

Remake of the Surveying and Spatial Information Regulation: Proposed Changes

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ABSTRACT

In New South Wales (NSW), practising surveyors are subject to the Surveying and Spatial Information Act 2002 and the Surveying and Spatial Information Regulation 2017. Every five years, each regulation is remade to ensure that the requirements of the regulation remain current and up to date with technology, community, industry and government needs. Pursuant to section 10 of the Subordinate Legislation Act 1989, the Surveying and Spatial Information Regulation 2017 is scheduled to be replaced on 1 September 2022. The objectives of the Surveying and Spatial Information Regulation are to ensure the competency of surveyors, maintain the integrity of the NSW cadastre and the NSW State Control Survey, and ensure measurement and marking standards are delivered from modern surveying and communication technologies. This paper outlines the key changes proposed in the new Surveying and Spatial Information Regulation. These changes include that all surveys adopt an accurate Map Grid of Australia (MGA) orientation, that surveyors connect to established survey marks or BYO accurate MGA coordinates using an approved Global Navigation Satellite System (GNSS) method, place less permanent survey marks, preserve survey infrastructure, provide a survey report for all water boundaries, and the review of survey certificates.

KEYWORDS: Regulation, legislation, surveying, standards.

1 INTRODUCTION

In New South Wales (NSW), practising surveyors are subject to the Surveying and Spatial Information Act 2002 (NSW Legislation, 2022a) and the Surveying and Spatial Information Regulation 2017 (NSW Legislation, 2022b). The objectives of the Surveying and Spatial Information Regulation are to ensure the competency of surveyors, maintain the integrity of the NSW cadastre and the NSW State Control Survey, and ensure measurement and marking standards are delivered from modern surveying and communication technologies.

Under the Subordinate Legislation Act 1989 (NSW Legislation, 2022c), all statutory rules, i.e. regulations, must be remade every 5 years to ensure they remain relevant to government, community and industry needs. The Surveying and Spatial Information Regulation 2017 is due for repeal on 1 September 2022. An online questionnaire was distributed to the industry in early 2021 for comment, and a workshop with industry associations and industry leaders to obtain additional feedback and comment was conducted in September 2021.

This paper provides an update of the issues, amendments and reforms that are proposed to ensure the surveying industry is enabled and capable to provide modern surveying services.

The reforms and amendments outlined in this document are generally minor in nature and do not make significant changes to survey practice in NSW.

2 PROCESS

The review process began in March 2021 by outlining possible and probable changes to the regulation (Gardner, 2021), followed by a corresponding series of presentations to the surveying industry. An online questionnaire was conducted from March to May 2021 to obtain views, comments and suggestions for improvement from the surveying industry. The results were used to refine the final submission to the Parliamentary Counsel’s Office to prepare the new draft regulation that will be circulated to all surveyors, users of surveying services, government agencies and relevant industry associations in a final draft exposure regulation.

A Regulatory Impact Statement will accompany a draft exposure version of the proposed regulation this year to gain final industry, government and community comments in order to ensure that all alternatives, options, cost and benefits have been considered and determined for the final regulation.

3 SUMMARY OF PROPOSED CHANGES TO DATE

A summary of the proposed changes from the Surveying and Spatial Information Regulation 2017 to the proposed Surveying and Spatial Information Regulation 2022 is outlined in Table 1. The sequence of numbers in the table is based upon the clause numbers in the current Regulation. These may change in the final version.

Table 1: Summary of proposed changes to the Surveying and Spatial Information Regulation 2017 for implementation in 2022.

Current Regulation	Proposed Regulation	Reason for Change
4 Mining surveys	Update reference to the current “Survey & Drafting Directions for Mine Surveyors 2020 (NSW-Mines)”.	Updated references.
5 Definitions		
<i>Accurate MGA orientation</i>	Add “positional uncertainty of 0.1m or less” to the existing survey Class of “D” or better.	Enable more flexibility and correct definition when determining accurate MGA orientation.
<i>Established survey mark</i>	Means a survey mark as approved. (By Surveyor-General, in SGD.)	Enable more flexibility.
<i>Recognised Professional Training Agreement</i>	Remove definition.	Recognised Professional Training Agreement is not used by the industry.
<i>Validation</i>	Means an approved rigorous method that assesses an instrument or method of measurement against a verified instrument or approved network.	A holistic scientific rigorous test performed once a year. For instruments or methods that do not carry their certification.
<i>Verification</i>	Means an approved rigorous method that assesses an instrument against the National Measurement Standard or the State Primary Standard.	In terms of instrument testing, a scientific rigorous test against a reference standard for instruments that can carry their certification.

Current Regulation	Proposed Regulation	Reason for Change
9 Surveys not requiring strict accuracy	The “agreement” between the client & surveyor for the survey not requiring strict accuracy is to be in writing. Review & update the clauses that apply. Refer to “Classifications” of survey rather than “Class” of survey. Plan to report the “agreed” accuracy. Update the survey certificate.	When a Clause 9 survey is undertaken, there is no documented agreement of what was to occur or to what accuracy. Class has a specific meaning in surveying. The survey plan must convey the accuracy agreed.
10 Re-marking surveys	New clause. Separate identification surveys from re-marking surveys. Title and/or report to indicate intent of survey. Update clauses that apply. New survey certificate.	Better understanding of requirements.
11 Identification surveys	New clause. Separate identification surveys from re-marking surveys. Title and/or report to indicate intent of survey. Update clauses that apply. New survey certificate.	Better understanding of requirements.
12 Datum line	MGA for <u>all</u> surveys. No magnetic meridian as datum (unless compiled plan). 3 survey marks for <u>all</u> surveys. Use established SCIMS coordinates for all 3 marks <u>or</u> use an approved GNSS method for all 3 marks. All marks must be within 1500m of the site. Approved GNSS coordinates must have a PU of 0.1m or less.	Simplifies the datum requirements and makes all plans have the same requirements. 80% of surveyors (from Survey Monkey results) agree that all plans should be on MGA. 2.5% of plans of survey currently use a magnetic meridian (MM) orientation.
13 Bench marks	At least one bench mark within 30m must have accurate AHD. “Confirm”, not “verify”, the results. Add to the requirement from Clause 70 that requires all PSMs to be shown to the nearest 3m, that all bench marks need to be shown on the plan to at least 3m. Add that only good SCIMS marks can be used, the same as Clause 12.	Height is becoming more important. The majority of surveyors place a local bench mark at the job site, however.
14 Equipment for measurement of surveys	Standardise the use of the term “verification” and “verified”. Verification is a rigorous annual assessment of the capabilities of the EDM. Steel bands have been replaced with an option to verify a metal tape every 2 years. Verification to be stored by the surveyor. Verification to be supplied for an audit or investigation.	Clearer breakdown of process required to ensure accuracy of equipment.
15 Validation of measurement methods	GNSS & remote measuring equipment to be validated every year, after services or repair. Validate using an approved method. Must use “verified” equipment in test method. Results stored by the surveyor.	Clearer breakdown of process required to ensure accuracy of equipment.

Current Regulation	Proposed Regulation	Reason for Change
	All measurement methods listed on survey plan.	
16 Confirmation of measurement methods	Clarifies that boundary, dimensions & connections are to be made by the most direct method practicable. Sufficient redundancy of measurements to ensure that the boundary, dimensions & connections determined are correct.	Due to changes in technology, indirect methods of obtaining measurements are possible. Sufficient redundancy of measurements is required to ensure that the correct value is quoted.
18 Surveys for affecting interests	Clarifies that this clause applies to surveys for affecting interests that extend beyond the main surveyed or subdivided area.	Clarifies the application of the clause.
19 Re-survey of property boundaries	Ensure that the surveyor either forms a common boundary with the adjoining parcel or provides a report to justify the discrepancy between the location of the boundary. Surveyor needs to ensure that there is appropriate land available for the surrounding titles & roads and any excess or shortage is dealt with appropriately.	A re-survey is to place the boundary in the same position as it was located prior. Thus, forming a common boundary if all the plans are in agreement or justifying the location of the boundary with extra survey if there is a discrepancy in the plans. The surveyor needs to survey enough land to justify that the proposed survey does not cause any issues or problems with the adjoining parcels and roads.
21 Calculation of area	Areas of land to be calculated using commercial software. Approved method – Surveyor-General’s Directions.	Refer to the Surveyor-General’s Directions & commercial software as suitable methods of determining area of land.
22 Surveys using GNSS equipment	Old GNSS clause proposed to be deleted.	Surveyor-General’s Directions to include outcomes from approved GNSS methods.
24 Accuracy of length measurement	Surveyor to ‘check’ measurements. Independent checks. Use independent method to check. GNSS not to check GNSS.	Clarify the requirement & be more rigorous.
26 Confirmation accuracy of measurement & calculations	Use the word “check”. Combine the outcome for age of partial survey and terrain details of lot into single mm+ppm for each lot. Add mm+ppm to survey certificate.	Simplify the outcome and enable E-plan digital compliance.
28 Boundary marks	Use “●” obstructed boundary symbol at corners that cannot be marked and no need for exemption. Remove requirement for clearing and blazing of rural un-fenced boundaries. Use 3” x 2” pegs as line marks (rural).	Where it is physically impossible to place a survey mark (when the boundary corner lies within the material of a structure that does not have an accessible surface), use ●. Avoid conflict with environmental legislation to prevent or limit clearing. Enable appropriate marking.
29 Marking of urban surveys	For urban survey that creates or redefines a boundary that intersects with a water boundary, place a reference mark for that intersection.	Intersections with roads and rivers are treated the same.
30 Marking of rural surveys	For rural survey that creates or redefines a boundary that intersects with a water boundary, place a reference mark for that intersection. No 500m limit. Allow double referencing if existing RM is within 30m.	Intersections with roads and rivers are treated the same. Allow efficient use of survey marks.

Current Regulation	Proposed Regulation	Reason for Change
31 Roads to be marked with reference marks	Delete Clause 31(3)(d), this will be dealt with in the amended Clause 63. If Reference Mark Tokens are used, then 2 must be placed (same as Drill Holes & Wings). Show connections across road intersections and where width varies.	Improve understanding of Regulation. A Reference Mark Token is no more stable or durable than a DH&W and therefore a second mark is required to provide adequate redundancy of marks and the ability to determine if one token moves. Connections across intersections & where variable enables the road to be crossed mathematically without assumptions.
35 Surveyor to note nature and position of survey marks etc.	If RM found deeper than 300mm, note on plan. List the state of all survey marks.	All surveyors will dig 150mm without special instructions.
36 Placement of reference marks	A second reference mark (RM) must be placed at any corner referenced by a 'reference tree' (as described in Schedule 3) that is found, that does not already have a second reference mark for that corner. If a specific point is used as RM, then additional RM must be placed in road.	Enable the preservation of basic cadastral infrastructure. Enable preservation of survey marks to ensure the integrity of the cadastre.
38 Deferment of placement of survey marks	Delete Clause 38.	This clause is rarely used by industry and same result can be achieved by using the exemption process currently in place.
41 Surveys redefining or creating multiple parcels, roads or affecting interests	Simplify the requirements for placing PSMs. Reduce to number of PSMs placed. Use 250m of road frontage as the basis for network propagation.	The current formula is based on the number of parcels and the lot size is reducing, hence there is oversupply of PSMs in some areas. The new methodology is based on the distance of road frontage.
42 Connection to permanent survey marks	Amend subclause 42(2) to be consistent with subclause 41(1). Connections are limited to 250m (urban) and 1000m (rural). All PSMs must be shown in a closed loop.	This ensures that only close PSMs are used and direct connections between PSMs are shown. PSMs are not more than 250m apart along the length of any road.
43 New permanent survey marks	Remove reference to GNSS techniques in subclause 43(1). Locality Sketch Plans must be lodged before the plan is lodged or within 2 months. New requirement to ensure there is a diversity of PSM types placed.	The lodgement of a sketch plan is the trigger that creates a PSM in SCIMS. The plan once lodged is assessed against the SCIMS database. Missing sketch plans cause delays in mark creation in SCIMS and significant cost in following up un-lodged sketch plans. Improve survey mark preservation and survey integrity by placing a variety of survey marks.
44 Definitions Water boundary definitions	Amend Clause 44 to be consistent with the Crown Lands Management Act 2016: bank, bed, lake and river. Remove the definition of stream. Use the term non-tidal instead of the description of "lake and stream" to define a non-tidal water boundary.	To enable greater consistency of specific terms, use the Crown Lands Management Act 2016 as the source of all definition. The use of the term 'non-tidal' to describe a water feature that does not have tidal influence is explicitly clear as to what is the defining factor that separates tidal and non-tidal water boundaries.

Current Regulation	Proposed Regulation	Reason for Change
45 First surveyor of landward boundary	Update reference to Crown Lands Management Act 2016.	Be consistent with other legislation.
46 First survey of a Mean High Water Mark or bank	All water boundaries require comprehensive report. First definition will require consent of adjoining owner.	Enable efficient approvals process. Ensure correct boundary is defined.
47 Surveys where the boundary includes tidal or non-tidal waters or other natural feature	Surveyor to use approved methods to determine tidal and non-tidal boundaries. Move 47(2) to Clause 64.	Surveyor-General's Direction No. 6 to be expanded and provide list of methods & better guidance.
48 Changes in boundaries formed by tidal waters	MHWM boundary consent will be required after 20 years, or if no approval or erroneous plan is basis of the current title.	The clause is clarified so that the surveyor is required to refer to a survey plan on public record prepared prior to the change in position of MHWM.
50 Surveyor to report of certain determinations	Survey report will be required for all water and natural feature boundary surveys.	Ensure smoother and correct approvals process.
52 Surveyor to make field notes	Field notes must include all measurement methods used. All dates in field notes must be correct. Include requirements of former Clause 53 for electronic field notes and data.	Simplify the requirement of the Regulation.
57 Method of recording observations	Change title of clause to "Method of recording angles & bearing". All distances, coordinates and heights must be recorded in metres.	Simplify the requirement of the Regulation.
60 Survey plan to indicate name of locality, street address and type of survey	Use the correct name (if any) assigned by the Geographical Names Board for any water feature shown on the plan. For partial surveys, the misclose vector tolerance for each parcel in accordance with Clause 26(3) to be shown. A complete description of all land affected on the first sheet for any acquisition or road plan.	The correct names must be used on survey plans. This is particularly important for survey plans as they are often the point where change is proposed. The misclose vector tolerance for each lot of a partial survey (mm+ppm). To ensure correct indexing and searching is applied, the current Lot/DP reference must be shown.
61 Method of recording datum line	The datum line statement must be shown as approved. The datum must be shown adjacent to the North Point. The orientation must be confirmed to a 3 rd mark and shown on the plan. Orientation and datum marks to be shown in a single loop with sequential lines.	Datum line must be shown as approved to assist understanding of the survey. It is important to maintain consistent language; the confirmation line is confirming the orientation. The orientation marks must be shown in a closed loop with direct connections.
63 Method of showing boundaries generally	Complete dimensions to include bearings, distances & area. Every road created must be a complete parcel. Connections across intersections, terminals and at variable width.	Better compression of the plan and ensure complete and accurate lot/road dimensions.
64 Method of showing water boundaries and other natural feature boundaries	Amend title of clause. If present waterline is different to adopted MHWM or bank, then both are shown. Was in Clause 47.	Increases the integrity of cadastral plans.

Current Regulation	Proposed Regulation	Reason for Change
65 Method of showing natural feature boundaries	Renumbered as Clause 64.	
65 Surveys adjoining MHW, bank & natural feature boundaries	Include details of any improvements, retaining walls, slip rails, jetties, etc. near water boundary.	Ensure all interests are recorded on the survey plan.
66 Surveys of land adjoining tidal waters	Renumbered as Clause 65. Minor alteration to require the descriptions and relationship to be shown on “the survey plan” instead of “a survey plan”.	The requirement is for the descriptions and relationship to be shown on the survey plan that is the subject of the clause, not on a separate survey plan.
67 GNSS-derived lines to be indicated	Amend title of clause. Delete reference to GNSS surveys. Show confirmations of datum line and confirmation line on plan.	Simplify the Regulation. Show greater rigour and integrity of datum of survey while enabling greater flexibility for the surveyor.
68 Surveyor to report doubts, discrepancies & difficulties	Amend the difference tolerance to: 40mm + 175ppm	Minor change to be in accordance with datum line tolerance.
70 Survey plan to show coordinate schedule	Due to changes in Clause 12, surveyor can adopt MGA orientation from established survey marks or approved GNSS. If approved GNSS method, hz Positional Uncertainty (PU) must be $\leq 0.1m$. If stratum survey only (limited in height and/or depth), hz PU $\leq 3m$.	All survey plans adopt MGA and the surveyor has more flexibility as to what survey method is adopted. New PU requirement of marks surveyed accurately. New PU requirement for stratum survey.
72 Surveyor to furnish survey certificate	Expand when a survey certificate is required. New certificate for Clause 9 (not strict accuracy), 10 (remark) & 11 (identification). Delete reference to Deferred Survey Marks.	Ensure reports and survey plans carry an appropriate survey certificate. New survey certificates.
73 New consent certificate	New clause to enable new digital plans to obtain approvals prior to final completion of the survey. Consent certificate may be used prior to all marks being placed. All boundaries must be defined, parcel design layout, easements, etc. must be final. Only minor amendments allowed. All survey marks must be placed before final survey certificate.	Enable more efficient workflow and shorten times for approvals in the development process.
74 Standards for public surveys under section 4 or 5 of the Act	Clarify outcomes of the Act are also provided by surveys for public authorities. Verified measuring equipment to be used. GNSS & remote surveying methods for public authorities are also validated.	Ensure traceability of measurements and all surveys are using the same datum.
75 Constitution of Board	Update the name “Institution of Surveyors NSW Ltd”, not incorporated. Add the “Association of Consulting Surveyors NSW (ACS NSW)” as one of the professional associations under section 27(2)(c) of the Act.	Allow greater input to the Board from more industry groups.
77 Formal Board determination	Delete reference to “recognised professional training agreement”.	No candidates are using this pathway to become registered.

Current Regulation	Proposed Regulation	Reason for Change
Schedule 1 Bench marks	Re-order into preference of use. Bench mark token has full description. All bolts, nails or spikes combined.	Minor reforms.
Schedule 2 Boundary marks	Line pegs 3' x 3'. All bolts, nails or spikes combined. Boundary mark token has full description.	Minor reforms.
Schedule 3 Reference marks	Reference mark token has full description. Nail & wing added.	Minor reforms.
Schedule 4 Permanent survey marks	Small enhancements for most diagrams. Recess SSM to stop “topping”. Ensure gap between cover box & pin/picket to stop “topping”.	Minor reforms.
Schedule 6 Form 1: Survey certificate	Amendment to survey certificate. Only one date of completion.	Minor reforms.
Schedule 6 Form 2: Survey certificate not requiring strict accuracy	Amendment to survey certificate. Only one date of completion.	Minor reforms.
Schedule 6 Form 5: Land survey & ident certificate	Amendment to survey certificate. Only one date of completion.	Minor reforms.
Schedule 6 Form 6: Consent certificate	New form. Enable approvals and consents to be obtained simultaneously before final plan of survey in finalised.	Enable approvals and consents to be obtained simultaneously in a new digital lodgement/workflow before the final plan of survey in finalised.

4 CONCLUDING REMARKS

The current Surveying and Spatial Information 2017 is due to cease operation on 31 August 2022 and a new Regulation is proposed to commence on 1 September 2022. This paper has outlined some of the changes that are being considered at this time. Considerable liaison, presentations and communication with industry groups, associations, government agencies and utilities will continue to obtain comments and ideas for the new Regulation. In addition, it is planned to ensure that new documentation, e.g. updated Surveyor-General’s Directions and updated Registrar General’s Guidelines, new plan forms and certificates, along with updated communication and education programs are provided to inform surveyors of the proposed changes before and after the new Regulation commences.

REFERENCES

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