

Occupational Profile: *Land Survey Technician*

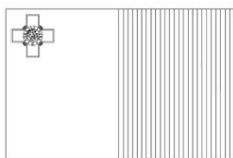
A competent Land Survey Technician should be able to demonstrate the following skills and competences:

Basic Competencies and Skills

1. Teamwork – The capacity and willingness to work well within a team environment
2. Health & Safety – Understand and make use of workplace health and safety policies
3. Communication – The ability to communicate effectively both verbally and in writing
4. Organisational Knowledge – Understand the workplace organisational structure and reciprocal obligations
5. Analytical Calculations – The ability to carry out simple mathematical calculations and understand coordinate geometry

Key Competencies and Skills

1. The ability to understand and make use of survey instruments and carry out routine checks
2. Undertake topographical surveys to the quality standards specified by the employer
3. Understand and interpret Engineering/Construction drawings and carry out setting out of simple construction elements
4. The ability to use ICT in Surveying
5. Understand the use of: map projections; graticules; grids and coordinate systems
6. Spatial Data Management



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The candidate applying to be trade tested for the Certificate of Competence should be in possession of the majority of the following knowledge, competencies & skills:

Demonstrating a disposition to co-operate effectively with team members
Assessing and identifying hazards in the work environment
Making proper use of personal protective equipment and other safety ware
Maintaining records in an orderly manner and compiling brief reports
Demonstrating sound listening techniques and display confidence in communicating with others
Demonstrating awareness of the organisational structure and Human resources policies and procedures
Understanding organisational hierarchy and workflows
Carrying out simple mathematical calculations related with reduction and checking of field observations
Understanding the use of coordinate geometry in the field surveying process

Understand and make use of survey instruments and carry out routine checks

Levelling Instruments:

- Automatic/Dumpy
- Digital
- Rotating Laser

Angle and Measuring Devices:

- Magnetic compass
- Theodolite
- Total station
- GPS

Instruments Routine Checking:

- Two peg test
- Multi pillar base line
- Horizontal/Vertical collimation

Survey Accessories Checking

- Tribrach
- Measuring tape

Undertake topographical surveys to the quality standards specified by the employer

Specifications and purpose of survey

Carrying out Reconnaissance survey and report findings

Establishment of traverse stations
Traverse observations and adjustment
Data capture and recording of survey information
Data processing using specialised survey software
Plotting of survey using computer aided design software
Quality control checking

Understand and interpret Engineering/Construction drawings and carry out setting out of simple construction elements

Understanding and use of scale rulers
Interpreting Engineering/Construction drawings and differentiate between existing and proposed features
Making use of control network/traverse stations during setting out
Using appropriate setting out markings
Understanding the use of different types of measuring tapes

The ability to use ICT in Surveying

Uploading and downloading of survey data between instrument and computer
Use of spreadsheet
Use of specialised survey software
Conversion of survey data
Computer aided design for plotting of surveys: layers, blocks, layouts

Understand the use of map projections, graticules ,grids and coordinate systems

Convert data from one project to another using appropriate conversion software
Must be able to relate the various coordinate systems used as a basis for spatial information
Geo-reference digital imagery

Spatial Data Management

Data Acquisition

Data Capture from orthophotography, Digitizing, Scanning, Field data collection

Data Exchange

- Data Import/Export to various formats using appropriate conversion software

Query Database

- Searches by Attribute
- Searches by Geography

Data Editing and Validation

- Master ordinary editing tasks

Data Output

- Producing a hardcopy map with evidence of proficiency in the use of the main components of map design

Attribute Data

- Managing fields and information in the attribute table

ASSESSMENT CRITERIA

Land Survey Technician

1. Introduction

The following is a detailed description of the assessment criteria to be adopted by the Trade Testing Board (TTB) to reach a final decision on the award of a Certificate of Competence for Land Survey Technician.

2. Trade Test

The trade test is to be made up of the following components:

1. Written
2. Log Book
3. The Interview
4. Practical Test (complemented with a technical report)

The Board has agreed on the sequence of the test and the markings allocated to each specific component as indicated below:

Component	Mark	Pass Mark
Written	100	50%
Logbook	100	50%
Interview	100	50%
Practical	100	50%

The Written Component

The Board has agreed that those candidates who provide a formal qualification of the required standard will be exempted from the written examination (first component). The qualifications submitted by the candidate should be recognized by the Malta Qualification Council (MQC).

However in the absence of a formal qualification or an insufficient qualification the candidate will have to sit for a written test (examination).

The duration of the written test will be of **6 hours spread on 2 papers** to assess the theoretical competence of the candidate.

The questions of the written test paper will cover topics such as:

- types of surveys
- knowledge and application of field equipment and instruments
- survey computations
- plan/map reading
- compilation and use of field notes
- plotting of surveys
- knowledge of components of a GIS
- knowledge of applications of GIS
- Health & Safety issues.

Logbook

Candidates in possession of a qualification related to Land Surveying and recognised by the MQC will not be required to present a logbook.

Interested candidates to sit for the competency test without possession of a qualification as indicated above shall maintain a detailed logbook illustrating the surveying works he/she participated in during a period of one year prior to the submission of the application.

The Trade Testing Board will evaluate the endorsed logbooks and will assess the following.

Neatness/Organisation of all the documentation and drawings
Report writing skills and proper use of technical terms
The content is related to the subject and includes a wide variety of surveying activities

The Interview Component

- All candidates will be called for an interview prior to the practical test, as this will allow the Board to assess the proficiency of the candidate with regards to operating various Land surveying instruments and basic Geographic Information Systems (GIS) processes
- The duration of the interview will be 20 to 30 minutes during which the Board will have the opportunity to put forward questions related to the various skill requirements and work elements.
- The Interview questions will cover the following topics.
 - (a) Health & Safety
 - (b) Aptitude towards field and manual work
 - (c) Attitude and forming part of a team
 - (d) Work experience
 - (e) Technical questions

The Board believes that the candidate should answer questions on the above topics with confidence while portraying technical skills and knowledge of the subject.

The Practical Component

The practical test will include two practical sessions

1. Land Survey Tasks

The Land survey tasks practical session will be conducted during a 4 hour morning sessions in an open area offering the appropriate environment for land survey activities.

Due to the genre of the work and the limited resources not more than one candidate can be assessed in one session.

Moreover, each candidate has to be accompanied by another two team members during the whole exercise.

The candidate will be given a site plan on which an area is indicated to be surveyed in detail. S/he will be asked to carry out the necessary field observations to prepare a vertical and horizontal control network surrounding the area to be surveyed. On completion of the control network the candidate will conduct a detail survey including sketching of a small part of the area.

The candidate will be tested on the following survey techniques:

- Choice of appropriate equipment to conduct the assignment
- Map reading
- Site reconnaissance
- Setting up and use of surveying instruments
- Levelling/angle observations
- Neatness of field sketching
- Data capture techniques
- Time management
- Safety measures

2. **Geographic Information System Tasks**

The geographic information session will be comprised of various spatial data management tasks. The candidate will be tested in an office environment for the following spatial data management tasks.

- Data import/export
- Various editing tasks
- Aerial photo interpretation
- Attributes information management