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## **Cadastral Endorsement**

### **Competency Frameworks**

### ***Surveyors Act 2003 s 39***

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## Introduction

This document describes the Competency Framework for endorsement as a Cadastral Surveyor as prescribed under section 39 of the Surveyors Act 2003.

The competency framework describes the competency Units, Elements and Descriptors that are required to be met for endorsement as a Cadastral Surveyor. The competency framework describes the performance that the candidate is required to display. Competency is developed through the appropriate combination of qualifications, skills, knowledge, and experience.

### **Definitions**

**Unit of Competency (Unit):** A major segment of the overall competency of a profession, typically representing a major function, role or field of activity.

**Element of Competency (Element):** A subdivision of a unit of competency into an observable function or activity.

**Performance Criteria (Descriptors):** An indicative list of the aspects of professional performance that would be regarded as evidence of competent professional performance in the work place in an element of competency.

**With Guidance:** The performance of the descriptor is achieved by the applicant under the direction of a competent supervisor. The applicant need not be able to perform the activity without requesting help in planning and execution.

**Under Supervision:** The performance of the descriptor is achieved by the applicant without direct supervision of each step; however the result of the activity cannot be used unless it has been checked by a competent supervisor.

### **Interpretation of the Framework**

The competencies for Surveyors will be typically demonstrated by experienced professional surveyors practising in any sector of the market. Surveyors, as employees in the public, private or tertiary sectors, will be practising as competent professionals demonstrating expertise and professionalism.

They will have demonstrated sound technical competence and management skills during their years of professional experience. They will work autonomously and accept responsibility for all professional work undertaken within their areas of expertise. However, they must recognise complex or unusual situations where professional guidance is required.

### **Competency Requirements for Cadastral Endorsement**

Applicants will need to have displayed their competency at the Surveyor level, as well as their competency in this discipline of surveying before being granted a Cadastral Endorsement.

An Applicant seeking the issue of a Cadastral Endorsement will need to demonstrate competency in the following Units:

- Unit 1: Professional Practice
- Unit 2: Collection of Data and Information
- Unit 3: Management of Data and Information
- Unit 4: Presentation of Information
- Unit 6: Communications
- Unit 7: Spatial Referencing System and Core Databases
- Unit 8: Land Administration and Property Development

# Competency Table for Cadastral Endorsement

## ***Unit 1: Professional Practice***

Surveyors with a Cadastral Endorsement will have demonstrated high levels of professionalism during their years of professional experience. They will demonstrate increasing levels of professionalism in all aspects of professional practice and a sound understanding of the profession's policy on ethics and professional practice.

<b>Element</b>	<b>Descriptors</b>
1.1 Undertake a program of tertiary education	<p>Applicants will need to demonstrate that they :</p> <ul style="list-style-type: none"> <li>i. Have completed a course of study of at least four years fulltime duration acceptable to the Surveyors Board of Queensland or have been previously registered as a Cadastral Surveyor by the Surveyors Board of Queensland</li> </ul>

## ***Unit 2: Collection of Data and Information***

Surveyors with a Cadastral Endorsement will be competent in all aspects of data and information collection that are relevant to their fields of surveying and will be accountable for the outcomes of work personally carried out or carried out under their direction.

<b>Element</b>	<b>Descriptors</b>
2.1 Collect data by measurement	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Apply technology to collect data by indirect methods</li> <li>ii. Clarify and confirm client needs and expectations</li> <li>iii. Evaluate various measurement systems, methods and procedures for accuracy and fitness for use</li> <li>iv. Apply best practice measuring techniques</li> <li>v. Review the effectiveness of measurement systems and methodology</li> <li>vi. Develop processes and systems to ensure measurements are legally traceable</li> </ul>
2.2 Search and acquire existing data	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Develop relevant geographic and land information records, survey data bases and general information depositories</li> <li>ii. Analyse the integrity and value of stored data and information and determine new uses</li> <li>iii. Analyse and evaluate the importance of historical records</li> <li>iv. Collect, collate and add value to data from existing bases</li> <li>v. Acquire and collate information in an orderly manner</li> <li>vi. Evaluate the relevance of information collected and optimize its uses</li> </ul>

### **Unit 3: Management of Data and Information**

Surveyors with a Cadastral Endorsement will be competent in all aspects of information and data management that are relevant to the cadastral field of surveying and will be accountable for all work personally carried out or carried out under their direction.

<b>Element</b>	<b>Descriptors</b>
3.1 Process data to accepted standards for specific requirements	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Determine procedures for verifying base data</li> <li>ii. Apply the most appropriate technology required to process data</li> <li>iii. Develop procedures for storing data in appropriate databases</li> <li>iv. Establish systems for verifying the integrity of data</li> </ul>
3.2 Convert data from one system or format to another	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Optimise the operation of databases holding spatial and textual data.</li> <li>ii. Establish procedures to identify and collate data in one system for transfer and integration into other systems.</li> <li>iii. Determine appropriate technology and procedures to convert and transfer data between systems and formats.</li> </ul>
3.3 Administer electronic and physical data bases.	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Determine procedures for recording, retrieving and updating information.</li> <li>ii. Develop and establish security systems to ensure data integrity.</li> <li>iii. Develop and implement appropriate maintenance systems.</li> </ul>
3.4 Apply project management principles	<p>Applicants will need to demonstrate that they have:</p> <ul style="list-style-type: none"> <li>i. A sound knowledge of project management principles</li> </ul> <p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>ii. Apply project management principles to work activities</li> <li>iii. Undertake project planning and monitoring</li> </ul>
3.5 Analyse, evaluate and interpret data	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Develop procedures for determining the accuracy and reliability of data.</li> <li>ii. Assess client needs and develop systems for data interpretation and evaluation.</li> <li>iii. Identify opportunities for data enhancement.</li> <li>iv. Determine procedures for collating data and relating it to specific areas of interest.</li> </ul>

### **Unit 4: Presentation of Information**

Surveyors with a Cadastral Endorsement will be competent in all aspects of the presentation of information that is relevant to their fields of surveying and will be accountable for the outcomes of all work personally carried out or carried out under their direction.

<b>Element</b>	<b>Descriptors</b>
4.1 Assemble data into specific data or information sets	Applicants will need to demonstrate that they are able to : <ol style="list-style-type: none"> <li>i. Understand market needs and anticipate new trends</li> <li>ii. Clarify and determine customer needs</li> <li>iii. Identify and enhance the potential benefits of creating specific information from various data bases</li> <li>iv. Transform data into useful information.</li> </ol>
4.2 Compile and produce maps, plans, charts and photographs	Applicants will need to demonstrate that they are able to : <ol style="list-style-type: none"> <li>i. Develop effective procedures for graphical and photographic presentation.</li> <li>ii. Determine the limitations of base data and optimise potential uses.</li> <li>iii. Understand and apply cartographic principles.</li> <li>iv. Use a computer aided drafting package.</li> <li>v. Develop new methods and procedures to meet client needs.</li> </ol>
4.3 Provide digital spatial information	Applicants will need to demonstrate that they are able to : <ol style="list-style-type: none"> <li>i. Understand the accuracy and reliability of data and determine best uses.</li> <li>ii. Determine procedures for transferring data files between various formats.</li> <li>iii. Control and coordinate the integration of spatial data into information bases.</li> <li>iv. Determine best data formats to meet customer needs.</li> </ol>
4.4 Produce models	Applicants will need to demonstrate that they are able to : <ol style="list-style-type: none"> <li>i. Determine parameters and procedures for creating digital models of physical surfaces.</li> <li>ii. Develop procedures for attaching attribute information to a digital model.</li> <li>iii. Determine procedures for transferring model files between formats.</li> </ol>
4.5 Formally present information orally to clients, government agencies and public forums	Applicants will need to demonstrate that they are able to : <ol style="list-style-type: none"> <li>i. Develop and implement appropriate communication and display techniques to present information in a usable manner.</li> <li>ii. Organise and address special interest groups.</li> <li>iii. Organise and preside over seminars and public meetings.</li> <li>iv. Organise, lead and contribute to discussion groups.</li> </ol>
4.6 Prepare reports.	Applicants will need to demonstrate that they are able to : <ol style="list-style-type: none"> <li>i. Compile and edit detailed technical reports on complex issues.</li> <li>ii. Design and develop information brochures and reports.</li> <li>iii. Compile and edit complex reports on surveying matters.</li> </ol>

4.7 Certify data	<p>Applicants will need to demonstrate that they are able to :</p> <ol style="list-style-type: none"> <li>i. Determine the accuracy and reliability of data to be certified.</li> <li>ii. Define the responsibilities associated with data certification.</li> <li>iii. Develop effective validation procedures.</li> <li>iv. Develop appropriate programs to manage risk associated with certification.</li> </ol>
4.8 Provide advisory services.	<p>Applicants will need to demonstrate that they are able to :</p> <ol style="list-style-type: none"> <li>i. Edit and qualify information for discussion with likely users.</li> <li>ii. Decipher confusing or conflicting information and relate it to specific issues.</li> <li>iii. Interpret complex information for collation and formatting into meaningful advice.</li> <li>iv. Provide strategies for adding value to existing information.</li> <li>v. Provide sound advice to clients on complex surveying and land management matters.</li> </ol>
4.9 Prepare Plans suitable for Government Land & Mining Registries	<p>Applicants will need to demonstrate that they have :</p> <ol style="list-style-type: none"> <li>i. A profound knowledge of the requirements of Government Plan registration process.</li> </ol> <p>Applicants will need to demonstrate that they are able to :</p> <ol style="list-style-type: none"> <li>ii. Prepare plans to meet the standards of Government Land &amp; Mining Registries</li> <li>iii. Develop a QA process to minimise requisitions</li> </ol>

**Unit 5: APPLICATION - Not Re-assessed. RENEWAL - as specified in SBQ-CF-0103.**

**Unit 6: Communication**

Surveyors with a Cadastral Endorsement will be effective communicators who successfully communicate to colleagues, subordinates, and customers on all matters relating to their surveying activities in a professional manner. They will be responsible for any personal communications that reflect on the responsibilities and integrity of the business enterprise.

Element	Descriptors
6.1 Communicate effectively.	<p>Applicants will need to demonstrate that they are able to :</p> <ol style="list-style-type: none"> <li>i. Communicate effectively, orally and in writing, at a professional level.</li> <li>ii. Use the full range of media options available to facilitate communications.</li> <li>iii. Compile, interpret and present information.</li> <li>iv. Interpret briefs and instructions.</li> <li>v. Issue clear, accurate instructions and meaningful advice to colleagues and subordinates.</li> <li>vi. Exchange data and information through electronic communications.</li> </ol>

<p>6.2 Present, promote, report on and advocate ideas on surveying and allied areas of practice</p>	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Prepare and presents technical reports and papers to professional forums.</li> <li>ii. Prepare position and discussion papers on surveying and allied topics for publication.</li> <li>iii. Present papers to seminars and public meetings.</li> </ul>
<p>6.3 Prepare and comprehend surveying documents.</p>	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Prepare and interpret professional surveying reports</li> <li>ii. Prepare specifications and standards.</li> <li>iii. Prepare submissions and quotations.</li> <li>iv. Prepare documents defining work procedures and processes.</li> <li>v. Prepare documents of measurement technology, data acquisition and spatial relationships.</li> </ul>
<p>6.4 Comprehend, report on and discuss relevant legal matters.</p>	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Operate in accordance with government acts, regulations or instructions.</li> <li>ii. Discuss legal matters pertaining to land and land information with clients, colleagues and other professionals.</li> <li>iii. Advise clients on legal requirements relating to land development.</li> <li>iv. Advise clients on land rights, land tenure disputes, and rights of entry and occupation.</li> <li>v. Contribute to advising clients on legislation pertaining to planning, development and environment issues.</li> <li>vi. Advise clients on responsibilities and liabilities pertaining to spatial information</li> </ul>
<p>6.5 Collaborate with colleagues and other interested parties.</p>	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Contribute to discussions with stakeholders on development projects.</li> <li>ii. Represent the concerns of clients and/or special interest groups to government, regulators and other stakeholders.</li> <li>iii. Negotiate solutions to common problems with other parties.</li> <li>iv. Contribute to the integration of surveying activities with the activities of other professionals.</li> <li>v. Provide advice and information on surveying, geomatics and developments.</li> </ul>
<p>6.6 Use professional expertise to contribute to the processes that shape society.</p>	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Contribute to discussions on the sustainable development of national resources and the conservation of national heritage.</li> <li>ii. Promote opportunities to utilise surveying for the benefit of society.</li> <li>iii. Advocate the orderly management and administration of land resources.</li> </ul>

### **Unit 7: Spatial Reference Systems and Core Data Bases**

Surveyors with a Cadastral Endorsement will be competent to contribute to designing, establishing and maintaining spatial reference systems; maintaining core data bases; and determining spatial relationships within land and geographic information systems. They will be accountable for the outcomes of work personally carried out or carried out under their direct supervision.

<b>Element</b>	<b>Descriptors</b>
7.1 Establish subsidiary networks	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Carry out or supervise the work required in establishing subsidiary network control datums.</li> <li>ii. Supervise the placement of appropriate reference marks in suitable locations</li> <li>iii. Analyse spatial data pertaining to the subsidiary network</li> <li>iv. Evaluate and adjust of created spatial data</li> <li>v. Record network information in appropriate data files</li> </ul>
7.2 Integrate spatial reference systems with fundamental physical and cultural data and manage core databases	<p>Applicants will need to demonstrate that they :</p> <ul style="list-style-type: none"> <li>i. Understand the logical structure of data bases</li> </ul> <p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>ii. Collate, update and maintain core data bases pertinent to topographic data, administrative boundaries, transport corridors, infrastructure and geographic information</li> <li>iii. Create new asset bases and integrate them with core data bases</li> <li>iv. Verify the integrity of data in data bases</li> </ul>
7.3 Accredite spatial data standards	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Contribute to the standards required for data created for specific purposes</li> <li>ii. Contribute to developing standard procedures for acquiring and storing spatial data</li> <li>iii. Contribute to developing procedures for testing and validating the integrity of spatial data</li> </ul>
7.4 Maintain and manage core data bases	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Review and maintain existing data</li> <li>ii. Interpret data for potential users</li> </ul>

### **Unit 8: Land Administration and Property Development**

Surveyors with a Cadastral Endorsement will be competent in all aspects of land administration and property development and will be actively involved in advising property developers or managing property development projects. They will be accountable for the outcomes of work personally undertaken and advice provided, and for all work carried out under their direct supervision.

<b>Element</b>	<b>Descriptors</b>
8.1 Advise on land tenure and existing land tenure systems.	<p>Applicants will need to demonstrate that they have :</p> <ul style="list-style-type: none"> <li>i. A profound knowledge and understanding of the principles of land registration and land tenure.</li> </ul> <p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Assess the impact of laws on land and land development</li> <li>ii. Counsel stakeholders on the advantages and disadvantages of various land titling systems.</li> <li>iii. Contribute to the rationalisation and operation of native title programs</li> <li>iv. Contribute to the financial analysis of establishing and maintaining land administration systems.</li> </ul>
8.2 Contribute information and advice to facilitate the administration, control and development of land resources	<p>Applicants will need to demonstrate that they have :</p> <ul style="list-style-type: none"> <li>i. A profound knowledge of planning law and procedures</li> </ul> <p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>ii. Contribute to the environmental and management policies applicable in various jurisdictions.</li> <li>iii. Coordinate multi disciplinary activities in property development.</li> <li>iv. Contribute to the management of land information resources.</li> </ul>
8.3 Encourage sustainable land development	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Apply expert local and regional knowledge to expedite development.</li> <li>ii. Initiate and coordinate feasibility studies and impact assessments.</li> <li>iii. Describe the inter-relationships between geology, geomorphology, water, soils, vegetation and fauna resources</li> <li>iv. Apply the techniques commonly used to describe and assess the physical land resources</li> <li>v. Describe the processes involved in undertaking land resource surveys and land evaluation practices</li> </ul>

<p>8.4 Provide advice on financial implications of land development</p>	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Identify and assess new land use options.</li> <li>ii. Undertake cost/benefit analyses for land development projects.</li> <li>iii. Assess the potential of land for further development.</li> <li>iv. Develop opportunities to optimise land value and sustainable use.</li> <li>v. Identify the principles of valuation by using them to obtain a valuation for a range of properties including allotments in a new land development</li> <li>vi. Describe the method and principles used for determining compensation for the compulsory acquisition of land</li> </ul>
<p>8.5 Provide design services to optimise land development and encourage sustainable land use</p>	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Develop innovative land boundary patterns.</li> <li>ii. Participate in the planning and designing of infrastructure for land divisions and land developments.</li> <li>iii. Develop proposals for sustainable land development.</li> <li>iv. Apply basic design parameters and relevant geometric principles to the preliminary design of urban and rural roads</li> <li>v. Explain and apply process of horizontal and vertical road alignment for rural and urban road design</li> <li>vi. Apply basic design parameters to design sewerage services</li> <li>vii. Apply basic design parameters to design of storm water services</li> </ul>
<p>8.6 Manages property development</p>	<p>Applicants will need to demonstrate that they are able to :</p> <ul style="list-style-type: none"> <li>i. Apply project management principles to property development.</li> </ul>
<p>8.7 Undertake cadastral surveys</p>	<p>Applicants will need to demonstrate that they :</p> <ul style="list-style-type: none"> <li>i. Can explain the law and principles regarding the reinstatement of cadastral boundaries</li> </ul> <p>Applicants will need to demonstrate that they are able to:</p> <ul style="list-style-type: none"> <li>i. Assess all relevant evidence and draw appropriate conclusions about the location of boundaries.</li> <li>ii. Understand and apply relevant legislation and standards for the conduct of cadastral surveys and the preparation of plans.</li> <li>iii. Ensure that plans are fit for purpose and if necessary capable of achieving the desired actions regarding the creation of land titles and the integrity of the land boundary system.</li> </ul>

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8.8 Prepare and manage planning applications	Applicants will need to demonstrate that they are able to : <ul style="list-style-type: none"><li>i. Describe the planning processes that are used in Queensland at State, regional and local government levels to control land use and development</li><li>ii. Discuss the purpose of, and the significant elements of, the Queensland's current planning legislation</li><li>iii. Outline the principles of performance based design</li><li>iv. Make conforming applications to Local Authorities</li></ul>
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***Unit 9: Not Applicable***

***Unit 10: Not Applicable***

***Unit 11: Not Applicable***