



**National Competency Standard for
Registered Licensed Cadastral Land Surveyors
affiliated with the Council of Reciprocating Surveyors
Boards of Australia and New Zealand**

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Terms and definitions

For the purpose of this Standard, the following terms and definitions shall apply.

Term/Acronym	Definition
Accuracy	The level of closeness of an estimated value – measured or computed – of a quantity to its true or accepted value
BAOQ	Bureau for the Assessment of Overseas Qualifications. The Bureau evaluates an overseas candidate's qualification when the candidate is seeking to apply for registration as a LCS in Australia and New Zealand
Code of ethics	Codes for Ethics, Conduct or Practice published in accordance with CRSBANZ Policy Statement (see Appendix)
Reference Frame	An official, fully defined, spatial reference system or surface to which measurements and/or coordinates upon the Earth may be defined and related
CRSBANZ	Council of Reciprocating Surveyors Boards of Australia and New Zealand
GIS	Geographic (or Geospatial) Information Systems
GNSS	A Global Navigation Satellite System(s) – a generic term for satellite-based positioning systems
Government Land Registry	The land registry in each jurisdiction that maintains the Torrens Register of interests in land titles for that jurisdiction and receives the instruments necessary to register changes in interests as a result of conveyancing transactions
GS	Graduate Surveyor Generically abbreviate title of a graduate with a university qualification accredited by CRSBANZ or qualification assessed as being equivalent by BAOQ
LCS	Licensed Cadastral Surveyor Generically abbreviate title of a surveyor registered or licensed under relevant legislation to practice as a cadastral (land boundary) surveyor
Land Registrar	Generic term for the officer appointed in each jurisdiction with responsibility for land registries under Torrens Title System and/or general law land acts
Learning outcome	Taxonomy of what graduates are expected to know, understand and to be able to do as a result of learning
Measurement	An observed value, the outcome of a repeated set of observations, or the result of processing such observations
NCS	This document, known as the National Competency Standard for Registered Licensed Cadastral Land Surveyors affiliated with the CRSBANZ
Precision	A term used to quantify the variability of a measurement or computed value. If several measurements are taken repeatedly to represent the same quantity, precision is used to refer to the degree of closeness or conformity of those measurements to each other
Relevant legislation	Legislation that is enacted and applicable in the individual jurisdiction that is affiliated with the CRSBANZ
Surveyor-General's Rules	Rules, directions, standards, code of practice or guidelines regarding the practice of cadastral surveying published in accordance with relevant legislation

1 About this Standard

1.1 Introduction

The Council of Reciprocating Surveyors Boards of Australia and New Zealand (CRSBANZ) is the body coordinating reciprocal arrangements for registered or Licensed Cadastral Land Surveyors (LCS) between jurisdictions within Australia and New Zealand. One objective of the CRSBANZ is to ensure sufficient and common standards for cadastral surveying practice and registration to enable mutual recognition between the jurisdictions under the Commonwealth *Mutual Recognition Act 1992* and *Trans-Tasman Mutual Recognition Act (1997)*.

One of the primary roles and responsibilities of the nine statutory Surveyors Boards, which are affiliated with the CRSBANZ, is to license or register cadastral surveyors.

The Surveyors Boards are:

- The Surveyors Board of Queensland
- Board of Surveying and Spatial Information New South Wales
- ACT Planning and Land Authority
- The Surveyors Registration Board of Victoria
- Tasmanian Land Surveyors Accreditation Board
- The Surveyors Board of South Australia
- The Land Surveyors Licensing Board of Western Australia
- The Surveyors Board of the Northern Territory
- Cadastral Surveyors Licensing Board of New Zealand

Given the crucial role that LCS have in determining property boundaries and spatial interests in land, Governments regulate the profession as a risk management strategy to protect the integrity of the cadastre.

Each CRSBANZ affiliated Board licenses cadastral surveyors to accurately determine and define land-related boundaries, together with associated spatial interests and provide authoritative advice to the community on matters related to land and development.

LCS registered by each Board are legally entitled to perform certified cadastral surveying activities under relevant legislation listed below.

- *Australian Capital Territory - Surveyors Act 2007*
- *New South Wales - Surveying and Spatial Information Act 2002*
- *New Zealand - Cadastral Survey Act 2002*
- *Northern Territory of Australia - Licensed Surveyors Act 1983*
- *Queensland - Surveyors Act 2003*
- *South Australia - Survey Act 1992*
- *Tasmania - Surveyors Act 2002*
- *Victoria - Surveying Act 2004*
- *Western Australia - Licensed Surveyors Act 1909*

The relevant legislation establishes Surveyors Boards to manage the competence of LCS by:

- establishing and monitoring educational and practical training standards for Graduate Surveyor (GS) seeking registration

- linking on-going professional development to annual registration, and
- efficiently dealing with complaints into LCS professional conduct and imposing restrictions, or removing the LCS registration, if misconduct or malpractice is proven.

1.2 Purpose

The National Competency Standard (NCS) describes the competency that is the skills, attitudes and attributes based on knowledge (gained through education) and experience (gained through post graduate training) that together is considered sufficient to practise as a LCS which allows them to undertake cadastral surveys, pursuant to relevant legislation of jurisdictions affiliated with the CRSBANZ.

The CRSBANZ has established the minimum standard of education as being a surveying related degree of at least four years duration or the equivalent thereof. Overseas survey degree qualifications are assessed by the Bureau of Assessment for Overseas Qualification (BAOQ) as being equivalent to an Australian or New Zealand degree.

The purpose of the NCS is to specify:

1. competencies required of a LCS that forms the basis of the CRSBANZ post graduate training and assessment requirements
2. survey degree learning outcomes that forms the basis of
 - CRSBANZ accreditation of survey degree programs
 - BAOQ assessment of overseas survey degree qualifications.

1.2.1 Competency Profiles

The NCS maps the expectations of professional competency at three levels within the profession:

Graduate Surveyor (GS):

The level of competency required of a graduate with a university qualification accredited by the CRSBANZ or assessed as being equivalent by BAOQ.

Candidate for registration as a LCS:

The level of competency required at the point of registration as a LCS, following a period of post graduate training.

Experienced LCS:

At this level an experienced LCS will have demonstrated high levels of technical competence, leadership qualities and effective management skills.

Professional competencies include requirement to comply with relevant legislation regulatory obligations including code of ethics and continuing professional development.

1.3 Units of Competency

The NCS includes six Units of competency which represent key areas of surveying practice.

Unit 1 specifies learning outcomes required of a GS at completion of a CRSBANZ accredited survey degree program.

Units 2 to 6 specifies the minimum LCS competencies required to conduct a cadastral survey and comply with relevant legislative rules and responsibilities in each jurisdiction affiliated with the CRSBANZ and are the competencies of a candidate for registration as a LCS assessed by individual CRSBANZ jurisdictions pursuant to relevant legislation.

Performance Criteria

Performance criteria describe discrete aspects of surveying practice that would be regarded as evidence of competent professional performance in the workplace. The NCS criteria are organised under units of competency and are not intended to represent a sequence or discrete stages in cadastral surveying practice.

Graduate Attributes

The graduate attributes specified in Unit 1 describe the generic skills, qualities, behaviours, attitudes and predispositions that graduates should achieve at completion of tertiary study. It is expected that these attributes would be further developed and extended in post graduate training and professional practice.

Graduate Surveyor Learning Outcomes

At completion of a CRSBANZ accredited survey degree program a GS should:

- achieve the graduate learning outcomes listed in Unit 1
- demonstrate knowledge of the competencies listed in Units 2 to 6
- demonstrate ability to use land surveying equipment and to be able to undertake tasks identified in the NCS under direct supervision by an experienced LCS at graduation.

Post Graduate Training

Surveyors Boards affiliated with the CRSBANZ oversee post graduate training and competency assessment processes that require candidates to demonstrate they have achieved the competencies listed in Units 2 to 6 before candidates are registered as a LCS.

The post graduate training process requires candidates to formally register with CRSBANZ member organisations to recognise their work experience, under the supervision of an experienced LCS.

Continuing Professional Development

To conduct a cadastral survey, a LCS must be competent in the requirements listed in Units 2 to 6 as they relate to the relevant legislation rules and responsibilities in each jurisdiction affiliated with CRSBANZ.

Competencies listed in Unit 6 Professional Practice require LCS to comply with relevant legislation regulatory obligations, including code of ethics, continuing professional

development and be responsible for, work undertaken on a cadastral survey by any other person under their direction.

An experienced LCS taking on the role of a supervising or mentoring surveyor has obligations under relevant legislation, in the preparation and instruction of candidates seeking to become a LCS.

1.3.1 Unit 1 Survey Degree Learning Outcomes

A competent well-rounded LCS requires broad knowledge in surveying and spatial science disciplines and in the applications of surveying in allied professions to support competencies specifically relevant to cadastral surveying.

LCS often play a leading role in integrating the work of the members of multi-disciplinary teams of other professionals that operate in the land development sector, such as town planners, valuers, engineers, mining engineers and others. LCS therefore must have a 'big picture' perspective that enables them to analyse, evaluate and synthesise inputs from a range of disciplines to achieve integrated outcomes.

In consideration of all the surveying and spatial industry's more general needs, the NCS provides an education pathway to registration or certification by professional associations, for graduates who choose to specialise in other disciplines.

A recurring theme in professional associations that provide certification of surveying and spatial science disciplines, is the issue of the protection of the public. While this is dealt with, in part, by the assurances given by professional bodies about the qualifications and competence of their members, the Surveyors Boards affiliated with the CRSBANZ have the sole statutory authority to legally establish surveying competency standards to protect the public interest.

Unit 1 learning outcomes include the following topics:

1. Cadastral surveying and Land Law
2. Geodetic surveying
3. Hydrographic surveying
4. Engineering surveying
5. Topographic surveying
6. High precision Industrial surveying
7. Construction surveying
8. Mining surveying
9. Photogrammetry and Remote Sensing
10. Geographic Information Systems
11. Property Valuation and Town Planning
12. Generic graduate attributes

Unit 1 learning outcomes are based on tertiary level proficiency in the enabling sciences of maths, computer science and physics that underpin surveying.

The generic graduate attributes and learning outcomes related to the integrity of the cadastre are considered mandatory in a CRSBANZ accredited survey degree program. The level of detail in remaining topics are at the discretion of tertiary education institutions in delivering survey degree programs.

1.3.2 Unit 2 Survey Measurement

The foundation for competency in survey measurement is a sound knowledge of, and the ability to apply, all the principles of surveying appropriate to cadastral surveying.

This requires:

- a) an ability in mathematics, computing and analysis to identify and solve practical survey problems, apply sufficient independent checks, adjust cadastral survey networks, eliminate material observational errors, and achieve the required measurement accuracies that will support the application of these survey principles and disciplines; and
- b) an understanding of the various survey disciplines for measuring and collecting spatial data, applying the appropriate methods and technology, and understanding the proper, use, care and calibration of survey instruments and the application of appropriate equipment and techniques to different cadastral survey situations

1.3.3 Unit 3 Land Law and Boundary Definition

Land law describes the rights, restrictions and responsibilities or title by which land is held and provides for the creation or transfer of interests in land. Land law also includes administrative systems relating to land held under Australian and New Zealand legislation and the related record systems, and the survey and tenure information that is processed in those systems.

Accurate boundary location and correct definition in all three dimensions at any point in time is fundamental to cadastral surveying. This requires a sound knowledge of, and ability to apply correctly, the hierarchy of evidence applicable to the definition of cadastral boundaries and the ability to resolve ambiguities in that evidence.

1.3.4 Unit 4 Land Information Systems

Competency in land information systems requires understanding the application of land and spatial information technology to cadastral surveying and the subdivision of land. It also requires the ability to use relevant information and to enhance information systems with contemporary datasets.

1.3.5 Unit 5 Statutory Planning and Land Development Engineering Principles

Competency in the statutory planning process as a LCS requires an ability to understand subdivision consents and their implementation. Understanding the processes for implementing subdivision consents also requires knowledge of the relevant planning legislation or regulatory documents, especially those that relate to the overall consenting process requirements of relevant legislation.

Competency in land development engineering principles requires an ability to understand subdivision engineering principles and requirements necessary to comply with regulatory consents for safe, stable and sustainable subdivision. This includes an appreciation of the necessary measures to mitigate potential land instability, flooding, and other detrimental effects of earthworks and land development. Competency in land development engineering principles also requires understanding of all aspects of access, roading, wastewater and stormwater, water reticulation, and other services as they relate to land subdivision to the extent that they are relevant to cadastral surveying.

The relevant legislation that empowers the Surveyors Boards, affiliated with the CRSBANZ, to regulate LCS competency standards are limited to conducting cadastral surveys and do not apply to subdivisional consent or subdivisional engineering design. Specifically, relevant legislation allows the subdivisional consent application and engineering design to have been developed by someone who is not a LCS and therefore the level of competency of Unit 5 is limited to an *understanding of* not an *ability to* complete planning applications and land development engineering design.

1.3.6 Unit 6 Professional Practice

Professionalism involves the capacity to understand and apply the roles and responsibilities of a LCS within surveying, social, cultural, ethical, legal and business contexts. The public confidence in cadastral survey and land tenure systems requires LCS to maintain and act in accordance with high standards of professionalism within their area of expertise or specialisation.

When a LCS determines the location of property boundaries for their clients, they are also effectively determining the boundaries of neighbouring land. For this reason, surveyors are said to be 'agents of the Crown' and have dual obligations both to their clients and the integrity of the cadastre.

Embedded in the professional practice of surveying is the ethical responsibility to acknowledge the Aboriginal, Torres Straight Islanders and Māori Peoples' as Traditional Indigenous Owners/ Occupiers of the lands upon which we work and to pay our respects to their Elders past, present and emerging in the New Zealand context respect the principles of Te Tiriti o Waitangi (the Treaty of Waitangi).

2 Competencies

2.1 Unit 1 Survey Degree Learning Outcomes

The competencies, of a GS at completion of a CRSBANZ accredited survey degree program include the following:

2.1.1 Cadastral Surveying and Land Law

The graduate learning outcomes are an ability to:

- explain different land tenure systems in the context of land policy, legal pluralism, land information systems and boundary delineation
- describe the difference between substantive aspects of land law and tenure and the legal procedures by which rights, restrictions and responsibilities are understood and administered in terms of type, spatial extent and perpetuation over time
- describe relevant law cases, statutes and articles on land tenure, boundary retracement, property rights, resource management, cadastral survey practice and land tenure administration
- identify, formulate, analyse, and provide alternative solutions to boundary problems, based on hierarchy of evidence, to reach properly substantiated conclusions about the most probable positions of boundary corners
- conduct field survey operations and prepare and present land survey records including field notes, reports, calculations, diagrams and plans
- explain and apply relevant law cases and articles on indefeasibility of title and on water boundaries
- describe relevant law cases, international treaties, policy documents and proclamations relating to Indigenous tenure, rights and title.

2.1.2 Geodetic Surveying

The graduate learning outcomes are an ability to:

- interpret, process and adjust conventional field measurements and positioning satellite observations for known sources of error
- analyse and critically evaluate survey control network adjustment
- explain the basic elements, concepts and configuration of positioning satellite systems
- compare different GNSS positioning modes including Precise Point Positioning (PPP) and choose the appropriate mode for various survey applications
- explain the various GNSS Augmentation Systems
- undertake geodetic surveys, of limited extent, based on fundamental knowledge of ellipsoidal geometry, reference systems and map projection systems
- undertake coordinate transformations and relate measurements to the appropriate geodetic reference systems
- critically evaluate alternative height systems and vertical reference frames
- explain how fundamentals of the Earth's gravity field apply to surveying techniques and computations.

2.1.3 Hydrographic Surveying

The graduate learning outcomes are an ability to:

- describe principles and processes of SONAR Technology, LiDAR and remote sensing systems and their applications to hydrographic surveying
- describe hydro-acoustics concepts, tidal fundamentals, sound wave propagation, inertial navigation systems, physical properties of water and its impact on the speed of sound.

2.1.4 Engineering Surveying

The graduate learning outcomes are an ability to:

- undertake plane surveying measurements and using them for coordinate determination in 3 dimensions
- explain the planning, execution and management of engineering surveys
- analyse and conduct network design and pre-analysis for GNSS and traditional surveys by following appropriate specifications and guidelines
- design the appropriate combination of equipment and procedures for data collection that ensures the results meet the quality requirements of relative positioning for a variety of engineering projects
- explain survey computation and data management requirements for a variety of engineering setout surveys including machine guidance systems.
- Interpret construction design in both hard and soft copy form and undertake setout survey including appropriate quality assurance processes.
- apply the principles of subdivision design including:
 - prepare optimal road and lot layout design based on detailed site analysis
 - prepare roadworks, earthworks, drainage, service infrastructure and landscape concept designs
 - undertake a detailed cost analysis and report on the economic feasibility
 - prepare a land development application in accordance with relevant legislation
- describe basic civil engineering principles of hydrologic, hydraulic, structural and geotechnical engineering
- describe basic principles of road and railway design

2.1.5 Topographic Surveying

The graduate learning outcomes are an ability to:

- define and explain terrain/surface parameters, Digital Terrain Models, visualization using CAD software, volume calculation, generalization, accuracy and quality control
- collect topographic data at appropriate accuracy and density for contour and volume determination purposes
- calculate and report volumes to an accuracy justified by the measurement method.

2.1.6 High Precision Industrial Surveying

The graduate learning outcomes are an ability to:

- explain the appropriate field procedures, equipment, and processing techniques for specific high-precision surveying tasks
- differentiate between the survey types that result in absolute position information and the one that require repeated relative positioning for local deformation monitoring
- discuss the implication of repeated measurements for long-term monitoring with respect to systematic and random influences on the measurement systems.

2.1.7 Construction Surveying

The graduate learning outcomes are an ability to:

- explain the planning, execution and management of building construction surveys
- explain the types of building set-out requirements ranging from domestic buildings to strata units to high-rise
- explain the roles and interactions with other construction professionals, technicians and trades persons.

2.1.8 Mining Surveying

The graduate learning outcomes are an ability to:

- explain the survey requirements of mine development in open cut and underground operations for coal and metalliferous mines including exploration, control network and transfer, and site infrastructure establishment
- explain the survey requirement of mine production including drill and blast, guidance and monitoring, and volume determinations
- describe general components of mine safety systems including legislation and risk management processes.

2.1.9 Photogrammetry and Remote Sensing

The graduate learning outcomes are an ability to:

- evaluate sources of error and precision of data in processing data
- Acquire and manage 3D point cloud data
- explain photogrammetry concepts, limitations and benefits including basic image processing, enhancement and data manipulation techniques
- explain the theory and use of ground based, airborne and spaceborne LiDAR systems and their capabilities for survey applications
- describe benefits and limitations of remotely sensed data
- explain the elements and operational principles of various static and mobile data acquisition platforms including unmanned aerial vehicles.

2.1.10 Geographic Information Systems

The graduate learning outcomes are an ability to:

- apply cartographic principles to generate maps, plans, images and models to explain, interpret, and assess spatial information
- employ GIS analytical techniques including basic geospatial programming to model and visualise spatial data
- describe concepts of spatial databases and database models
- describe fundamentals of GIS and Web Mapping Services, data layers, base maps, metadata and role of standardized data in spatial information system development
- explain the principles for Spatially Enabled Digital Twins and 3D Cadastre
- explain concept of Building Information Modelling and integration with GIS
- describe automated workflows through a project / survey plan lifecycle including pre-processing, quality assurance, converting and formatting for use with different software packages.

2.1.11 Property Valuation and Town Planning

The graduate learning outcomes are an ability to:

- describe land and property valuation methods for a range of property types and purposes in accordance with relevant statutory requirements.
- identify basic land development administrative procedures and processes involved in implementing sustainable land development for various uses, and their economic, social, urban design and environmental impact

2.1.12 Generic Graduate Attributes

1. Investigation and critical thinking
 - Conduct investigations and critical analysis of complex problems by methods that include document search, analysis and interpretation of data, reviewing and comparing different perspectives of a problem context, and synthesis of information in order to reach valid or defensible conclusions.
2. Problem solving, creative thinking and design
 - Identify, formulate, analyse, and solve complex survey related problems to reach substantiated conclusions
 - Design a process to solve a problem, achieve a design objective or improve a situation.
3. Communication skills
 - Demonstrate ability to communicate complex survey concepts using a range of media options
 - Comprehend and write effective, reports and presentations.
4. Individual leadership and teamwork skills
 - Demonstrate ability to work effectively as a member and leader in teams
 - Explain collaboration through diversity and inclusion
5. Project management skills
 - Apply project management principles and practice including project design, scheduling, project, risk, and change management into the practice of surveying.
6. Professionalism, ethics and equity
 - Apply professional ethics, accountability, and equity in particular contexts
 - Identify roles and responsibilities of professional surveyor in society, especially the primary role of protection of the public and the public interest.
7. Awareness of the impact of surveying on society and on the environment
 - Analyse social, cultural and environmental aspects of surveying
 - Explain concepts of sustainable design and development.
8. Commitment to lifelong learning
 - Identify and address individual educational needs to maintain competence and contribute to the advancement of knowledge.
9. Digital technology agility
 - Explain application of fourth industrial revolution digital technologies in surveying such as the Internet of Things, robotics, virtual reality and artificial intelligence
 - Explain digital transformation in surveying profession.

2.2 Unit 2 Survey Measurement

The competencies required of a LCS are:

an understanding of—

- the principles of cadastral surveying, geodetic surveying, and topographical surveying
- the functions and limitations of different equipment used for cadastral surveying and the necessity for regular calibration

an ability to—

- apply suitable measuring methods and techniques
- interpret historical survey data
- eliminate material measurement errors
- reduce and adjust measurements
- present spatial data correctly and unambiguously
- apply statistical and mathematical analysis and adjustments to:
 - horizontal and vertical survey measurements
 - cadastral and geodetic control networks
 - map projections
 - vertical reference frames
- undertake coordinate transformations and relate measurements to the appropriate geodetic reference frames
- interpret and determine topographic and hydrographic features relevant to the definition or location of boundaries
- record and document measurements and other survey observations accurately and unambiguously
- apply an appropriate quality assurance process when gathering and processing survey measurements
- use survey equipment correctly to achieve the level of accuracy required for the purpose of the survey.

2.3 Unit 3 Land Law and Boundary Definition

The competencies required of a LCS are:

an understanding of—

- land tenure and the operation of the different land tenure systems in Australia and New Zealand including:
 - Crown land
 - General Law (Old or Deeds System) Title
 - Torrens (Real Property) Title
 - Strata and Community Title
 - Aboriginal Title or Māori Title
 - Possessory Title
 - Pastoral and mineral leases
- central and local government regulatory processes that affect land tenure
- the Crown's responsibility for the operation of tenure systems
- the origins of the control of land subdivision
- the implications of relevant legislation to land use, subdivision, and cadastral surveying

- the principles and administrative practices of land registration
- historical and current processes for the disposition of land from the Crown
- historical land survey requirements and practices
- the Land Registrar's role and responsibilities so far as they interact with cadastral surveying
- Common Law as it affects land tenure
- bringing General Law land under Torrens Title
- the information required, and the processes involved, in claiming rights to land
- Strata Title / Unit / Community Title developments or schemes in accordance with relevant legislation
- the basic principles of engineering and building design and construction as far as they relate to the definition of cadastral boundaries and rights associated with buildings, services, and structures

an ability to—

- apply the different types of surveys and their purposes in relation to land tenure and the subdivision of land
- apply the concepts of indefeasibility of title and real property rights, and legislation affecting interests and rights in land
- understand the type of land tenure and associated interests, rights, restrictions, and responsibilities
- prepare plans to meet the standards of relevant legislation suitable for lodgement in Government Land Registries
- comply with the prescribed practices to define new boundaries
- correctly resolve anomalies and conflicts in the cadastre
- interpret and add information to cadastral records correctly
- interpret and apply all Acts, legislative instruments, rules, and case law relating to cadastral boundaries
- interpret and apply Court orders relating to the definition of cadastral boundaries, interests, and rights
- comply with the Surveyor-General's Rules and the procedures and directives of the Land Registrar
- re-establish real property rights, restrictions and responsibilities on Crown, private and Native Title or Māori land, by the application of survey practices and legal principles to the assessment of all relevant intrinsic and extrinsic evidence
- determine the position of new boundaries, including natural (water or irregular) and permanent structure boundaries, with respect to existing boundaries, lines of occupation, interests, and property rights
- determine the position of height limited boundaries, interests, and rights with reference to a vertical reference frame
- describe and determine boundaries and interests of mineral rights
- balance the interests of current, future, and neighbouring affected parties in relation to boundary definition when defining and describing interests in land
- interrogate and interpret survey, title and land information records and databases
- interpret cadastral survey datasets, field notes, reports and other supporting documentation from the cadastral record
- unambiguously present cadastral survey datasets and reports that are appropriate for their intended purpose
- determine the position of tidal boundaries – including the application of the doctrines of

accretion, reliction, avulsion and erosion, natural features sourced by spatial information or remote sensing methods

- determine the position of natural boundaries – banks, ad medium filum aqua or viae, natural features sourced by spatial information and remote sensing methods.

2.4 Unit 4 Land Information Systems

The competencies required of a LCS are:

an understanding of—

- survey information, survey data sources and systems, and their analysis and interrogation, relevant to cadastral surveying and subdivision of land
- the basic principles, concepts, and methods, for using and presenting digital spatial and attribute data
- the basic principles of spatial information systems management and operations, their development process, and the application of cadastral information to these systems

an ability to—

- access, retrieve, and interpret information from data sources
- merge and transfer digital spatial and attribute data into and between other formats or systems
- determine the inherent limitations of different sources of data and interpret them correctly
- recognise the need for certified data to be reliable and meet accuracy standards.

2.5 Unit 5 Statutory Planning and Land Development Engineering Principles

The competencies required of a LCS are:

an understanding of—

- relevant legislation that controls the subdivision of land and buildings
- the relevant national policy statements and standards, district and regional plans and other statutory and regulatory documents that affect the subdivision of land and buildings
- the influence of other legal interests in land that may affect the completion of the subdivision process and the issue of records of title
- the basic principles of soil properties, land stability, inundation and other natural hazards or environmental effects, as they relate to the subdivision of land and buildings
- the basic principles of earthworks, access, roads, wastewater and stormwater drainage, water supply systems, and the provision of utility services as they relate to the subdivision of land and buildings
- the types of regulatory documents that control the provision of access and services to a subdivision

an ability to—

- interpret rules in regulatory planning documents as they relate to the subdivision of land

and buildings

- interpret all types of planning consents that require the definition of spatial rights to give effect to them
- interpret the conditions of a subdivision consent and understand the processes required to satisfy them
- interpret an engineering design and constructed works to the extent necessary to identify where a design or constructed work may be incompatible with the topography, subdivision consent, existing rights and interests, or existing cadastral boundaries
- correctly define the boundaries of all titles, easements and other rights or restrictions to ensure the proper extent of ownership and protection of rights associated with the constructed works.

2.6 Unit 6 Professional Practice

The competencies required of a LCS are:

an ability to—

- act professionally and honestly at all times to maintain public confidence in the cadastral surveying and land tenure systems
- develop, maintain, and apply systems of professional practice management and effective quality assurance to all aspects of a cadastral survey to ensure compliance with the Surveyor-General's Rules or equivalent and the procedures and directives of the Land Registrar
- be responsible for work undertaken on a cadastral survey
- develop and apply systems to ensure ongoing professional development in relation to cadastral surveying
- advise clients on legal requirements relating to land development and land rights, land tenure and rights of entry
- apply project management principles together with quality assurance principles to ensure projects are correctly implemented
- write clear, logical, and unambiguous documents and reports to a professional standard that can be easily understood by the recipient
- communicate effectively, orally and in writing at a professional level using a range of media options
- interpret briefs and instructions and issue clear, accurate instructions and meaningful advice
- prepare and interpret professional surveying reports, specifications and standards, submissions and quotations
- demonstrate a sound knowledge and understanding of the code of ethics
- conduct business and professional activities in accordance with the code of ethics
- apply and promote a high code of personal conduct
- recognise and understand contractual risks and liabilities
- practise and enforce correct principles of work health and safety
- understand the likely safety and environmental impacts of work undertaken
- work within the limits of personal skills and expertise and seek professional advice and support when required.

3 Appendix

3.1 CRSBANZ Policy Statement - Code of Ethics



COUNCIL OF RECIPROCATING SURVEYORS BOARDS OF AUSTRALIA AND NEW ZEALAND

1 September 2021

POLICY STATEMENT – CODES OF ETHICS, CONDUCT & PRACTICES

The Council for Reciprocating Surveyors Boards of Australia and New Zealand (CRSBANZ) advocate that ethics, conduct and practice influence the decision making process at our workplace, judgement in the practice of surveying, and the execution of responsibilities by a survey professional.

CRSBANZ encourage participating Boards and their professional surveyors to acknowledge that their ethical or moral responsibilities extend to the community, to their clients and employers, to their peers and to their employees.

CRSBANZ recognise the need for shared values or principles such as integrity, independence, care and competence, and a sense of duty as fundamental elements to the growth and development of our profession.

CRSBANZ recognise the importance of codes for Ethics, Conduct or Practice for professional surveyors being founded and created on such values.

Accordingly, CRSBANZ recommends that participating Boards utilise appropriate reference material as a basis for policy statement or code development for Ethics, Conduct or Practice.

CRSBANZ recommends all professional surveyors conform to relevant codes of ethics, conduct or practices.