



Australian Government

Department of Education, Employment and Workplace Relations

MSS025005A Produce site maps

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit of competency covers the ability to map the environmental features of a site using sketch maps, computer rendered graphics or geographic information systems (GIS) software. Personnel identify sources of existing environmental data and assess its availability/suitability, collect field data as necessary, assess data quality and format, and present data and incorporate it onto maps. Producing maps to display environmental data requires knowledge of environmental management processes, relevant legislative and regulatory requirements, mapping principles, and the use of mapping software and hardware. Personnel will require additional units of competency to manage spatial data sets or undertake complex modelling, data manipulation and analysis using GIS.

Application of the Unit

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

- environmental monitoring, sampling and field testing (e.g. air, odour, water, soil and noise)
- geotechnical services
- natural resource management
- occupational hygiene monitoring (e.g. air, noise and radiation)
- groundwater and clean water (e.g. catchments, supply and environmental flows)
- water treatment, storm and wastewater management
- solid and hazardous waste management
- management of contaminated sites
- site remediation or rehabilitation
- resource efficiency (e.g. energy, water and waste auditing).
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

MSS024005A Collect spatial and discrete environmental data

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

1	Source and assess existing site information and data	1.1	Confirm the client's information needs, timeframe and site map specifications
		1.2	Locate and obtain existing enterprise site information and review its relevance and accuracy
		1.3	Locate external sources of relevant data sets and assess their availability, value and limitations
		1.4	Confirm ownership, access arrangements and price of required data sets
		1.5	Obtain selected data sets in accordance with enterprise procedures
		1.6	Build a detailed description of the site using existing information and data and identify any gaps
2	Collect field data about the site	2.1	Establish information needs and identify appropriate field techniques
		2.2	Confirm details of field work, site permits/access restrictions and legislative/regulatory requirements with supervisor, as necessary
		2.3	Confirm data format and quality requirements
		2.4	Assemble required field equipment and supplies and check that all items are fit for purpose
		2.5	Ensure that all required equipment and supplies are transported safely to and from the site
		2.6	Take sufficient and accurate measurements of the site and its features to ensure data reliability

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| 3 | Prepare data and supporting information | 3.1 | Assess the integrity of all data to ensure its suitability |
| | | 3.2 | Recognise and resolve any disparities between data sets |
| | | 3.3 | Identify compatible formats for data |
| | | 3.4 | Select data to meet client needs |
| | | 3.5 | Assemble relevant data elements |
| | | 3.6 | Ensure data format meets client needs |
| | | 3.7 | Prepare supporting information using media and format that meet client needs |
| 4 | Produce maps to meet information needs | 4.1 | Transfer data accurately from data sources into GIS or similar systems |
| | | 4.2 | Prepare sketch and/or computer generated maps to the required quality standard and within the expected timeframe |
| | | 4.3 | Ensure that all required site features and standard map elements are included in accordance with standard cartographic design principles |
| | | 4.4 | Compare map against site features to 'ground-truth' information, as necessary |
| | | 4.5 | Seek feedback from users regarding the utility of maps/data and resolve any problems |
| | | 4.6 | Analyse feedback to identify opportunities to improve the quality of maps |

Required Skills and Knowledge

Required skills

Required skills include:

- locating, interpreting and assessing existing maps, data sets and environmental information
- communicating effectively with suppliers of data and map users
- planning and preparing for field work
- collecting and recording spatial and environmental data in the field
- scaling information and plotting data
- preparing hand drawn or computer rendered maps
- using computers and software to manipulate and present data in graphs, tables, diagrams and maps
- seeking advice when issues/problems are beyond scope of competence/responsibility
- working safely

Required knowledge

Required knowledge includes:

- environmental terms, concepts and principles relevant to data sets and maps
- types and functions of maps, charts, aerial photos and their advantages/disadvantages
- map conventions, symbols and representation of topographical features on maps and plans
- mapping principles, including layout, legend, scale, media, printing and presentation styles
- use of software and hardware, such as printers and plotters
- functional components of a compass/global positioning system (GPS) and factors affecting compass/GPS accuracy
- techniques for estimating distance and taking bearings
- relevant legislation, regulations, licences and permit requirements for site
- enterprise environmental management framework of policy, procedures and management plans for site
- relevant health and safety requirements and enterprise safe work procedures

Evidence Guide

Overview of assessment	Competency must be demonstrated in the ability to
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	perform consistently at the required standard.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Assessors must be satisfied that the candidate can competently and consistently apply the skills covered in this unit of competency in new and different situations and contexts. Critical aspects of assessment and evidence include:</p> <ul style="list-style-type: none"> • sourcing existing environmental information and data sets that meet quality requirements • collecting reliable spatial and environmental data at the site • using available data to produce maps that meet the client's specifications and timeframe • working safely.
Context of and specific resources for assessment	<p>This unit of competency is to be assessed in the workplace or a simulated workplace environment.</p> <p>Assessment should emphasise a workplace context and procedures found in the candidate's workplace.</p> <p>This unit of competency may be assessed with:</p> <ul style="list-style-type: none"> • <i>MSS024003A Apply an understanding of environmental principles to a site.</i> <p>The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team.</p> <p>Resources may include:</p> <ul style="list-style-type: none"> • site/project history, maps and aerial photos • guidelines, codes, regulations, and enterprise procedures governing data collection • relevant field equipment, GPS receivers and related GPS software • relevant computer software and hardware.
Method of assessment	<p>The following assessment methods are suggested:</p> <ul style="list-style-type: none"> • review of maps produced by the candidate • feedback from clients, supervisors and peers about the candidate's ability to source, assess and use existing data sets to produce maps • observation of candidate collecting field data with a focus on: <ul style="list-style-type: none"> • general site reconnaissance and observations • set-up and use of equipment • accurate data recording • problem solving/troubleshooting

	<ul style="list-style-type: none"> • safe work practices • oral and/or written questions to assess underpinning knowledge of mapping principles. <p>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.</p> <p>Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</p> <p>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.</p>
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, codes, procedures and/or enterprise requirements	<p>Legislation, standards, codes, procedures and/or enterprise requirements may include:</p> <ul style="list-style-type: none"> • federal legislation, such as: <ul style="list-style-type: none"> • Environment Protection and Biodiversity Conservation Act 1999 • Australian Heritage Council Act 2003 • Native Title Act 1993 • state/territory government legislation and regulations and local government by-laws, policies, and plans dealing with: <ul style="list-style-type: none"> • land use, acquisition, planning and protection • environmental protection • cultural/heritage protection • vegetation management • nature conservation and wildlife/plant protection • water and water management • soil conservation

	<ul style="list-style-type: none"> • pollution and contaminated sites • fisheries, forestry and mining operations • Australian and international standards, such as: • AS/NZS ISO 14000 Set:2005 Environmental management standards set • enterprise or regulator procedures for sampling, monitoring and in-field testing • material safety data sheets (MSDS) • enterprise environmental management plans for sites and projects • safe work procedures
Maps	<p>Maps may include:</p> <ul style="list-style-type: none"> • topographic • land use and land title maps • vegetation, soils and regional ecosystem maps • air photos • satellite imagery • thematic maps produced using GIS software, such as Mapinfo and Arcview
Environmental features of sites	<p>Environmental features of sites may include:</p> <ul style="list-style-type: none"> • hills, mountains, plains and cliffs • waterways, dams, lakes, oceans, estuaries and deltas • vegetation and fauna • soil and rock types • buildings, such as houses, schools, police stations, hospitals, churches, factories and industrial plants • roads, railways, tracks, jetties, piers and other infrastructure • utility services • property boundaries, shire boundaries and electoral boundaries • mining leases, local catchment areas and nature reserves • population and demographics
Enterprise site information	<p>Enterprise site information may include:</p> <ul style="list-style-type: none"> • site or project history • client history • records of consultations with stakeholders • site access protocols and permits • site utilities/services (e.g. water, sewer, electricity and gas)

	<ul style="list-style-type: none"> • maps (e.g. road, topographical and survey marks) • existing data sets (e.g. vegetation, topography, soils and regional ecosystem maps) • hazards and safety risks
External sources of data	<p>External sources of data may include:</p> <ul style="list-style-type: none"> • government departments and agencies (e.g. environment, climate change, agriculture and mining) • utility authorities/companies (e.g. water, gas and electricity) • land title office and Valuer General • local government records • Geoscience Australia • Australian Social Science Data Archive • companies providing environmental services
Data sets	<p>Data sets may include:</p> <ul style="list-style-type: none"> • textual, graphical, spatial and temporal in hard/soft copy • satellite imagery and remote sensing data • geophysical, geochemical, geological, hydrological and meteorological data • ecological data, such as distribution of vegetation, fauna and pests • social science data, such as demographic and census information • land use data, zoning and property classifications • historical records and photographs
Field techniques	<p>Field techniques may include:</p> <ul style="list-style-type: none"> • on site surveying • hand mapping • comparing site features with existing site information • collection of samples and field measurements
Field equipment and supplies	<p>Field equipment and supplies may include:</p> <ul style="list-style-type: none"> • GPS • tapes and pegs • compass • clinometer • portable computer, palm pilot or data logger • communication equipment
Standard map elements	<p>Standard map elements may include:</p> <ul style="list-style-type: none"> • latitude and longitude

	<ul style="list-style-type: none"> • grid reference systems (old and new and their relation to one another) • north point, elevation, scale and legend
Integrity of data	<p>Integrity of data may include:</p> <ul style="list-style-type: none"> • accuracy, currency and completeness • scale and resolution • confidence limits for data • quality (e.g. age/condition of hard copy documents)
Disparities between data sets	<p>Disparities between data sets may involve:</p> <ul style="list-style-type: none"> • datum and projection • currency
Supporting information	<p>Supporting information may include:</p> <ul style="list-style-type: none"> • graphs, tables, equations and parameters • explanatory notes
Occupational health and safety (OHS) and environmental management requirements	<p>OHS and environmental management requirements:</p> <ul style="list-style-type: none"> • 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

Unit Sector(s)

Environmental

Custom Content Section

Not applicable.