

# **SURVEYORS BOARD OF THE NORTHERN TERRITORY**

## **Guidelines for Supervising Surveyors and Surveying Graduates**

### **1. Introduction**

These guidelines are to inform supervising surveyors of their obligations and responsibilities in the training of surveying graduates under Professional Training Agreements. They are to be read in conjunction with the 'Training Requirements for Graduate Surveyors under the Northern Territory Licensed Surveyors Act' at attachment C.

Professional Training Agreements are taken very seriously by the Board. Although the Board conducts a final examination of graduates prior to granting Certificates of Competency, it can only ever be a general indication of the competence of the candidates. The real tests occur during the life of the Professional Training Agreement where the level of knowledge and character necessary to become a professional surveyor is determined by the supervising surveyor. It is only when a graduate has achieved that standard in the mind of the supervisor that approval should be given for the graduate to present to the Board in the final examinations. Poorly presented candidates reflect on the reputation of the supervising surveyor.

This approach to training places clear obligations on the supervising surveyor, not just toward the surveying graduate, but equally to the future profession of surveying.

During the training agreement and after licensing, the graduate is a reflection on the supervisor and on the company (in fieldnotes, project work and direct relations with the client and the public). The graduate's training must be at least as important to the supervisor as the successful completion of survey jobs. The supervisor and company should provide every possible tuition, guidance and opportunity and the graduate should only be progressed to the next stage when ability is proven.

Despite any intention of the graduate to specialise once licensed, this training must give a balanced general training in all aspects of cadastral work. Competency in all aspects must be demonstrated before the graduate is recommended for the licence.

### **2. Definitions**

In these guidelines the following expressions have the following meanings:

- "Board" means the Surveyors Board of the Northern Territory established under the Licensed Surveyors Act 1983.

- “Graduate” means a surveying graduate who is a party to a Professional Training Agreement. The surveying graduate is required to have the educational qualifications acceptable to the Reciprocating Surveyors Boards of Australia and New Zealand.
- “Supervising Surveyor” or “Supervisor” means a licensed surveyor who agrees to supervise a graduate under a Professional Training Agreement.

### **3. The Professional Training Agreement**

The purpose of the professional training agreement (PTA) is to provide the graduate with a structured training program of education and development of attitudes and skills. The PTA should be structured so as to enable the graduate to progress to the level of a competent professional surveyor in an efficient and effective manner. The PTA should take into account local conditions and specialisations. It should be prepared by the supervising surveyor in consultation with the graduate.

The graduate is required to complete a minimum of two (2) years (480 days) practical training. Refer to attachment C for more details.

The period of training shall include at least twelve (12) months (240 days) on cadastral surveys. The cadastral surveys should include a sufficient amount of rural and urban work in the Northern Territory of which the trainee is to carry out the survey in the role a Party Leader. Arranging the variety of work is the responsibility of the supervising surveyor and the trainee. It is expected that the trainee will undertake at least five surveys in each arena.

### **4. Competency Standards**

The Institution of Surveyors Australia Incorporated (ISA) in conjunction with the Reciprocating Surveyors’ Boards of Australia and New Zealand developed a “National Competency Standards for Professional Surveyors”. While those standards (published in July 1996) do not specifically deal with cadastral surveys, these guidelines are based on those general standards.

In particular, pages 51 through 66 of those National Competency Standards (which can be found at the Boards website under Training and the *Professional Training Agreement* heading: <https://surveyorsboard.nt.gov.au/registration-and-training>) detail the necessary “Key Competencies” for stage 2 (equivalent to the period of a professional training agreement).

Supervisors are to ensure that graduates achieve the level of competency and professional development required by the Board as outlined herein and in the competency based standards for surveyors. Graduates should be exposed to a variety of surveys and challenged by difficult and complex situations. Supervisors are to ensure that any deficiencies in the graduate’s skills are rectified.

The training should be broadly based, not specialised. The training subjects which should be covered are detailed in attachment A. Some require full competence while others only require an awareness at the licence level and

others are individually optional.

Two topics deserve special mention as they are vital to the ultimate professionalism of every surveyor-

- Professional ethics should be impressed on the graduate both by example and by instruction throughout the period of the PTA; and
- Leadership is a quality necessary to all surveyors.

## **5. Skills To Be Taught**

In transforming the generic competencies to the specific cadastral area, it is recommended that during the period of a professional training agreement the following subjects be covered:-

### **5.1 Safety**

- Safe working practices. The teaching of safe working practices must precede any other training.

### **5.2 Basic Practical Field Skills**

- Linear measurements using steel band and electronic distance measuring equipment,
- Theodolite angle measurement,
- Levelling,
- Electronic and manual methods of data recording,
- Placement and referencing of boundary and general survey marks,
- Independent checking of observations and error-elimination procedures,
- Use and maintenance of tools, equipment, and vehicles,
- Safety procedures and safe work practices.

### **5.3 Rural/Urban Cadastral Re-Establishment of Alignments**

- Location of old survey marks and occupation
- Re-establishment of title boundaries through the analysis of available evidence,
- Determination of adoptions based on the principles associated with crown boundaries, previous surveys, survey marks, and occupation.

### **5.4 Map, Geodetic And Height Datums**

- Field surveys based on the Geocentric Datum of Australian (GDA), its derivation, the Map Grid of Australian (MGA), and the Australian Height Datum.
- General engineering and topographic surveys based on local grids and control traverses.
- The dependence of Global Positioning System surveys upon these datums.

### **5.5 Accuracy**

- The standards of accuracy required in field surveys.
- How to achieve the necessary standard in each situation encountered.

### **5.6 Team Leadership**

- Staff supervision and field party leadership,
- Responsible use of vehicles and equipment,
- Bushcraft, especially in remote areas,
- Responsibility for the team.

### **5.7 Survey Information**

- Searching and interpretation of title and survey information from the various sources.
- The relevance and availability and use of this analogue and digital information, (not necessarily familiarity with the physical actions of obtaining the information).

### **5.8 Survey Computations**

- Computer hardware and software and their applications to surveying and a surveying practice in general.
- The application of general survey computations learned in the degree course.
- Calculation of re-establishment of cadastral alignments:-
- including distribution of original errors into the most probably correct places;
- achieving a best fit of boundaries to available original marks and dimensions; and
- taking into account legal implications.

### **5.9 Plan Drafting**

- Familiarity with the different requirements (regulations, guidelines and conventions) for drafting plans under the various land tenure Acts - sufficient to instruct and control the drafting, not necessarily enough to physically draft the plans personally.

### **5.10 Documentation**

- Preparation of the other survey and business documentation related to surveys (eg field notes, sketch plans, applications, reports and correspondence).

### **5.11 Calibration**

- Understanding of the need for repeated calibration of equipment, and competency in the calibration of all equipment and instruments used.

**5.12 Ethics**

- Ethics, as apply to a professional person generally, and as apply to a licensed surveyor in particular.

**5.13 Knowledge of Relevant Legislation**

- Familiarity with the various Acts, regulations, directions, guidelines and manuals relevant to a survey practice. These are listed at attachment B of this manual.
- Awareness of Common Law as it affects land tenure.
- Sound knowledge of the various regulations, directions and guidelines related to authorised surveys. This should include the practices and procedures of the various survey registering agencies. It is emphasised that training in the practical application of the regulations is essential. Acts, regulations, directions, guidelines and procedures are now changing frequently, so it is necessary that library and knowledge be kept up to date.

**5.14 Land Development Process**

- Experience of the total subdivision process, including planning procedure, local government, servicing authorities, engineering and finance.

**5.15 Survey Office Procedures**

- Survey office procedures with an emphasis on quality assurance and the avoidance of mistakes.

**5.16 Unit Titles**

- The Unit Titles Act and associated plans and surveys.

**5.17 Digital Survey Data**

- Lodgement of survey data digitally with the various registration authorities in the formats required by them.

**5.18 Mining Surveys**

- Surveys under the Mining Act.

**5.19 Global Positioning Systems**

- Use of Global Positioning Systems, including handheld, static, Differential GPS and Real Time Kinematic.

It is expected that the graduate will be competent in all of the preceding subjects, 5.1 to 5.19, at the time of completion of the professional training agreement.

It is expected that the graduate will be aware or familiar with the following

subjects, to 5.21, at the time of completion of the professional training agreement, and that following licensing will work in a structure with limited guidance until competent in those subjects.

#### **5.20 Client Instructions and Liaison.**

- Including understanding clients needs and guiding their instructions to give them the best results. Informing them as to costs and time frame.
- Ongoing client relations.

#### **5.21 Riparian Boundaries**

- Definition and re-establishment of tidal and non tidal riparian boundaries, the nature of those boundaries and the rights that are conferred.

While the above subjects give a basic training which will allow the licensed surveyor to practise effectively in a wide range of work; there are a number of other subjects which will either allow more efficient work in some situations or will allow specialised or unusual jobs to be carried out. It is recommended that some such subjects be covered by each graduate - and credit will be given for such subjects. A few such subjects are given below at 5.22 to 5.23.

#### **5.22 Engineering Surveys**

#### **5.23 Building Set-Out**

- Experience in building set-out or control with respect to a boundary (not necessarily multi-storey)

### **6. Level Of Supervision**

The philosophy of the Reciprocating Surveyors' Boards of Australia and New Zealand is that:-

- the surveyor is solely responsible for surveys carried out under his/her supervision, and
- surveyors should exercise a standard of supervision that will ensure the survey reflects his/her professional responsibilities and complies with relevant statutes.

The extent of supervision will vary according to the experience and skill and ethics of the graduate. The recommended level of supervision is as follows:-

- 6.1 The supervisor should fully brief the graduate on the purpose and details of the survey before the graduate commences involvement in that survey,
- 6.2 The supervisor should discuss all aspects of the survey with the graduate at the completion of the work,
- 6.3 Early in the training period the supervising surveyor should always accompany the graduate on site, until the graduate demonstrates an ability to act as team

leader for some parts of the survey. From that time onwards the frequency of on site supervision can be reduced, but-

- the supervisor should be present on sufficient occasions during each survey to ensure that the graduate's problems are solved expeditiously,
  - the supervisor should inspect the marking and physical aspects of the survey, and the field records, closes, re-establishment etc on its completion, and
  - the supervisor should effect sufficient angular and linear checks of the surveys to be satisfied with the standard and accuracy of the graduate's work.
- 6.4 Just before the successful completion of the training agreement it is acceptable for the supervision of the graduate to be reduced for the specific purpose of the further professional development of the graduate's work attitude and ethics.
- 6.5 The supervising surveyor will still be wholly responsible for the correctness of the surveys.
- 6.6 It is recommended that in the period of off-site supervision:-
- in the cases of simple jobs, the supervising surveyor should inspect the field record of each job, and
  - in other cases the graduate should prepare a short survey report describing important aspects of each survey (particularly the re-establishment) and
  - that this record be retained by the supervising surveyor and forms part of the off-site supervision. These reports could form part of the documentation presented to the Surveyors Board supporting the graduate's application for registration as a licensed surveyor.
- 6.7 Acceptance of only off-site supervision is limited to the final period of a graduate's training. It is never to be extended to a person who is not under a training agreement, no matter how extensive that person's experience.
- 6.8 Supervisors should act within the confines and the spirit of the certificate signed in each fieldbook (namely, "under my supervision") lodged during the period of a Professional Training Agreement. The fact that the supervisor has signed the plan and fieldbook indicates satisfaction as to the accuracy of the survey, that the survey is in accordance with the regulations, and an acceptance of full responsibility for the survey.

## **7. Responsibilities Of The Supervisor**

The professional training of a graduate is an important and demanding role, not one to be undertaken lightly or for the wrong reasons. The responsibilities of the surveyor include:-

- 7.1 Not enter into Training Agreements with more than two (2) graduates at any one time,
- 7.2 Provide the range of experience necessary for the graduate's development,
- 7.3 Provide the tuition and guidance necessary for the graduate's development (both technical and professional),
- 7.4 Wholly responsible for the correct performance of jobs by the graduate,
- 7.5 Treat the graduate's development as of primary importance and not just an ancillary activity to the running of the firm or the correct completion of surveys,
- 7.6 Encourage the graduate's participation in Board approved continuing professional development courses.
- 7.7 Responsible for effective feedback to the graduate on every job,
- 7.8 Report to the Board on a regular basis on the progress of the graduate's training.
- 7.9 Responsible for the decision to put the graduate forward for licensing. The Board must depend heavily on the surveyor's opinion as to the graduate's readiness,
- 7.10 The Professional Training Agreement should state the extent of the supervisor's responsibility (if any is accepted) for arranging or participating in training (of a stated nature) which is not available within the supervisor's firm. To clarify the extent or basis of the agreement it is beneficial for it to list the scope of work normally done by the supervisor, and to list any necessary types of work which the supervisor does not do.
- 7.11 It is recognised that the supervisor is not committed to successfully complete the graduate's development within any time frame, even though a time schedule is included in the agreement. The length of time necessary to complete the training is dependant on the endeavours of the graduate.

## **8. Responsibilities Of The Graduate**

- 8.1 Fundamental and general educational matters (including familiarity with Acts, regulations, guidelines and manuals) should not be neglected by the graduate.
- 8.2 The length of elapsed time before licensing is expected to be heavily dependant on the amount of personal time that the graduate is prepared to contribute during (and before) the Training Agreement.
- 8.3 The graduate is responsible for ensuring that sufficient time is spent on continuing professional development.
- 8.4 The graduate is responsible for keeping records of the training received and for informing the supervisor of any slippage of time.
- 8.5 To clarify the basis for the agreement (and to assist in preparing an achievable time schedule) it is beneficial for the agreement to include a realistic description of the graduate's competencies, experience and knowledge before entering the agreement.

## **9. Model Professional Training Agreement**

A model Professional Training Agreement is attached. It is recommended that the topics in that model be considered for inclusion in all training agreements. But every agreement is unique so the model should not be used uncritically as a pro forma.

## **10. Training Reports**

10.1 The following records should be maintained, to be submitted to the Board initially on a six monthly basis. The maintenance of these records not only make the interim and final reports easier to prepare, but also more readily identify any deficiencies in the training program.

BY THE GRADUATE:

- a work folder of completed training projects; and
- tables of experience (form 3) lodged at six month intervals recording the type of work experience and the accrual of training days.

BY THE SUPERVISING SURVEYOR:

- reports covering the level of skill and knowledge of the graduate, such that the degree and complexity of work and responsibilities can be analysed; and
- verification, comment and signing off of the graduate's training projects and tables of experience.

Each entry in the records described above in this paragraph should specifically state which of the skills listed in this document have been developed during that job.

10.2 Each supervisor who has undertaken in full or in part a component of a graduate's training is required to document the categories of training and the period during which it was undertaken. A certificate to that effect is required to be signed after each period as set out in Form 3 (copy attached).

10.3 The period and categories of training must aggregate to at least the minimum requirement set out in the Board approved agreement.

10.4 The Supervising Surveyor shall provide reports to the Board on a six (6) monthly basis as per form 4.

10.5 The Board will monitor the progress through the reports, and where necessary provide counselling and assistance to ensure appropriate training opportunities are provided to the graduate and support is available to the Supervising Surveyor.

## **11. Certificate of Professional Training**

When the graduate has completed the required amount of training and the supervisor is satisfied that the graduate is capable of undertaking land boundary

surveys unsupervised, the supervisor is to complete a certificate of professional training. The certificate of professional training is form 5.

## **12. The Examination**

### **12.1 Examination Timing**

The supervisor decides when a graduate has the all-round skills and knowledge to result in a successful completion of the Board's examination. There will always be personal and commercial pressures which may influence the timing of that decision. The focus must however always be on the capability of the graduate to perform as a licensed surveyor in their own right.

### **12.2 Project Work**

The graduate is required to submit projects to the Board. Details of the required projects are at attachment C.

Although the project work must be the work of the graduate, the supervisor should check the work as correct. Sub-standard work reflects on the supervision.

### **12.3 Equipment**

The supervisor should ensure that the graduate is given the best possible support to ensure a successful result at the Board's examination. This should include equipment and staff.

### **12.4 Examination Preparation**

The supervising surveyor should consider work allocation immediately prior to the examination to allow the graduate adequate preparation opportunities.

## **13. Transfer Of An Agreement**

If circumstances arise such that the graduate's training can not be optimally managed by the supervising surveyor, then the supervising surveyor should arrange transfer of the professional training agreement, or in extreme cases its suspension or termination.

## **14. Dispute Resolution**

If the aspirations and commitments of both parties are discussed during the shared preparation of the agreement, and if the graduate's progress is discussed frequently during the period of the agreement, a dispute is unlikely.

If a dispute arises that can not be readily resolved by the supervisor and graduate the Board will willingly provide a Board member to assist with negotiations or resolution. Such assistance will not infer blame.

## **15. Termination Of Agreement**

It is prudent for both parties to include in the Professional Training Agreement a clause that outlines the circumstances and conditions relating to the termination of the agreement. The Board suggests that the provisions of paragraphs 13 & 14 above be fully considered before implementing such termination. The Board must be notified of the termination of an agreement. The notification should include evidence that both parties concur with the termination. The Board should be provided with a Certificate of Service for its records.

**FORM 3**

**LICENSED SURVEYORS ACT 1983  
CERTIFICATE OF PROFESSIONAL TRAINING**

I, ....., a surveyor registered under the *Licensed Surveyor Act 1983* hereby certify that ....., a surveying graduate-

- (1) has been professionally and continuously employed with me in the practice of land surveying from ..... to ..... that is to say, for a period of ..... years and ..... months;
- (2) has, during the said period, gained the following experience -

Nature of Practical Experience Obtained by Candidate	Length of Time (in days) over which Candidate has Obtained Practical Experience Under Professional Training Agreement				
	Office Experience	Field Experience as a General Assistant	Field Experience as an Instrument Operator	Field Experience as a Party Leader	Total Experience Obtained
Land Boundary Surveys: - in Urban Areas - in Rural Areas					
Engineering Surveys					
Topographical Surveys					
Mining Surveys					
Control Surveys					
Other Surveys: • Land administration • Town planning • Hydrography • Remote sensing ( <i>lidar, UAV, photogrammetry</i> ).					
Total Experience					

Dated at ..... this day ..... of 20.....

.....  
Licensed Surveyor

**FORM 4**  
**PROGRESSIVE REPORT OF**  
**PROFESSIONAL TRAINING PROGRAM**

To be completed by the Supervising Surveyor and lodged with the Table of Experience at six month intervals.

TOPIC	Completed	Date	Signed
<b>Competency in:</b>			
Safe Working Practices			
Basic Field skills			
Error elimination			
Engineering survey			
Completed at least 5 surveys in Rural cadastral survey			
Completed at least 5 surveys in Urban cadastral survey			
AGD, GDA and AHD			
Achievement of accuracy			
Team leadership (field)			
Survey document e.g. searches, field notes			
Survey computations			
Plan drafting			
Calibration			
Client instructions & liaison			
Repegs, idents, lease diag, easement diag			
Office procedures (QA)			
Land Development Process			
Knowledge of relevant Acts			
Ethics			
<b>Familiarity with:</b>			
Building set-out			
Use of GPS			
Digital Survey Data			
Riparian Boundaries			

*Dated at ..... this day ..... of 20.....*

.....*Licensed Surveyor*

**FORM 5**

LICENSED SURVEYORS ACT 1983  
CERTIFICATE OF PROFESSIONAL TRAINING

I, ....., a surveyor registered under the *Licensed Surveyor Act 1983* hereby certify that ....., a surveying graduate is fully competent to take responsibility for surveys effected.

*Dated at ..... this day ..... of 20.....*

.....Licensed Surveyor

## ATTACHMENT A

Safe Working Practices
Basic Field skills
Error elimination
Engineering survey
Rural cadastral survey
Urban cadastral survey
AGD, GDA and AHD
Achievement of accuracy
Team leadership (field)
Survey document eg. searches, field notes
Survey computations
Plan drafting
Calibration
Client instructions & liaison
Repegs, idents, lease diagrams, easement diagrams
Office procedures (QA)
Land Development Process
Knowledge of relevant Acts
Ethics
Building set-out
Use of GPS
Digital Survey Data
Riparian Boundaries

## **ATTACHMENT B**

### **The Main NT Acts Relating to Licensed Surveyors:**

Control of Roads Crown Lands  
Encroachment of Buildings  
Fences  
Land Title  
Lands Acquisition  
Law of Property  
Licensed Surveyors  
Local Government  
Mining  
Planning  
Real Property (Unit Titles)  
Unit Titles  
Water