in concrete (mini PSMs).

The last of these, mini PSMs, are restricted to placement in community divisions and subdivisions of more than 5 allotments (see Cadastral Survey Guidelines section 14.3 for more detail).

SSMs are survey marks constructed to the same specifications set for PSMs and shall be identified by the symbol  

Brass survey mark plaques, provided by the Surveyor-General, shall be used on all new PSMs & SSMs, other than mini PSMs.
2.3.1 Requirement to Connect and Place Permanent and State Survey Marks

Further to regulations 14, 15 and 22 Survey Regulations 2007:

2.3.1.1 Connection

Surveys must connect to at least three PSMs or two PSMs and one SSM in urban areas, or three SSMs in rural areas, existing or new. If any two or more of the marks are within a 100m radius of each other in urban areas, or within a 500m radius of each other in rural areas, they shall count as only one mark for the purposes of this requirement.

2.3.1.2 Spacing

PSMs and SSMs within the survey are required at 200m spacing from other PSMs and SSMs in urban areas and 2000m spacing from other PSMs & SSMs in rural areas. See the Cadastral Survey Guidelines section 14 for application of these spacing. If PSMs or SSMs connected, existing or new, do not satisfy these spacing then additional PSMs shall be placed.

2.3.1.3 Whole to Part

If PSMs or SSMs connected, existing or new, as required in 2.3.1.1 and 2.3.1.2 above do not provide sound geometric control for the survey then additional PSMs or SSMs, existing or new, are required to be connected to provide sound geometric control.

2.3.1.4 Divisions of More Than Five Allotments/Lots

On plans for division of land into more than 5 allotments or lots the Surveyor-General, following receipt of the proposal plan, shall advise the surveyor carrying out the division of the number and location of new PSMs or SSMs, based on 2.3.1.1, 2.3.1.2 & 2.3.1.3 above. The PSM/SSM configuration may include some mini PSMs for use in kerbs; see the Cadastral Survey Guidelines section 14 for required locations of these mini PSMs.

Where no certificate of practical completion has been issued for division of land into more than 5 allotments or lots, and PSMs or SSMs have not been reinstated, the surveyor who has carried out the survey must place the PSMs or SSMs otherwise required under regulation 23 of the Survey Regulations 2007 within two years of the plan’s deposit by the Registrar-General.

2.3.1.5 Potential Infrastructure Destruction

Surveyors undertaking surveys for infrastructure projects are responsible for replacing PSMs and SSMs disturbed, or threatened with destruction, through those projects.

2.3.2 Protecting Permanent and State Survey Marks

In all areas PSMs and SSMs shall be placed in safe locations where they are least likely to be disturbed. Below ground marks placed shall be set at least 200mm below ground level to allow encasement in urban areas and to reduce the risk of being disturbed in rural areas.

Below ground PSMs or SSMs shall be protected by a cast iron cover suitably supported by a 195 millimetre diameter PVC pipe:

- when placed in urban areas
- on re-establishment of the pavement after existing PSMs or SSMs are found in place below pavements.
PSMs and SSMs shall be witnessed by a steel dropper with a witness plate attached:

- when placed in rural areas
- if existing PSMs and SSMs connected in rural areas are not already witnessed by a dropper, or the witness dropper and/or its plate are in a state of disrepair such that they no longer serve their purpose
- if not practicable to protect below ground PSMs and SSMs placed in urban areas with a cast iron cover
- when placed below ground in divisions of land in urban areas of more than 5 allotments or lots (as well as the cover required above).

Witness droppers shall be placed to best protect the PSM/SSM, and to be in safe locations. In urban areas witness droppers shall be encased in a PVC sleeve; a rolled witness plate shall instead be fixed to the PVC sleeve.

The witness plates to be used on steel droppers or PVC sleeves shall be those provided by the Surveyor-General, with the relevant details of the PSM’s location marked on the witness plate in a permanent manner.

A location plan prepared on sheets provided by the Surveyor-General shall be supplied by the surveyor for every PSM placed on a survey.

PSMs shown placed or connected on survey plans lodged in the Lands Titles Office must have their location on the plan related to adjacent improvements or other physical features. This requirement will not apply to PSMs in urban areas that have been previously connected to the cadastre and are obvious on the ground.

### 2.3.3 Coordination or Heighting of Permanent and State Survey Marks

Surveyors shall determine, and provide to the Surveyor-General:

- MGA2020 coordinates of PSMs and SSMs they place,
- MGA2020 coordinates of existing PSMs and SSMs they connect that have coordinates, in the geodetic dataset published by the Surveyor-General, with no PU or a PU greater than or equal to 0.10m,
- MGA2020 coordinates and/or heights, as relevant, of existing PSMs and SSMs connected where their survey differs to current coordinates and/or heights by more than tolerances set by Surveyor-General’s Direction 1.3.4

The provision of coordinates and heights shall be undertaken in accordance with section 2 of the Cadastral Survey Guidelines.

### 2.4 Survey Pegs and reference marks

While it is necessary to mark every new boundary point defined on a cadastral survey with a survey peg or reference mark it is not necessary to mark existing boundaries redefined.

Pursuant to regulation 10 of the *Survey Regulations 2007* the following are approved as survey pegs:

(a) a peg of a durable nature, composed of wood, metal, plastic or other material approved for the purpose by the Surveyor-General, measuring at least 300 millimetres in length and 50 millimetres square at the top and coloured white; or

(b) a metal spike of at least 300 millimetres in length to which is mounted a metal or plastic top of durable material, at least 50 millimetres square and coloured white; or

(c) a star dropper of at least 300 millimetres in length and coloured white.
Where it is not practicable to drive a survey peg of the type specified in regulation 10 of the *Survey Regulations 2007*, due to fencing, walls or permanent covering of the boundary, the following reference marks may be used as alternatives to survey pegs:

- a galvanised iron nail driven into the fence and painted white
- a masonry nail or screw secured into the wall or pavement and painted white
- a deck spike at least 100 millimetres in length and 8 millimetres in diameter driven into bitumen and painted white.

Where it is not practicable to peg the actual boundary corner a position offset to the boundary corner is to be pegged using a reference mark.

Where a survey peg marking a boundary is not visible from an adjacent peg, survey pegs shall be placed along the new boundary so that from any survey peg on the boundary the adjacent survey pegs are visible.

New boundaries need not be pegged if their improvements are within one metre of the boundary, and the relationship between the boundary and the improvement is shown on the plan.

If the survey is for a division of land into more than 5 allotments or lots, the allotment or lot numbers must be placed, in a permanent and durable manner, on the top or face of each survey peg of the types specified in regulation 10 of the *Survey Regulations 2007*.

Where no certificate of practical completion has been issued for division of land into more than 5 allotments or lots, and survey pegs have not been reinstated, the surveyor who has carried out the survey must place the survey pegs otherwise required under regulation 23 of the *Survey Regulations 2007* within two years of the plan's deposit by the Registrar-General.
**Direction 3 - Certification of Plans**

3.1 **Application of this Direction**

This Direction details the form for certification of plans of cadastral survey, the requirement for currency of field work represented in a certified plan, and the supervision responsibilities of surveyors certifying cadastral surveys. Plans under the *Community Titles Act 1996* are not required to carry the certification below, however, they are a cadastral survey, requiring compliance with survey instructions.

3.2 **Certification**

The surveyor responsible for any plan of cadastral survey, other than those carried out under the *Community Titles Act 1996*, to be lodged in the Land Titles Registration Office shall complete and endorse the following certificate on the plan of survey:

\[ I ................…….. licensed surveyor of South Australia do hereby certify - \]

(1) That this plan has been made from surveys carried out by me or under my personal supervision and in accordance with the Survey Act 1992.

(2) That the field work was completed on the ........ day of ................. 20… excepting for the final placement of survey marks. (strike out if not applicable)

\[ Date ................ ...........................................  Licensed Surveyor \]

The exception provided in clause (2) of the certification is restricted to surveys affected by the requirements of regulation 23 of the *Survey Regulations 2007*.

3.3 **Marking & Improvements Within Two Years of Lodgement**

Field work carried out more than two years prior to the date a plan of cadastral survey is lodged in the Lands Titles Registration Office must be checked to confirm whether marking and improvements remain the same:

- pegging of new corners must be reinstated if disturbed or missing
- any alteration to the status or position of other marks and improvements must be reflected on the plan.

The date of field work completion in clause (2) of the certification shall then signify this checking was done within two years.

3.4 **Supervision**

A surveyor endorsing the certification of a plan of cadastral survey is responsible for the survey irrespective of whether it was carried out by them or under their supervision. A surveyor carrying out a survey under their supervision shall ensure that the survey reflects their professional responsibilities, and complies with relevant legislation, directions and guidelines.
Direction 4 - Survey Reports

4.1 Application of this Direction
This Direction details the requirement for providing reports on cadastral surveys.

4.2 Reports Requested on Particular Surveys
A surveyor must provide the Surveyor-General with a survey report in relation to their cadastral surveys, within 14 days of receiving a written request from the Surveyor-General for such a report. The request from the Surveyor-General may cover all or certain survey types over a period of time or until a particular event occurs. The reports must include information, and be in a form, required by the Surveyor-General.

4.3 Reports Required on All Prescribed Cadastral Surveys
A survey report is required for all prescribed cadastral surveys lodged in the Lands Titles Registration Office.

The following are prescribed cadastral surveys for the purpose of Regulation 18(3):

- A survey certified by a licensed survey required for a transaction pursuant to the administration of the **Real Property Act 1886** with the exception of a plan of land division creating six or more allotments where the outer boundary survey has been accepted for filing or deposited in the Lands Titles Office (LTO)
- An “outer boundary” survey certified by a licensed surveyor for a development pursuant to the **Community Titles Act 1996**
- A survey certified by a licensed surveyor required for a transaction under the **Roads (Opening and Closing) Act 1991**
- A survey of Crown land certified by a licensed surveyor for deposit or filing in the LTO

The Survey Report must contain a completed Certified Survey Plan Checklist, of a form specified in Appendix A of the Cadastral Survey Guidelines (or an expanded version), and a written report.

Survey reports must be attached to the plan lodged in the Lands Titles Registration Office at the time of lodgement and meet the following content criteria:

4.3.1 Boundary Data Discrepancies
A detailed survey report is required if the survey reveals differences with previously lodged plans greater than the following:

- 3 minutes in the angle of road alignments at any road junction or bend on an urban survey
- 3 minutes in any angle on a rural survey
- 0.1m + 1/2000 length ratio in any distance
- 0.15m in the position of any boundary corner on an urban survey
- 1m in the position of any boundary corner on a rural survey

Detailed survey reports must disclose any differences between the survey as lodged and previous surveys, defining or redefining common boundary points, together with any other information which may be of assistance in assessing the accuracy and reliability of the redefinition of the boundaries of the land under survey. Detailed survey reports shall be in the form of a written report or an annotated copy of the survey plan. For further details refer to section 17 of the Cadastral Survey Guidelines.
In all other cases, a less detailed survey report identifying and commenting on differences (if any) between the survey as lodged and previous surveys shall be acceptable. If there are no material differences with other surveys a statement to that affect will suffice.

4.3.2 PSMs Gone
Where a permanent survey mark is shown Gone by a surveyor their survey report shall describe the steps taken to locate the permanent survey mark and the likely cause of its destruction.

4.3.3 Natural Boundaries
Where a survey redefines a natural boundary the survey report shall describe the method adopted to locate the boundary. If there is significant difference in the position of any part of the natural boundary to its previously surveyed position the survey report must address potential reasons for this apparent movement.

4.3.4 PSM Coordinate and Height Discrepancies
Where a survey’s connection to permanent survey marks results in differences to the coordinates or heights in the geodetic dataset published by the Surveyor-General exceeding the tolerances specified in Surveyor-General’s Direction 1.3.4, the surveyor must report the discrepancy using the online coordinate error report form and provide an updated MGA2020 coordinate for that permanent survey mark. For further details refer to section 2.5a of the Cadastral Survey Guidelines.

The surveyor must endorse the form’s certification that they have verified their measurements in relation to detecting the coordinate or height discrepancy. A surveyor must not make such an endorsement unless they have verified their observations through independent measurements.
Direction 5 - Exemptions

In accordance with Regulation 25 of the Survey Regulations 2007, the Surveyor-General exempts the following:

1. **Adjustment of Surveys**

Surveys of land in designated survey areas are exempt from the requirement of Regulation 22(b) of the *Survey Act 1992*.

2. **Final Marking**

Surveyors are exempt from the requirement of Regulation 23 of the *Survey Act 1992*, as regards reinstating pegs marking:

- boundaries of reserves which abut other reserves or roads.
- boundaries of reserves and roads which abut the balance allotment in staged developments.

3. **Community Plans**

Primary plans (but not including substitute or added sheets) under the *Community Titles Act 1996* which create boundaries requiring no new PSMs are exempt from showing connection required under Regulation 11(2)(a) and (b) of the *Survey Act 1992*.

4. **Map Grid of Australia**

Certified cadastral surveys outside of Designated Survey Areas (DSAs) lodged with Land Services SA are exempt from the requirements of Direction 2, 2.3.3: co-ordination and/or height requirements in accordance with MGA2020, between 7 February 2019 and 30 April 2019. The requirements in 2.3.3 of Direction 2 for all certified surveys shall take effect from 1 May 2019.