



**Board of
Surveying and
Spatial Information**

Registration Examinations: Guidelines for Land Surveying Assessments

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Board of Surveying and Spatial Information

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Approval

Name	Role	Section the be approved
Michael Spiteri	Registrar, BOSSI	Whole document
Michael Spiteri	Registrar, BOSSI	Amendments to cadastral assessments
Michael Spiteri	Registrar, BOSSI	
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1. Introduction

The Board of Surveying and Spatial Information (the Board) has issued a Determination on Examinations that states requirements in relation to:

- Enrolment as a candidate
- Practical experience
- Application to sit for examination
- Land Surveying examination and projects
- Conduct of examination
- Certificate of competency

To successfully pass the examinations and projects, candidates are required to be familiar with the provisions and requirements of the relevant acts and regulations relating to surveying, subdivision, planning, engineering design and the sale and transfer of freehold and Crown land parcels. In addition, knowledge of Surveyor General's Directions and the Registrar General's Guidelines provide important reference information for candidates.

The practical projects should demonstrate that many of the competencies listed in these guidelines have been attained. Professional standards are to be demonstrated in all aspects of submitted practical projects.

Projects are to be presented to the Board at the viva voce examinations. Financial candidates will be advised by the Board of upcoming examinations and will be invited to make application to attend. Financial candidates will be provided with an application form and advice of the fees for attending an examination.

Payment of fees are to be made via the BOSSI website www.bossi.nsw.gov.au

Application forms are to be sent to:

The Registrar
Board of Surveying and Spatial Information
PO Box 143
Bathurst NSW 2795
T: 02 6332 8238
E: bossi@finance.nsw.gov.au

1.1. Project Certification

Each project must have a Project Certification form attached. The Project Certification form, complete with all the required details, is to be signed by the candidate and counter-signed by the supervising surveyor after checking and discussing the work with the candidate.

The counter-signature certifies that the supervising surveyor has ensured:

- appropriate supervision of the project has been undertaken
- the project is prepared and presented in a professional manner
- the candidate has satisfied the requirements of the project
- the project is entirely the candidate's own work.

Project Certification forms can be downloaded from the Board's website www.bossi.nsw.gov.au.

The Board prefers candidates to draft their own plans. However, whilst drafting is not an examinable competency, the candidate takes full responsibility for the content of the plan and must ensure that it is in a form suitable for lodgement at NSW Land Registry Services (NSW LRS) or the relevant authority in the case of town planning or engineering projects.

1.2. Examination

The Board's Land Surveying examinations include the topics of Town Planning, Engineering, Urban Cadastral, Rural Cadastral, and Strata and Community Titles as detailed in this document. Examinations are typically held in March and October each year.

Candidates will be required to present their projects in front of two or three assessors. Candidates will present, in addition to their projects, a completed Project Certification form, field notes, search, calculation sheets and any other documentation used in the preparation of their project.

The candidate will then be asked to give a brief description of their project and how they prepared their project. More detailed questions will be then asked of the project or on hypothetical examples to ensure the candidate has demonstrated sufficient competence for that particular examination topic.

1.3. Assessment

Competence is judged against the competencies detailed in these guidelines for each particular examination. Based on the project and examination, the candidate will be allocated a grading of

- Competent
- Not yet Competent
- Conditional

1.4. Conditional result

A conditional result is given at the discretion of the assessors and only when the candidate:

- needs to rectify a minor error or address a minor omission in their project, or
- needs to demonstrate a more detailed understanding of a particular aspect of the topic.

Candidates who receive a conditional result will be so advised at the end of the examination. The Registrar will subsequently write, setting out the items that will need to be satisfactorily addressed before they will be passed as competent. The corrected project, or the information requested by the assessors, must be submitted to the Registrar by the due date specified, otherwise grading for that particular examination will result in a 'Not yet Competent'. Unless exceptional circumstances can be demonstrated, candidates will be afforded only one opportunity to address a conditional result in an examination.

Failure to satisfy the requirements of a conditional result will result in a 'Not yet Competent' grade and the candidate will have to repeat the examination at a future set of the Board's examinations.

2. Examinations

2.1. Requirements

The examination required by the Board, takes the form of an interview (see 2.2).

A person is not eligible to be examined unless they are a financial candidate and have undertaken the required practical experience as detailed in the Board Examination Determination.

Financial candidates will be advised by the Board of upcoming examinations and will be invited to make application to attend. As part of the invitation, financial candidates will be provided with an application form and advised of the fees payable for attending an examination. Application forms and fees are to be sent to the Registrar.

Candidates presenting themselves at the examinations are expected to dress professionally. As a minimum requirement, this means a dress shirt and tie for male candidates and business attire for female candidates. Candidates who, in the opinion of the Registrar or the examiners, do not dress appropriately will not be permitted to sit the examination as they have not met the requirements for examination.

2.2. General nature of the interview

The examination in the face-to-face interview with the Board's assessors is based upon the competencies listed in these guidelines. The interview will include an examination of the candidate's project. A project may not cover all of the Board's required competencies and candidates should expect to be asked questions not related to their project.

Should the Board, as a result of the interview, consider that a candidate does not have the appropriate level of experience and/or professional attitude to satisfy the criteria to be awarded a competent grade in that examination, the Board will ask the candidate to retake the entire examination at a future set of examinations. Candidates will be advised in which criteria they are

lacking and on the second attempt will be specifically examined in these criteria, in addition to the other listed competencies for the project.

2.3. Expectations of the Board

The interview enables the candidate to demonstrate a mature and professional attitude to questions and comments by the Board's assessors. Matters relevant to the interview are the candidate's understanding, responsibilities and obligations in respect of:

- the cadastre, client and community
- the Board of Surveying and Spatial Information (BOSSI)
- BOSSI's Determination on Supervision
- BOSSI's Guide for Professional Conduct
- Knowledge of BOSSI's policies and procedures
- employer and employee responsibilities
- candidate surveyors
- fellow registered surveyors
- his/her contribution to the surveying profession and /or membership of professional bodies
- the presentation of surveys and related documentation
- Continuing Professional Development (CPD)
- his/her knowledge of new technology and instruments etc.
- legislation - current and proposed
- technical and professional journals
- confidential information
- tendering of legal evidence - professional responsibility, potential liability
- the planning permit and certification processes for subdivision
- professional practice.

Candidates should also be aware that their knowledge may be tested by appropriate hypothetical scenarios that a registered surveyor would be expected to manage.

3. Projects

Candidates are required to submit and present the following projects:

- Town Planning
- Engineering
- Urban Cadastral
- Rural Cadastral
- Strata and Community Titles

Candidates must ensure that the project presented to the Board meets the guidelines set for that project before attempting the examination. If a candidate is unsure about their project they should seek advice from their supervising surveyor. The Board can provide advice on the suitability of projects by contacting the Registrar. Candidates must have any project that does not strictly meet the guidelines contained in this document, pre-approved by the Board.

As part of the examinations, candidates will need to demonstrate their knowledge in all competencies for that particular examination. It is therefore recommended that candidates undertake projects that include elements that demonstrate compliance with as many competencies as possible. This may involve submitting a portfolio of surveys instead of one single survey.

The project must be based on field work which is not more than two years old (unless exceptional circumstances can be demonstrated and prior consent is obtained from the Board).

All plans and reports should be prepared in a professional manner and comply with current legislation, standards and the requirements of authorities such as NSW LRS and councils.

Unless specified otherwise below, one electronic copy of the project documentation must be submitted to the examiners for the Board's use. This will include reports and plans. Candidates should note that the Board may use submitted projects for educational and instructional purposes with future candidates. Project Certification forms should also be submitted separately to the examiners.

Electronic submissions are to meet the following requirements:

- All individual files are merged into one file and in similar layout as per the hard copy which was submitted for the assessment.
- This file is to be in PDF format.
- Submission is to be via USB memory stick. Please Note: that the USB submitted will be retained by BOSSI and should therefore only contain files relevant to your project.
- The file is to be named using the

convention:

ID_Name_Assessment_Month_Year.pdf

Eg: 243_John Smith_Town Planning_March_2017.pdf

The projects are used by the Board to assess the competency of a candidate. Therefore, it is critical that the projects are subjected to a high level of scrutiny. Projects will be thoroughly examined in all aspects, from field work and computations through to the drafting of the final documents.

3.1. Town Planning project

The assessment process involves the presentation of a Town Planning project at the viva voce exam. The project allows the candidate to demonstrate competence in town planning, land development, subdivision design and the relevant legislation that is encountered when undertaking these activities. Candidates must also demonstrate that the proposal complies with the relevant planning controls and appropriately addresses the natural and man-made attributes of the site and reflects current commercial and social expectations for such a proposal. In addition, the Town Planning project will be used to substantively assess the candidate's competence in spatial information.

Spatial information

The Town Planning examination includes an assessment of a candidate's knowledge of spatial information (SI). The following spatial information competencies have been developed to ensure that surveying candidates have a basic understanding of some of the principals and issues in SI.

SI competency 1: Demonstrated ability to identify and source spatial information from point of truth sources for inclusion in survey information output

It is expected that a candidate would have a good understanding of:

- whether specific data is needed for the project and the most appropriate organisation from which it might be sourced from, with a particular focus on obtaining data from relevant local government, state agencies, etc. with an understanding of issues relating to 'free' data versus data which may be 'commercial'
- how useful metadata can be to identify why a particular spatial information dataset is the most appropriate for their project, as well as to have an understanding of the various metadata standards in use by the SI industry
- the 'point-of-truth' of the data source, particularly in cases where the same dataset may be available from multiple sources at varying levels of quality, completeness, etc.
- how spatial information can be collected and provided by professionals who may be from non-surveying disciplines
- the difference between primary and secondary data sources and how data may have been manipulated by intermediate organisations before it was used by the candidate
- issues that a user should be aware of when requesting spatial information from an organisation, particularly relating to digital data formats and
- issues relating to licensing and copyright for spatial information sourced from another organisation and how that may restrict or enhance the usage of the data.

SI competency 2: Demonstrated understanding of the 'fitness-for-purpose' of datasets incorporated into submitted projects

It is expected that a candidate would be able to demonstrate their evaluation of whether a spatial dataset is fit for the purpose to which it is intended to be used on their project. This should include providing documentation of relevant metadata, licencing and terms-of-use conditions, as well as:

- where the data was created
- whether there are any copyright or licensing issues relating to the use of this data
- how the data was created and how positionally accurate the data may be
- how the data relates to the project objectives regarding such issues as scale, data model, format, projection, etc.
- the currency of the data and whether it is still maintained and
- the geographic extent of the data as it may relate to the project.

SI competency 3: Demonstrated understanding of the spatial data flow through a project / survey plan lifecycle

This competency relates to the acquisition of the data, the synthesis and modelling of that data into your project, the analysis and management of that data in relation with other project data and the publication of that data to the intended user. This also includes the preservation of topology and attribution during these processes as well as an understanding of the error propagation from the previous translation and transformation activities.

The candidate should have a good understanding of:

- the adequacy of the data and how it was sourced for the project
- the agencies and organisations that were contacted when the data was acquired and whether there were any limitations advised with the use of the data
- the use of the various data sources in the project and whether they are all spatial (and overlaid graphically) or whether data is being interpreted from written reports which describe location based objects and data
- the interpretation of any subjective data, such as aboriginal cultural heritage items, and the impact of this interpretation on the project
- the use of data which may be derived from analytical models, such as hydraulic modelling of flood extents, and the issues which need to be investigated to determine if the outcomes are realistic for your project
- whether the data has been ground-truthed and if so, by whom and which method
- the methodology required to combine data sets from various sources at various scales, currency, accuracy, etc. and the impact that this may have on your project and
- acknowledgement of the data sets used, their source and limitations and the impact of the final presentation in outcomes such as the Statement of Environmental Effects report.

SI competency 4: Ability to interpret controlled vocabularies across spatial information systems relevant to survey information output

This competency particularly relates to cross-discipline issues which may occur with professionals in industries such as environment, heritage, planning, transportation, emergency management, etc.

The candidate should have a good understanding of:

- some of the issues relating to the effective communication of SI issues with clients and other professionals who are not surveyors, particularly to ensure that there is a commonality of understanding on issues relating to the data and use of that data
- the effective interpretation of metadata from spatial information layers prepared by other professionals and the relevance of an included spatial dataset in a project, with reference to the source data's metadata record
- the operation of the various ePlan, EPlan and ePlanning frameworks in operations in New South Wales (NSW) such that a candidate can understand the difference between a plan, a landXML file and a spatial information dataset and
- the reason why key spatial information layers, themes, objects, symbology were included or excluded in the project using appropriate terminology.

SI competency 5: Demonstrated understanding of the NSW Spatial Information Management Framework as would be relevant to a NSW Registered Surveyor

The NSW Information Management Framework is based on national initiatives such as those undertaken by ANZLIC (Australian and New Zealand Land Information Council) and ICSM (Intergovernmental Committee on Surveying and Mapping) whose initiatives include the Australian Standard for Spatial Data Accuracy, Standards and Practices for Control Surveys, Cadastre 2034, the GDA94 Technical Manual and other documents.

The candidate should have a good understanding of:

- the current NSW Information Management Framework as it applies to spatial information and may be relevant to NSW land and mining survey practices
- the appropriate principles, policies and guidelines contained within that framework and as may apply to metadata, custodianship, intellectual property, access and licencing, data standards, copyright, governance, etc.
- metadata discovery tools, such as the ANZLIC metadata tool
- understanding of the 10 themes of the foundation spatial data and the relevance of that to survey related projects and activities
- the NSW Spatial Data Directory and how that may be used to source data and
- other online sources of data using custodians licencing and intellectual property terms and conditions.

SI competency 6: Demonstrated understanding of the issues associated with changes to various digital cadastral databases on lodgement of deposited plans (DPs)

There are a number of digital cadastral databases (DCDB's) in use in NSW, some of which are based on survey data while others are based upon varying cadastral data which may have originally been digitised from cadastral maps or acquired by other means.

While many of these DCDB's are used for administrative purposes, over the past several decades a number of DCDB's have been progressively used to manage a range of planning, environmental and asset data for a wide variety of business applications, typically requiring integration of spatial data with data from other systems (e.g. asset data, planning instruments, etc). Often this requires a correlation of the data models and methodologies between the DCDB data environments and those from other related systems.

Nevertheless, the issues associated with the various digital cadastres in NSW are complex and difficult, often associated with substantial business process issues within each host department, utility or council.

It is expected that the candidate will have a working knowledge of how the cadastral data produced from an urban or rural survey may be used and managed in a digital cadastre, particularly when it may be in conflict with other digital cadastral data. This will required that the candidate have a good understanding of:

- some of the processes (and constraints) that could be used to 'blend' different digital cadastres and how they may be managed
- some of the issues associated with the collection and update of an agency's digital cadastre
- the use of metadata to ensure that data integrity is maintained, or at least not degraded
- why the business processes of council's and utilities are important for maintaining their own digital cadastres
- how LandXML ePlan works and how it will impact on and / or improve the quality of various digital cadastral datasets in use in NSW
- ideally the lodgement by the candidate of a DP through the SIX ePlan lodgement portal with attendant documentation
- how ePlan will impact on the management of various digital cadastres and provide a higher level of coordination between different users of the DCDB and
- how different other digital cadastres could affect this project.

Guidelines for the size and scope of suitable projects

The project will involve preparing a proposal for a significantly large development in an urban, rural or industrial area which meets the provisions of the relevant planning instruments and other planning requirements. Ideally the project will be one on which the candidate has had some professional involvement whilst undertaking their practical experience. A project of suitable complexity will generally assist the candidate to demonstrate competence, thus avoiding the need for assessors to also rely on questions of a more general nature.

As a guide the following subdivisions sizes are considered suitable:

- Conventional residential subdivision 20 hectares or 50 lots.
- Rural subdivision 50 hectares or 20 lots.
- Industrial subdivision 20 hectares or 20 lots.

A 'hypothetical' project may be prepared, but candidates must visit the site and document their investigations with photos and notes. Candidates should discuss this project with their supervising surveyor and other professionals and also note these discussions, along with any comments. Candidates should seek relevant data from councils and government agencies for their project.

Project design work

For each type of subdivision, the candidate must:

- undertake and document a site inspection with photos and notes
- obtain relevant planning requirements from the consent authority
- obtain copies of relevant planning instruments
- obtain copies of relevant topographic and planning constraints mapping
- undertake a site analysis
- obtain specialist reports
- undertake road and lot layout design
- complete a planning report
- complete a development application form
- prepare a statement of environmental effects
- undertake an economic analysis.

Competencies

Candidates must demonstrate competence in the following topics, amongst other things:

- legal framework and hierarchy of planning instruments
- development application and approval process
- consent authority standards
- principles of subdivision design
- environmental considerations
- appreciation of site features, opportunities and constraints
- design and document preparation
- cost estimate and economic feasibility
- preparation of a planning report
- working with specialist consultants
- communication with stakeholders and authorities
- development application
- project management
- *Work Health and Safety Act 2011*
- ethics and professional conduct
- spatial information competencies commencing at a date determined by the board as noted above.

Deliverables

For each type of Town Planning Project, the candidate should bring the following documents to the exam:

- two A3 size set of plans (includes site analysis plans, lot layout and road layout plans)
- one copy of the applicable Local Environmental Plan together with one copy of any applicable Development Control Plans
- list of the current State Environmental Planning policies that apply to the development site
- a copy of any other relevant reference documentation, such as external consultant studies undertaken over the site
- evidence of site visit
- two copies of the Planning Report and Statement of Environmental Effects
- two copies of the completed Development Application form
- two copies of the Economic Feasibility
- metadata statements for all sourced information (A typical metadata statement template is included in Appendix A)
- working drawings to demonstrate the process resulting in the adopted lot and road layout
- one electronic copy of the submitted project as per the requirements outlined in Section 3 above

The project should be presented as if it would be lodged at the consent authority for development consent. Plans should be at an appropriate size and scale to be legible.

3.2. Engineering project

The assessment process involves the presentation of an Engineering project at the viva voce exam. The project allows the candidate to demonstrate competence in Engineering design, stormwater drainage design, tender preparation and construction management.

Guidelines for the size and scope of suitable projects

The prepared plans and documentation will normally consist of a road, or a railway or other major structure that includes stormwater design, together with documents for tender and construction. Ideally the project will be one on which the candidate has had some professional involvement whilst undertaking their practical experience. A project of suitable complexity will generally assist the candidate to demonstrate competence, thus avoiding the need for assessors to also rely on questions of a more general nature.

As a guide the following minimum sized engineering projects are considered suitable:

- Residential subdivision of 20 lots and 250 m of road incorporating the design of:
 - a) two roads incorporating six vertical curves
 - b) connection to an existing road
 - c) any battle axe driveways that are part of the project
 - d) one intersection

- e) three kerb returns
- f) hydrology and hydraulics for stormwater drainage of three pipe lines, 10 pits, upstream catchment and downstream discharge minor and major storm events.
- Rural Subdivision of 500 m of new road incorporating the design of:
 - a) connection to existing road
 - b) two horizontal curves with superelevation
 - c) three vertical curves
 - d) design speed compliance
 - e) any battle axe driveways that are part of the project
 - f) hydrology and hydraulics for three stormwater pipe lines and culverts for two catchments for the minor and major storm events.
- Industrial subdivision of 500 m of new road incorporating the design of:
 - a) two roads incorporating six vertical curves
 - b) connection to existing road
 - c) any battle axe driveways that are part of the project
 - d) one intersection
 - e) three kerb returns
 - f) hydrology and hydraulics for stormwater drainage of three pipe lines, 10 pits, upstream catchment and downstream discharge minor and major storm events.
- Railway of 1,000 m incorporating the design of:
 - a) two horizontal curves including transition curve and superelevation
 - b) two vertical curves
 - c) design speed compliance
 - d) track control survey marking plan.

A 'hypothetical' project may be prepared, but candidates must visit the site and document their investigations with photos and notes. Candidates should discuss this project with their supervising surveyor and other professionals and also note these discussions, along with any comments. Candidates should seek relevant data from councils and government agencies for their project.

Project design work

For each type of engineering project, the candidate must:

- undertake and document a site inspection with photos and notes
- obtain relevant design requirements from the consent authority
- obtain copies of relevant design and construction specifications
- obtain specialist reports

- undertake engineering and stormwater design
- prepare a bill of quantities
- obtain applicable construction costs for each item in the bill of quantities and prepare a priced bill of quantities
- prepare a tender document, including invitation to tender, construction specification, general conditions of contract and relevant schedules, annexures and attachments and tender form.

Competencies

Candidates must demonstrate competency in the following topics amongst other things:

- legislative and consent authority requirements
- principles of road/rail/other structure design together with stormwater drainage design
- safe and practical design
- appreciation of site features, opportunities and constraints
- design and document preparation
- construction certificates and compliance certificates
- cost considerations in design
- construction methods
- erosion and sediment control
- geotechnical considerations
- *Work Health and Safety Act 2011*
- communication with stakeholders and authorities
- project management, contracts, tenders and supervision
- ethics and professional conduct
- spatial information competencies 1 and 2 as may be related to Engineering.

Deliverables

For each type of Engineering project, the candidate should bring the following documents to the exam:

- one full size set of plans at scale and one A3 size set of plans including base detail survey plans with levels and contours
- two copies of the Tender Documents that include:
 - Invitation to Tender
 - Bill of Quantities
 - Construction Specification of local council or relevant authority
 - General Conditions of Contract and any Special Conditions of Contract that will apply to the project.

-
- o Tender Form
- two copies of the priced Bill of Quantities for cost estimate purposes
 - one copy of the local council or authority design specification
 - metadata statements for all sourced information (A typical metadata statement template is included in Appendix A)
 - one electronic copy of the submitted project as per the requirements outlined in Section 3 above

The project should be presented as if it would be given to an authority for approval and for a contractor who is tendering on the project. Plans should be at an appropriate size and scale to be legible.

3.3. Urban Cadastral project

The project must demonstrate a candidate's competence to undertake urban cadastral surveys that exhibit a significant degree of difficulty.

A very large component of the practice of surveying is related to cadastral surveying and in particular those aspects involved with the definition of land boundaries. It is essential that professional surveyors, registered to undertake boundary survey work, have a thorough understanding and knowledge of the requirements.

The candidate may submit a portfolio of work, rather than a single plan, to demonstrate an acceptable level of competence. The plans must be suitable for lodgement at NSW LRS. At least one plan presented must show a boundary obstructed by buildings/walls or other obstruction so that it is not possible to define or redefine the boundary by direct measurement. If the survey involves a party wall, the candidate must survey the relationship of both sides of the party wall to the surveyed boundary. The measurements relied upon are to confirm the direction and width of that wall throughout its length.

At least one boundary shown in the Urban Cadastral Project must be based on two or more deposited plans. The candidate must also present an identification survey.

Candidates must demonstrate competence in the following topics amongst other things:

- Land ownership
 - o Old System and Torrens Title
 - o use and interpretation of cadastral information tools and data sources (e.g. SIX, CRE, DCDB, charting maps), title search and current title
 - o rights and interests in land (including creation and types)
 - o notations on title and their meaning
 - o plan search and other survey records on public record
- Boundary definition
 - o roads – their alignment and widths
 - o principles of boundary definition
 - o hierarchy
 - o field notes
 - o identification survey

- Legislation
 - consents – railway, council, maritime, etc.
 - Acts and Regulations – marking requirements, survey orientation (SCIMS) and street addressing
 - lease plans
 - party walls and their creation
 - adverse possession
 - possessory title
 - Encroachment of Buildings Act 1922
 - instrument calibration including analysis
 - Work Health and Safety Act 2011
- Spatial information competencies as may be related to Urban Cadastral commencing at a date determined by the Board
 - ePlan and land XML process awareness
 - spatial information on the plan

Regarding the LandXML competency, access can be arranged by the Board for candidates who do not have access to NSW LRS validation tool when they make application to the Board to undertake this assessment. Candidates will be provided a LandXML file which must be validated with the NSW LRS validation tool and the candidate should be prepared to explain, if necessary, why the file did not pass validation and what methods can be undertaken to ensure the file passes validation. Candidates will be required to submit the initial validation report for the file provided by the Board and a rendered image from their pre-exam project as part of their project submission for this assessment.

For the Urban Cadastral examination candidates should present:

- one full, correct scale copy of final urban cadastral plan
- two A3 size copies of final urban cadastral plan
- original field notes signed and dated
- calculation sheet
- one complete set of search including relevant CRE, titles, deeds, dealings, plans, etc properly organised (note that the examiners may want to keep some or all of this information for their records)
- Surveyor General's DP Checklist & NSW LRS DP Checklist
- proof of equipment calibration, including measurements and reductions
- identification report and sketch for either the property surveyed as part of urban cadastral project or some other property, including relevant title, base plans and field notes
- evidence of compliance with the Work Health and Safety Act 2011 for the survey work undertaken (for example, a Safe Work Method Statement).
- photographs and aerial imagery of the site if possible

- copy of LandXML validation report and a rendered image
- one electronic copy of the submitted project as per the requirements outlined in Section 3 above

Survey plans presented must be suitable for lodgement at NSW LRS for registration. All survey work must comply with the current Surveying and Spatial Information Regulation.

3.4. Rural Cadastral project

The project must demonstrate a candidate's competence to undertake rural cadastral surveys that exhibit a significant degree of difficulty.

A very large component of the practice of surveying is related to cadastral surveying and in particular those aspects involved with the definition of land boundaries. It is essential that professional surveyors, registered to undertake boundary survey work, have a thorough understanding and knowledge of the requirements.

Candidates must demonstrate competence in the following topics amongst other things:

- Land ownership
 - Old System and Torrens Title
 - use and interpretation of cadastral information tools and data sources (e.g. SIX, CRE, DCDB, charting maps), title search and current title
 - title search, current title and crown grants
 - rights and interests in land
 - notations on title and their meaning
 - plan search and other survey records on public record
- Boundary definition
 - principles of boundary definition
 - hierarchy
 - historical methods and techniques
 - field notes
 - road alignments – Act IV William IV No. 11 1883, crown roads, reserved road, opening and closing of roads
 - tidal boundaries – Mean High Water Mark, accretion and erosion, Coastal Protection Act 1979, natural features sourced by SI methods
 - non tidal boundaries – banks, ad medium filum aqua or viae, natural features sourced by SI methods
 - where applicable, application of Global Navigation Satellite System (GNSS) for rural surveys
- Legislation
 - consents – railway, council, Crown Lands, etc.
 - Acts and Regulations – marking requirements, survey orientation (SCIMS) and street addressing

- o easements – creation and types
- o instrument calibration including analysis
- o Work Health and Safety Act 2011
- Spatial information competencies as may be related to Rural Cadastral commencing at a date determined by the Board
 - o use and recording of imagery as an evidentiary tool

The survey presented in the project shall:

- Be located in a rural environment on land that is zoned RU1 or RU2 under the relevant LEP
- Be a minimum area of 10 hectares unless a variation is approved in writing by the Board.
- Be bound in part by an irregular road or other irregular strip of land having at least three substantial changes in bearing or an irregular watercourse or other similar natural feature which forms an existing boundary or have formed a previous boundary that is now consolidated. The survey methodology adopted to re-establish this boundary must include appropriate independent checks.
- Be based on a pre-1975 plan of survey (pre EDM) and in an area where there are few or no recent registered surveys, except where the survey demonstrates conflicting alignments/adoptions between the registered surveys and/or with the project survey, resulting in a Rural Cadastral Project of increased difficulty.

For the Rural Cadastral examination candidates should present:

- one full, correct scale copy of final cadastral plan
- two A3 size copies of final rural cadastral plan
- original field notes signed and dated
- calculation sheet
- complete set of search including relevant Parish map, titles, deeds, dealings, plans, etc
- Surveyor General's DP Checklist & NSW LRS DP Checklist
- proof of equipment calibration, including measurements and reductions
- evidence of compliance with the Work Health and Safety Act 2011 for the survey work undertaken (for example, a Safe Work Method Statement)
- photographs and aerial imagery of the site if possible
- one electronic copy of the submitted project as per the requirements outlined in Section 3 above

Survey plans presented must be suitable for lodgement at NSW LRS for registration. All survey work must comply with the current Surveying and Spatial Information Regulation.

3.5. Strata and Community Titles project

The project must demonstrate a candidate's competence to undertake strata and community title surveys with a significant degree of difficulty.

As there is an increase to the density of urban living the provision of developments containing multiple titles and joint ownership of shared facilities is becoming more common. The subdivision of these developments can be either through the Strata or Community Title legislation. It is essential that professional surveyors, registered to undertake boundary survey work, have a thorough understanding and knowledge of the requirements.

Candidates must demonstrate competence in the following topics amongst other things:

- Strata Schemes
 - Base title and plan requirements
 - Structures and buildings that can be strata subdivided
 - Types of strata plans
 - Unit entitlement, initial period
 - By laws
 - Common property
 - Utility lots
- Legislation
 - Acts/Regulations
 - Consents for subdivision
 - Signatures on plan
 - Encroachments
 - Easements – existing and new
 - Pre 1974 boundaries
 - Termination of strata schemes
- Strata Plan Boundaries
 - Preparation of location plan and floor plan
 - Structural boundaries
 - Line boundaries
 - Stratum statements
- Staged Strata Scheme
 - Plan preparation
 - Strata development contract
- Part Strata Development
 - Stratum plan
 - Management Statements
 - Easements

- Community Schemes
 - Types of Community plans
 - Components of the plan
 - Plan preparation
 - Approved forms – Management Statements, Development Contract
- Spatial information competencies as may be related to Strata and Community Titles commencing at a date determined by the Board
 - Use and recording of imagery as an evidentiary tool

For the Strata and Community Title examination candidates should present:

- two full, correct scale copy of final cadastral plan
- title search, together with any associated instruments
- original field notes signed and dated
- copy of base plan defining the parcel boundaries
- copy of the base strata plan if subdividing lots and/or common property in an existing strata
- Land and Property Information checklist
- copy of council's letter of determination if available and/or applicable
- copy of architectural plans if available
- photographs of the site and the building if possible
- one electronic copy of the submitted project as per the requirements outlined in Section 3 above

The survey plan presented shall:

- include the creation of a minimum of 2 strata lots and common property
- the strata lots must include external courtyards as part of the lot

Survey plans will be presented as if they were to be lodged with NSW LRS for registration. All field work must comply with the current Surveying and Spatial Information Regulation.

Appendix A – Metadata statement template

Metadata Statement		
Category	Element	Definition
Data	Data name (user input)	data file name. (user input)
Data representation	Data Type	(user input) e.g. Vector (points, lines, polygons) Raster (images or photographs) Table (text)
Reference	Reference Number	(user input)
Custodian	Name and Address	The name and address of the Company and point of contact details. (user input)
Description	Abstract	Brief summary description of the content of the data. (user input)
Data Currency	Date of First Version	When the data was first created. (user input)
	Date of this Version	Date of this version of the data. (user input)
Data Status	Progress	The status of the process of data creation. (user input) e.g. Completed Historical/Archive Obsolete Ongoing Planned Required Under development

Metadata Statement		
Category	Element	Definition
	Maintenance and update frequency	Frequency of changes or additions made to the data. (user input) e.g. continual daily weekly monthly as needed Irregular not planned unknown
Access	Stored data format	The format in which the data is stored by the Surveyor. (user input) e.g. AutoCAD Drawing Exchange Format (DXF) AutoCAD Drawing File (DWG) Shapefile (SHP) ArcInfo Coverage
	Available format type	The format in which the data is available. (user input)
	Access constraints	Restrictions or legal prerequisites that may apply to the access and use of the data including licensing, liability, and copyright. (user input)

Metadata Statement		
Category	Element	Definition
Data Quality	Lineage	A brief history of the source or production the data. (user input)
	Positional Accuracy	A brief assessment of the closeness of the location of objects in the data in relation to their true position on the Earth.
	Attribute Accuracy	Should contain a brief assessment of the attribute accuracy of the data i.e. how reliable the attribute values of the data are compared to what they represent in the real world.
	Logical Consistency	A brief description of the degree of adherence of logical rules of data structure, attribution, and relationships. (user input)
	Completeness	An assessment of the extent and range in regard to completeness of coverage, attributions and verification. (user input)
Miscellaneous	Source Pathname:	Data location. This not required for submission but may support internal data management.
Projection:	Name :	Map Grid Australia (MGA 94)
	Zone:	MGA [zone] (userinput)
	Units :	Metres
	Datum:	Geocentric Datum of Australia 1994 (GDA94)
	Ellipsoid:	GRS80
Metadata date	Metadata date	Date on which the metadata record was created or modified. (user input)