

RTC5519A**Unit Descriptor****Unit Sector****Conduct biological surveys**

Conduct biological surveys

No sector assigned

ELEMENT**PERFORMANCE CRITERIA**

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| 1. Carry out preliminary design activities for the biological survey | 1.1 Survey scope, objectives and constraints are identified according to client requirements, biological components to be surveyed and enterprise policy.
1.2 All current data relevant to survey requirements is sourced, collated and evaluated according to enterprise policy.
1.3 Processes for data collection are developed, consistent with the survey scope, objectives and constraints.
1.4 Processes for data processing are developed, consistent with the survey scope, objectives and constraints.
1.5 A survey design that reflects client requirements and survey scope, objectives and constraints is developed and presented to the client for discussion and approval. |
| 2. Determine requirements of the biological survey | 2.1 Survey indicators are identified and constraints and opportunities for data collection identified and evaluated.
2.2 Data collection points are identified that are repeatable and statistically representative for the biological survey.
2.3 OHS hazards associated with conducting a biological survey are identified, risks assessed and controls developed according to enterprise guidelines, costed and documented in the survey design.
2.4 Tools, equipment and machinery required for the biological survey are identified, costed and availability confirmed with suppliers, contractors and appropriate personnel.
2.5 Scheduling of survey activities and surveyor access are determined according to the survey design.
2.6 Survey procedures and schedules are documented according to scientific conventions and the survey scope and objectives, and are presented to appropriate personnel and the client for briefing and acceptance. |

- 3. Conduct the biological survey
 - 3.1 Field visits are conducted to verify and consolidate previously collected data and to gather further information on species frequency, distribution, health and/or habitat values.
 - 3.2 The **biological** survey is conducted according to the survey design and enterprise policy.
 - 3.3 Survey activities are monitored for accuracy, compliance to the survey design and out-of-specification procedures or events.
 - 3.4 Staged data collection is undertaken according to survey design, survey scheduling and surveyor access requirements.
 - 3.5 All monitoring and survey data is recorded promptly and accurately, according to the specifications of the survey design.

- 4. Compile a biological survey report
 - 4.1 Analysis of collected data is undertaken according to industry policies and guidelines.
 - 4.2 Conclusions about the **biological** survey are drawn from relevant information and are based on appropriate evidence and reasoned arguments.
 - 4.3 A **biological** survey report is produced which conforms to industry standards for presentation, structure and content, and is presented to the client for acceptance.
 - 4.4 The report describes **biological** survey findings according to the survey scope and objectives, identifies areas requiring remedial action for improvement and details recommendations for action.

KEY COMPETENCIES

What processes should be applied to this competency standard? There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the key competencies, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Oral and written communication with the client, enterprise staff, senior management, consultants or industry contacts will be required. There is likely to be negotiation between the developer of the biological survey and the client to achieve the survey objectives.	3
Collecting analysing and organising information	Information about survey design and previous studies will be obtained through literature research and consultation. Survey design should be organised and presented as survey site plans, statements of projected outcomes, written work procedures, a timeline chart, and schedules for surveying activities. All individual records, collected field data, statistical analysis and findings should be organised, formatted and presented for the client according to enterprise standards and industry best practice.	3
Planning and organising activities	The planning and design process, conduct of the biological survey and organisation and presentation of findings should proceed in a logical, orderly and efficient manner. Timely and appropriate information needs to be available for decision-making. The survey design should reflect the activities required to effectively and accurately obtain objective results.	3
Working with others and in teams	Survey design, conduct, analysis and production of assessment reports will involve working with other members of a team to achieve the survey objectives.	3
Using mathematical ideas and techniques	Mathematical concepts will be required to measure quantities, distances and times, calculate areas, resources, costs, conduct analysis of data, and present results of the biological survey.	3
Solving problems	Problems relating to survey design, the variable nature of survey points, availability of resources and equipment, costs, monitoring of the surveying procedures and time line failures may arise as the survey proceeds and require remedial action.	3

Key Competency	Example of Application	Performance Level
Using technology	Technology will be required to record, store and communicate ideas and information consistently, reliably and accurately. It will also be used to research relevant information, collect and process data from survey points, and to produce the survey design, analysis and assessment report.	3

RANGE STATEMENT

What scope may be specified for the biological survey?

Survey scope may include the size of the area to be surveyed, the type of plant/animal community and the quantity and species within the community that are to be directly surveyed, regularity and replication of survey periods, and the extent of analysis and recommendations required.

What objectives may be specified for the biological survey?

Objectives may include monitoring of health, rate of growth/fecundity, successful establishment, decline of individual species and/or the specified **biological** community.

What constraints may affect the biological survey?

Constraints may be financial, time, scheduling, labour availability, seasonal, and government legislation and regulations.

Who may be referred to as a client?

Clients may include the enterprises management, or a private individual, company, community group, government agency or a combination of these entities.

What biological components may be surveyed?

Biological components cover vegetation and/or animals.

Vegetation may include plant communities in parks, along roadsides and on rural properties. The plant communities may include remnant native vegetation, weeds and introduced species, regenerated or revegetated native areas. The vegetation to be surveyed may include a particular species, specified group of species or a specified area of vegetation.

Animals may include native or introduced species in parks, urban bushland, along roadsides and on rural properties. Animals to be surveyed may include a particular species, specified group of species, or a specified area of occurrence or habitat.

What current data may be available for assessment?

Current data may include written or oral records, existing studies, and local and State government policy and practices affecting the species or area to be surveyed. Current data may relate to human intervention (such as clearance, cultivation, grazing, settlements, revegetation), landscape degradation (such as salinity, accelerated wind and water erosion, edge die-back, species depletion), natural fire and flooding events, surface water levels, watertable levels, toxicity, soil type and status, pest plant populations and pest animal activity.

What processes for data collection may be developed for the biological survey?

Processes may include the employment of staged visual assessments and checklists, photo points, aerial photography, plant/animal sampling, transect plant or associated animal counts, and examination of aerial or other existing photographs.

What processes for data processing should be developed for the biological survey?

Processes should include data recording, organising, analysis and presentation techniques.

What survey indicators may be identified?

Survey indicators should include a suite of linked, measurable units associated with the objectives of the survey.

What constraints and opportunities for data collection should be considered?

These may include aspects of surveyed species/communities and associated indicators (e.g., seasonal behaviour) that may influence the quality of data obtained or ability to obtain the data.

How may the data collection points be repeatable?

The data collection points must enable the surveyor to return at regular intervals (e.g., weekly, monthly, annually) to repeat the data collection activity so that the data may be comparatively analysed. The time of day or night for data collection may also require repeated consistency, to reduce variable factors.

How may the data collection point be statistically representative of the biological surveyed?

The data collection points should be suitably distanced logistically, spatially or sequentially from other data collection points to prevent overlap of information or collection of variable data that may detrimentally affect the survey analysis.

What OHS hazards may be associated with conducting a biological survey?

Hazards may include solar radiation, extreme weather conditions, air, soil and water borne microorganisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, insect, spider and snakebite, slippery and uneven surfaces, and moving vehicles.

What controls may be introduced to minimise the risk of OHS hazards?

Controls should be introduced according to enterprise OHS policies and procedures and may include identifying hazards, assessing and reporting risks, cleaning, maintaining and storing tools, equipment and machinery, appropriate use, maintenance and storage of personal protective equipment including sun protection and high visibility clothing, safe operation of tools, equipment and machinery, safe handling, use and storage of chemicals and hazardous substances, correct manual handling, basic first aid available on site, personal hygiene, and reporting problems to managers.

What tools, equipment and machinery may be required to conduct a biological survey?

Tools, equipment and machinery may include computers and appropriate software, photographic equipment, potentiometer, tape measure, flagging tape, site or district maps, compass, recording implements, survey point markers and drivers, Global Positioning System (GPS), specimen bags, secateurs, leaf tissue collection equipment, field testing reagents and tools, and binoculars.

What requirements for surveyor access may be considered?

Regular access to survey points may require the issue of permits or land manager assistance. Access may be pedestrian or vehicular. Detrimental environmental impacts may be associated with the establishment of regular access routes, particularly in heritage, endangered or rare flora or fauna habitats.

EVIDENCE GUIDE

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

- Biological classification systems.
- Plant/animal recognition.
- Environmental factors that impact on vegetation/animal populations.
- Ecological principles and terminology.
- Energy flows and trophic structures of communities.
- Legal requirements relating to the protection and clearance of vegetation and/or animal species.
- Assessment, reporting and client liaison procedures and best practice techniques.
- Enterprise work team management guidelines.
- OHS legislative requirements and Codes of Practice.
- Hazard identification, assessment and control.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- Communicate and negotiate orally and in writing with the client, enterprise staff, managers and consultants.
- Research and evaluate information.
- Calculate the cost requirements of components of the biological survey.
- Assess survey findings and produce written reports and conclusions based on appropriate evidence and reasoned arguments.
- Comply with legislative requirements.

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

Essential Assessment Information

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.