



Australian Government

Department of Education, Employment and Workplace Relations

MSS025013A Assist with assessing and monitoring wetlands

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit of competency covers the ability to plan and conduct desktop and field activities designed to collect and interpret information about the characteristics and condition of specific wetlands. This work assists environmental scientists and planners to develop wetland inventories, assess and monitor the condition of wetlands and/or develop wetland management plans.

Application of the Unit

This unit of competency is applicable to environmental technicians in a range of industry sectors, such as:

- stormwater management
- clean water (e.g. catchments, supply and environmental flows)
- environmental services, such as monitoring of water quality
- environmental compliance, auditing and inspection.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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| 1 | Confirm details of assigned activities with supervisor | 1.1 | Clarify the scope and objectives of assigned activities, constraints and wetland components involved and any conservation measures or management plans in place |
| | | 1.2 | Identify regulations, standards, guidelines and enterprise procedures that apply to assigned activities |
| | | 1.3 | Clarify the required outputs, timeframe, available resources and stakeholder involvement |
| | | 1.4 | Confirm assessment indices and data collection plan details for target wetland |
| | | 1.5 | Clarify the use of survey proformas, data collection forms and/or field identification guides, as necessary |
| 2 | Source and assess available wetland data | 2.1 | Locate and obtain existing wetland data and review its relevance and accuracy |
| | | 2.2 | Locate external sources of relevant data sets and assess their availability, price, value and limitations |
| | | 2.3 | Obtain selected data sets in accordance with enterprise procedures |
| | | 2.4 | Use available data to identify known wetland boundaries, characteristics, condition and any environmental issues relevant to the study |
| | | 2.5 | Identify any significant information gaps |
| 3 | Plan and organise assigned field activities | 3.1 | Analyse field activities to identify related tasks and plan efficient sequences |
| | | 3.2 | Identify risks, safety and environmental requirements associated with field activities |
| | | 3.3 | Assemble required field equipment and materials and check that they are fit for purpose |

- 3.4 Liaise with relevant personnel to explain the scope and purpose of field activities, organise site access and obtain permits, as necessary
 - 3.5 Review work plan in response to new information, changed circumstances or instructions from appropriate personnel
 - 3.6 Update work plan and communicate changes to appropriate personnel, as necessary
- 4 Conduct wetland survey and monitoring activities
 - 4.1 Observe and record wetland characteristics and evidence of disturbance using survey proformas, field identification guides and digital photography, as appropriate
 - 4.2 Collect reliable point positional data and attribute environmental data/samples for each location in accordance with data collection plan
 - 4.3 Verify any existing geographic information system (GIS) mapping of wetland location/type
 - 4.4 Collect representative water, soil and/or (micro)biological samples using specified sampling methods and equipment
 - 4.5 Obtain valid and reliable in-situ measurements using specified test methods and equipment
 - 4.6 Ensure that monitoring data/samples are collected at the same locations and during similar seasonal/climatic conditions
- 5 Finalise field work
 - 5.1 Pack and safely transport all samples, equipment and supplies back to home base
 - 5.2 Ensure all samples and data are labelled and stored safely to ensure integrity and traceability
 - 5.3 Ensure dispatch of collected samples for subsequent analysis
 - 5.4 Clean and test equipment before storage

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| 6 | Contribute to assessment of wetland condition | 6.1 | Review field observations, measurements and/or results of laboratory analyses to identify significant trends and/or problems with data |
| | | 6.2 | Use given formulae and tables to assign scores, parameter values, index values and health index/rating, where appropriate |
| | | 6.3 | Analyse data relating to wetland characteristics, existing conditions and management values, as required |
| | | 6.4 | Identify environmental issues that may impact on current wetland management objectives/practices |
| | | 6.5 | Report findings using a format and style that suits their intended use and in accordance with enterprise guidelines |
| | | 6.6 | Communicate results within the specified time and in accordance with enterprise confidentiality and security guidelines |
| 7 | Maintain a safe work environment | 7.1 | Use safe work procedures and protective equipment to ensure personal safety and that of others |
| | | 7.2 | Minimise environmental impacts of testing/sampling and generation of waste |
| | | 7.3 | Collect and/or dispose of all waste in accordance with environmental requirements and enterprise procedures |

Required Skills and Knowledge

Required skills

Required skills include:

- interpreting procedures, guidelines and manuals
- locating and evaluating wetland information
- planning and conducting assigned desktop/field activities efficiently
- making 'objective' observations based on clear criteria
- demonstrating correct and safe use of sampling/measuring equipment (including pre-use checks) to obtain valid samples and data
- identifying and rectifying basic equipment faults
- estimating numbers of flora and fauna, % coverage, and measuring dimensions and areas
- assigning assessment scores, index values, health index/rating, and calculating scientific quantities, uncertainties and unit conversion factors
- analysing findings of field work to produce reliable results and logical conclusions
- providing written reports that meet user needs
- communicating effectively with others, such as enterprise staff, members of the public, clients, landowners and consultants
- responding effectively to changed or unforeseen circumstances
- seeking advice when issues/problems are beyond scope of competence/responsibility
- working safely

Required knowledge

Required knowledge includes:

- specific legislation, policies and guidelines relevant to field activities
- sources of wetland information (e.g. directories, indexes, data sets and assessment tools)
- basic terminology and principles of wetland assessment, monitoring and management
- defining characteristics and functions of major wetland types
- fundamental principles of ecology and assessment of site environmental indicators
- environmental factors that impact on soils, water quality, population and diversity of flora and fauna
- procedures and equipment for collecting soil, water, (micro) biological samples and environmental measurements (e.g. water)
- procedures and equipment for maintaining, storing and transporting samples/specimens to ensure their wellbeing, viability and integrity
- procedures and equipment for basic spatial and environmental measurements
- enterprise procedures for the recording of field data and reporting of findings

- protocols for the confidentiality and security of information and communicating with the community and media
- relevant health, safety and environment requirements

Evidence Guide

Overview of assessment	Competency must be demonstrated in the ability to perform consistently at the required standard.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently apply the skills covered in this unit of competency in new and different contexts. Critical aspects of assessment and evidence include: • planning and safely conducting survey and monitoring activities for a range of wetlands that meet user needs • accessing and using existing environmental data sets • obtaining reliable field samples and measurements • providing detailed descriptions of wetland characteristics, existing conditions, management values, environmental issues and possible causes • completing all documentation in the required format and timeframe • working safely and minimising environmental impacts.
Context of and specific resources for assessment	This unit of competency is to be assessed in the workplace or a simulated workplace environment. Assessment should emphasise a workplace context and procedures found in the candidate's workplace. This unit of competency may be assessed with: • <i>MSS024005A Collect spatial and discrete environmental data</i> • <i>MSS024006A Perform sampling and testing of water.</i> The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. Resources may include: • access to a range of wetlands • sampling equipment, field instruments and materials

	enterprise procedures, test methods and equipment manuals.
Method of assessment	The following assessment methods are suggested: - review of wetlands data, results and records prepared by the candidate - feedback from peers and supervisors that the candidate consistently follows enterprise procedures, sampling/measurement procedures and works safely - oral/written questioning associated with surveys and monitoring of wetlands, sampling/measurement equipment and procedures and wetland assessment techniques - observation of the candidate collecting samples and conducting field tests in wetlands. In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work-like environment.
Guidance information for assessment	

Range Statement

Codes of practice	Where reference is made to industry codes of practice, and/or Australian/international standards, it is expected the latest version will be used
Legislation, standards, guidelines, procedures and/or enterprise requirements	Legislation, standards, codes, procedures and/or enterprise requirements may include: - federal legislation, such as: - Environment Protection and Biodiversity Conservation Act 1999 - state/territory government legislation and regulations and local government by-laws, policies, and plans

	dealing with: • land use, acquisition, planning and protection • protection of wetlands • vegetation management • nature conservation and wildlife/plant protection • water quality and water management • soil conservation • pollution and contaminated sites • Australian and international standards, such as: • RAMSAR Convention • AS/NZS 5667 set Water quality • A Directory of Important Wetlands in Australia, Environment Australia • ANZECC Wetland Classification System • National Water Commission Framework for the Assessment of River and Wetland Health (FARWH) • state/territory Environmental Protection Authority (EPA) indexes, guidelines and manuals, such as: • Index of Wetland Condition (VIC EPA) • Water Quality Sampling Manual (QLD EPA) • Regulatory monitoring and testing: Water and wastewater sampling (EPA SA) • Wetland Assessment Techniques Manual for Australian Wetlands (Wetlandcare Australia)
Wetlands	Wetlands may include: (ANZECC classification) • marine and coastal zone wetlands • inland wetlands • human made wetlands State/territory classification systems for wetlands vary and may include: • riverine • palustrine (river, run-off/rainfall, groundwater fed) • lacustrine • artificial • marine • spring or groundwater fed
Desktop and field activities	Desktop and field activities may include: • accessing relevant data sets and using GIS techniques to map wetland areas, high conservation areas and/or high degradation areas; and determining priority areas for field assessments

	• validating GIS mapping of wetland location and type • conducting rapid wetland assessments • assessing condition of specific wetland components, including flora and fauna (type, % cover, dominant species and condition buffers) • collecting information for use in wetland vegetation inventory • assessing disturbance and relating this to wetland condition • trialing a wetland monitoring program • establishing sites for future wetland monitoring
Wetland management plan	A wetland management plan may include: • existing and future values of wetland • wetland management objectives to protect these values • problems and issues that may compromise these objectives • agreed wetland management practices to mitigate existing impacts and minimise future impacts
Wetland data sources and data	Wetland data sources and data may include: • national databases, such as: • Directory of Important Wetlands in Australia • EPBC Online Protected Matters Search Tool • state/territory databases, such as: • Regional Ecosystem (RE) maps, Wildlife Online, Wildnet, Ecosystem Health Monitoring Program (EHMP) surveys (EPA QLD) • Index of Wetland Condition (EPA VIC) • geographic information system GIS datasets, such as: • climate • biological and physical parameters of the land and ocean • management boundaries and tenure • biodiversity • natural resources, agriculture and fisheries • land use information, such as topographical maps, aerial photos, satellite imagery and land use/zoning maps • terrain models • drainage intensity, flood and drainage studies • water and sediment quality studies • contaminated site reports

	• acid sulphate soil studies • aquatic ecology studies (e.g. threatened/scheduled species, migratory birds, key habitats and habitat corridors/connectivity) • riparian vegetation studies • reports of consultations with the scientific community, local environmental groups and industry associations, catchment management committees, and councils
Survey proformas, data collection forms and field identification guides	Survey proformas and data collection forms will vary greatly with scope and objectives of survey/monitoring activities but data fields may include: • observer identification details (ID) • site ID, (sub) catchment and/or regional ID • ownership, access, location (e.g. global positioning system (GPS)), site photo ID and transect ID • verification of wetland classification (GIS mapped, field) using identification guides and codes • proximity of other wetlands, ecosystems, roads and current/adjacent land use • site disturbance indicators, such as soil disturbance, vegetation structure modification, water quality, hydrologic disturbance, dumping, land use, feral/domestic animals, and weed causal factors • acid sulphate soil indicators, such as iron stain, scald and hydraulic conductivity • general wetland characteristics, such as: • water body dimensions, current/max water level, depth, water sources, modifications and banks • water quality (e.g. visible slime, temperature, turbidity and electrical conductivity) • habitat potential • vegetation buffer/cover/types/health/dominant species/recovery potential • fauna observations Field identification guides may include: • descriptors, photos and/or coding for wetland types and specific disturbance indicators
Field equipment and materials	Field equipment and materials may include: • topographic maps and aerial photos • compass, survey point markers and drivers, GPS, tape measure, flagging tape, 1m² quadrats and sub-quadrats

	• data recording sheets, palm pilot, laptop, data logger, digital camera and binoculars • sampling equipment, such as bottles, bags, biological specimen containers, secateurs, scoop nets, esky and ice, sample preservatives, water pumps and tubing, and shovels • automatic water samplers • portable water quality probe that measures (e.g. dissolved oxygen, temperature, turbidity, pH, conductivity and field test reagents) • flow meters • personal protective equipment, insect repellent, appropriate clothing and footwear, phone, emergency position indicating radio beacon (EPIRB) and first aid kit
Laboratory analyses	Laboratory analyses may include: • suspended solids • phosphates • nitrates and ammonium • peroxide oxidation (combined acidity and sulfate for soils)
Environmental issues and possible causes	Environmental issues and possible causes may include: • fragmentation or loss of connectivity of wetlands and/or vegetation • adjacent land use pressure causing excessive nutrients, sediment and noise pollution • human disturbance due to vehicles, boats, fire, rubbish, excessive nutrients and sediments, and impacts of feral/stock/domestic animals • exposure of acid sulphate soils • low diversity of vegetation, invasion by weeds • poor habitat potential due to invasion by pest species and land clearing • structures affecting wetland hydrology • poor condition of banks and fringing vegetation due to access of stock • poor condition of mangrove, salt marsh, seagrass due to impaired natural flow/tidal flush, excessive human disturbance, and impaired vegetative filter strips
Occupational health and safety (OHS) and environmental management requirements	OHS and environmental management requirements: • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through state/territory or federal

	legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory Departments of Health
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Unit Sector(s)

Environmental

Custom Content Section

Not applicable.