



Manual for Auditing Cadastral Surveys

CADASTRAL INFORMATION DIVISION

Department of Survey and Mapping

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National Land Commission Secretariat

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FOREWORD

Section 218 of the Land Rules and Regulation 2007 mandates the National Land Commission to be responsible for quality control of the national cadastre. A systematic monitoring of the cadastral surveyors is an important process in ensuring the quality control of the cadastre. This is achieved through a common practice of audit surveys, which conducts performance as well as compliance auditing of the works executed by the cadastral surveyors.

The Manual for Auditing Cadastral Surveys provides a detailed procedure on selecting surveys for auditing, conducting survey audits, analysing results and suggesting remedial measures for surveys deemed unsatisfactory. It has been developed by drawing insights from international best practices.

With the implementation of this Manual, all licensed surveyors shall be subject to cadastral audit surveys. This will enhance accountability in cadastral surveying and help achieve compliance to standards in cadastral surveying. In turn, audit surveys will contribute towards enhancing professional code of conduct of the licensed surveyors and delivery of cadastral surveying services.



(Dasho Pema Chewang)
Secretary

ACRONYM

CAC: Cadastral Audit Committee

CID: Cadastral Information Division

DoSAM: Department of Survey and Mapping

DoLAM: Department of Land Administration and Management

NLCS: National Land Commission Secretariat



This Manual is intended for use in auditing cadastral survey conducted by the surveyors. It covers the roles and responsibilities of different officials and procedures for auditing. This Manual will serve as a guide.

This Manual consists of two parts:

PART I - INTRODUCTION

This gives a brief description of the definition, types and objectives of audits, and is particularly useful to officers who have not received any formal audit training.

PART II - THE AUDIT PROCESS

This describes compliance audit and outlines the procedures to be followed including report preparation and maintenance.

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PART-1 INTRODUCTION

1. INTRODUCTION

Cadastral Information Division (CID) under the Department of Surveying and Mapping (DoSAM) is responsible for managing the cadastral data of the whole country. CID validates the cadastral datasets for land-ownership registration and land conveyances.

These datasets undergo desktop validation prior to approval and up-dating in the national cadastral database. This approach is being practiced as means of quality control that entails scrutinization of parcel area, plot identifier, topology and other basic map elements. It is effective, but doesn't reasonably assure measurement accuracy with respect to ground. Accuracy can only be assured if cadastral standards are strictly adhered to by the practicing cadastral surveyors.

Considering the implication of the cadastral surveys, it is imperative to periodically monitor and assess conformance of standards and this can be realised through cadastral survey audit. The cadastral survey audit will evaluate both the system and the processes adopted by cadastral surveyors to ensure quality of cadastral surveys.

This Manual shall serve as guidelines for officials to conduct cadastral audit and consists step-by-step process to carry-out auditing.

2. DEFINITION OF AUDIT

An audit can be defined as a systematic and independent examination of specific activities carried out by an individual or a group of individuals, in order to determine whether such activities and related results comply with the standards, and whether these standards are implemented effectively and are suitable to achieve objectives.

3. TYPES OF AUDITS

There are two main types of audits:

Adequacy Audit: This is also known as a system or management audit. Its objective is to determine the extent to which the documented system and the associated procedures adequately meet the requirements of the organization or the applicable quality standard.

Compliance Audit: This is an audit which seeks to establish the extent to which the relevant standards, the documented system and the associated procedures are implemented and observed by the staff.

This manual basically deals with compliance audits.

4. AUDIT OFFICER

Audit officers shall obtain complete and accurate information about specific activities they are auditing. Apart from being objective and independent, audit officers should also be:

Diplomatic	Observant	Interested	Unbiased
Inquiring	Industrious	Open Minded	Analytical
Patient	Resilient	Trained	Able to communicate well

On the other hand, the following are attributes unfavourable to the work of audit officers:

Gullible	Opinionated	Nit-picking
Cynical	Argumentative	Accepts things at face value

5. OBJECTIVES

The primary objectives to conduct the cadastral audit are:

- To ensure cadastral surveying is undertaken in compliance with the cadastral standards (land act, land rules & regulations, directives, manual and guidelines).
- To determine professional deficiency and put in place a process for the professional development.
- To assess the effectiveness and efficiency of key processes supporting the delivery of the service, and addressing stakeholders' needs, in compliance with legislative instruments.

6. LEGISLATIVE FRAMEWORK

The manual is formulated based on the section 218 (a), (b), (h) of the Land Rules and regulations:

- a. This agency (CID) shall be responsible for the development of standards related to all cadastral activities in the country.
- b. It shall be directly responsible for the quality control of all cadastral work.
- h. It shall be responsible for development of technical manuals and guidelines related to cadastral survey.

7. INSTITUTIONAL FRAMEWORK

CID shall be responsible for implementing the audit function in accordance with this procedure. The audit team shall be appointed under the direction of Director, DoSAM. The list of competent cadastral surveyors who are conversant in cadastral concept and practices will be submitted to the Director by the Chief, CID. The team shall consist of:

- Licensed Survey Engineer/Licensed Senior Surveyor as the team leader.
- Two Licensed surveyors for field investigation.

However, the human resource can be increased or decreased based on the need.

The Cadastral Audit Committee (CAC) shall be formed at the department level to review the audit finding. It will comprise of the following:

- Director, DoSAM as the Chairperson;
- Chief of CID as Member Secretary;
- Section Heads under CID and the audit team as members.



PART-2 THE AUDIT PROCESS

8. SELECTION OF SURVEYORS FOR AUDIT.

The surveyors to be audited shall be selected based on two methods:

A. Routine Audit

- CID will aim to audit every surveyor at least once every three years.
- Surveyors lodging surveys of land for the first time in Bhutan will be given priority in the routine audit program.
- Surveys will be selected for audit from surveys certified after the subject surveyor's previous audit date.

B. Targeted Audit

Selection of surveyors targeted for audit will be prioritised based on past performance as evidenced by the level of non-complying survey practise exposed in one or more of the following indicators:

- Surveyors with three or more non-compliant surveys requiring investigation by the CID during the past year.
- An issue raised during validation and approval by CID.
- Post-approval issues identified by the public or survey profession.
- CCS/ LG surveyors with higher-than-average requisition rates.
- An area of focus (maximum transaction and high market values) for NLCS/public.
- All CCS shall be targeted for audit.

Priority will be given to surveyors who fall under more than one of the indicators or who have a particularly high incidence in one of the indicators. Surveyors lodging high numbers of surveys will be given priority within the target group.

The program of targeted audits will be given priority over the routine program.

9. AUDIT INSTRUCTIONS

- Chief CID will manage a survey audit program that is based on a routine program running concurrently with the specific targeting of surveyors with ongoing poor survey records.
- Chief CID shall submit the list of surveyors to be audited to the Director, DoSAM for final endorsement.
- CID will issue instructions, detailing the name of the surveyor and the survey to be audited in accordance with the procedures.

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- Surveyors targeted for audit will be notified in advance and advised of the reasons.
 - A copy of each such instruction will be filed for future reference on the surveyor's audit file.

10. PLANNING AND PREPARING FOR THE AUDIT

Before conducting the audit, the audit team shall:

- a) Review the last audit report (if any) and note the areas of non-compliances and any follow up actions required to be taken.
- b) Define the scope of the audit.
- c) Prepare a time schedule indicating the dates on which the audit will take place.
- d) Serve notification regarding the audit to the relevant officials.
- e) Meet with the supervisor (Chief CID) before proceeding to field for discussions and guidance.

11. OFFICE AUDIT

The audit team shall conduct preliminary office assessment prior to commencement of field investigation.

- The auditing surveyor will scrupulously investigate cadastral dataset (map, rawfile, field file, survey report), and also study previous report if any to understand and identify any area of non-conformance(s).
- The auditing surveyor shall select the datasets of targeted surveyor lodged in preceding 12 months and assume to be non-conformance(s). Minimum two parcels must be selected for audit.
- The auditing surveyor shall discuss with the Director or the Chief for guidance if any apparent weakness is identified during the office assessment.
- The audit team shall proceed to the field only after serving written notice to the surveyor and arranging access to parcel.
- The audit team will visit office of a surveyor to discuss and assess the process, and quality control adopted to undertake cadastral surveying, prepare and lodge cadastral dataset.
- The auditing surveyor shall:
 - ✓ Review the process adopted to undertake cadastral surveying and prepare cadastral data as in Annexure-I.

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- ✓ Identify the quality control used to assure data quality and determine application on sample datasets.
 - ✓ Also discuss issues, findings, recommendation and seek clarification for non-conformance(s) after the field audit.

12. FIELD AUDIT

The audit team shall be responsible to conduct all fieldworks. However, the team can supervise and direct another surveyor who is not a team member on inevitable circumstances. The audit team shall:

- Use surveying instruments which are properly maintained and standardised in accordance with regulatory requirements.
- Visit the site, undertake a visual inspection, determine the presence of survey marks, monuments and information relevant to the survey and liaise with land owner(s).
- Assess cadastral survey compliance on the ground, but not limited to:
 - ✓ The accuracy of parcel boundary.
 - ✓ The placement of boundary markers.
 - ✓ The correctness of the control point.
 - ✓ The status of ground features or monuments, whether or not shown in the map.
 - ✓ Measurement accuracy of the boundary markers and monuments.
- Re-survey the plot and feature. If the audit measurements indicate discrepancies with the original, redundant observation must be made to prove accuracy of the measurement. Different control point should be used for confirmation.
- Fill up the questionnaire in Annexure-II, to get an insight into the method and control of the surveyor while undertaking cadastral survey.
- The field works must be documented in the audit record.

13. ASSESSMENT

The error(s) determined from the Field and QA Process Audit will be rated as either major non-conformance or minor non-conformance. A major non-conformance is one which will introduce significant error(s) in the cadastral map and impact cadastre.

The most common non-conformant breaches are listed in the category below. The list is not intended to be an exhaustive set of all possible breaches.

A. Major Non-conformance

- Cadastral survey is not conducted on the national geodetic reference datum.
- Using wrong coordinates of the control point(s) for cadastral survey.
- Existing parcel boundary is incorrectly surveyed or mapped.
- Parcel area is surveyed considerably inconsistent with Thram.
- Boundary marker is placed inaccurately beyond required accuracy tolerance.
- Cadastral survey is conducted without landowner(s) or authorized representative.
- Consolidating contiguous plots of different land types or land owners.
- Realigning parcel without a written agreement of affected landowners or in absence of the parties.

B. Minor Non-conformance

- Ground features or occupations associated with the parcel are not surveyed.
- Inaccurate position of the ground features.
- Not using Standard measurement units.
- Not showing description of boundary marker(s) on cadastral dataset.
- Not using proper point identifiers or other map elements.
- Lodging cadastral dataset without data cleaning.
- Not using calibrated instrument, and recommended instrument(s) and software(s).
- Creation of trapped land.
- Incomplete information in the prescribed survey report.

A surveyor will have unsatisfactory outcome of the audit process if the audit finds one or more major non-conformances from the category A or three or more instances of minor non-conformance from category B. The surveyor with unsatisfactory outcome shall be the subject of review by the Cadastral Audit Committee.

Insignificant non-conformances not in the list need not review by the committee. It shall be dealt directly with the surveyor by the audit team. However, audit team may consider to report in cases of repeated and excessive infringement.

14. AUDIT REPORT

The audit team shall prepare concise audit report documenting all the related records and evidences.

- The report shall be submitted to the Chief, CID, who will confirm adherence to the audit procedures prior to the committee meeting. Any non-adherence found shall be submitted to CAC for review.
- The report will be finalised and endorsed after incorporation of decisions/ views made by the committee.
- The copy of the report shall be submitted to the secretariat for information. Similarly, the copy shall be shared with the concerned surveyor(s) for undertaking corrective actions.
- The audit team shall update information in the survey audit database.

15. REVIEW OF UNSATISFACTORY OUTCOME

The CAC shall convene to review the audit survey report. The audit team will present the overall report and specific finding of the surveyor whose audit outcome is unsatisfactory.

- The committee shall determine and decide appropriate action to rectify non-conformance(s).
- The surveyor shall implement corrective action within two months after forwarding the audit report. CID will be responsible to plan and implement activity related to professional development.
- Non-conformance shall be dropped if clarification and evidence provided by a surveyor justify and satisfy. The clarification or evidence not received during the audit will be considered within one-month time frame after forwarding the audit report to surveyor.
- The Director, DOLAM, shall be informed if corrective action impacts the land conveyance in process. Similarly, land owners shall be informed by the surveyor.

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- The Surveyor shall demonstrate to the committee how standards are to be met in future for three consecutive unsatisfactory outcomes.
 - The committee shall recommend to the licensing board for temporary suspension of cadastral practice beyond three consecutive unsatisfactory outcomes.
 - The committee can recommend to the licensing board for discontinuing cadastral practice in excessive infringement.

16. MAINTENANCE OF AUDIT RECORDS

- CID will be responsible for the orderly retention of records of the audit process.
- Individual audit files will be raised in the name of each practising registered land surveyor, and copies of all audit instructions, reports and correspondence relating to the professional performance of the surveyor will be retained on those files. The content of these files will be treated as CONFIDENTIAL.
- Access to audit files will be restricted to Records and CAC members. Access to a surveyor's audit file will be provided to the relevant surveyor upon request and approval by the DoSAM Director.

17. COMMUNICATION

Audit personnel are expected to comply with the following guidelines for communication of audit information.

Auditors

When an auditor has audit related information or questions that need consideration or answers, the auditor should first discuss with the supervisor. The supervisor may address the issue or may instruct the auditor to contact another employee or supervisor. If the supervisor is not available, the auditor should talk with the Chairperson of the CAC.

Supervisor

If an audit supervisor has information or questions related to auditing, they should refer them to the CAC Chairperson unless otherwise instructed. The CAC Chairperson may address the issue or may direct the supervisor to contact other relevant officials.

CAC

CAC may instruct supervisors to consult professionals from other background for required opinions and suggestions especially legal based.

18. ROLES, RESPONSIBILITIES AND DELEGATIONS

Surveyor

- The surveyor to be audited should co-operate and renders all possible support to the auditor.
- The surveyor should provide all information's correctly.
- The surveyor should provide written notice within a week after receiving the audit notification to the landowner(s) whose land access is required.
- The surveyor should liaise with the local authorities for any support required by the audit team.

Auditor

- The audit team shall conduct the cadastral audit in accordance with this manual.
- The audit team shall carryout a preliminary plan on the procedures of selection.
- Accordingly, the audit team shall serve a written notice two weeks before the actual audit to a surveyor who will be audited.
- All activities must be conducted in an ethical and transparent manner without fear, favour or prejudice.
- The audit team may contact owner(s) to confirm access arrangement and the field investigation should not proceed without knowledge of the relevant landowner(s).
- The audit team shall prepare a thorough audit report and present the findings to the audit committee.
- The audit team shall follow-up on implementation of corrective actions.

Supervisor

- The Chief of CID as the audit supervisor shall assure adherence to the audit procedures.
- The audit supervisor is responsible for coaching, overseeing, and directing the efforts of the auditors, to assure the audit resources available are applied in a way to achieve the primary objectives.
- The supervisor will assist auditors by making available the necessary tools, training, and guidance.
- The Supervisors is also responsible for monitoring workloads, evaluating individual auditor performance, and reviewing each part of the audit to the extent necessary

to assure that the final package meets division quality standards.

- The supervisor should ensure that the Dzongkhag/Thromde/Dungkhag Land sector(s) and private surveying firm(s) cooperates, supports and provides free access to cadastral information to the audit team.

CAC (Cadastral Audit Committee)

- The audit committee shall review the report and decide corrective action or intervention.
- The CAC shall instruct the supervisor to intimate the decisions to the auditors/surveyors.
- The CAC has the full authority to drop or pass memos to the surveyor for any liability.

19. REVIEW AND AMENDMENT OF MANUAL

CID shall review and amend this manual as and when it is deemed necessary due to:

- ✓ Change in legislation.
- ✓ Irrelevancy with time.
- ✓ Inefficiency in realizing intended purpose.

REFERENCE(S)

Audit and quality assurance. (2007, January). Toitū Te Whenua Land Information New Zealand. <https://www.linz.govt.nz/land/surveying/csd-preparation/audit-and-quality-Assurance>