



Australian Government

Department of Education, Employment and Workplace Relations

AHCIRG425A Monitor and control irrigation drainage systems

Release: 1

AHCIRG425A Monitor and control irrigation drainage systems

Modification History

Not applicable.

Unit Descriptor

This Unit covers the process of monitoring and controlling the performance and efficiency of an irrigation drainage system and defines the standard required to: identify and correcting system problems; measure, record and report soil moisture, salinity and water table depth; apply measuring and testing techniques; regulate drainage flows and clear blockages; record and report system performance.

Application of the Unit

This Unit applies to irrigation managers in the amenity horticulture and food and fibre production industries.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This Unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Assess irrigation drainage and collection systems	1.1 Measurements are taken with appropriate equipment to determine drainage performance 1.2 Drainage/tail water quality is measured in accordance with OHS and enterprise policy and procedures 1.3 Water table depth is measured where required in accordance with OHS and enterprise policy and procedures 1.4 Soil salinity is measured where required in accordance with OHS and enterprise policy and procedures 1.5 Factors external to the system, which may cause interference, are identified and recorded in accordance with OHS and enterprise policy and procedures 1.6 Drainage system data is analysed and compared to the performance specified in the irrigation drainage plan
2 Regulate flows	2.1 Flow regulating systems are inspected and apply adjustments are applied necessary to achieve discharge requirements specified 2.2 Discharge flows are monitored and diversions applied to facilitate repair or emergency
3 Control and operate drainage system structures and processes	3.1 Processes are controlled to maintain performance specified in the irrigation drainage plan 3.2 Maintenance procedures for drainage system structures are developed and implemented 3.3 Operational conditions of the drainage system are identified, addressed and reported according to organisational requirements 3.4 Processes are integrated to improve drainage network performance
4 Troubleshoot drainage problems	4.1 A visual inspection is undertaken to determine damaged or broken components and results are recorded in accordance with Occupational Health and Safety (OHS) and enterprise policy and procedures 4.2 Areas being drained are inspected for signs of water pooling and problems are recorded in accordance with OHS and enterprise policy and procedures 4.3 Access to drainage lines is obtained to allow blockage to be cleared 4.4 Blockage is cleared or blocked section is replaced according to enterprise, environmental and OHS procedures 4.5 Drainage line is tested to confirm blockage is cleared from pipe system 4.6 Drainage line is repaired/resealed to permit normal use 4.7 The drainage site is rehabilitated
5 Record and report	5.1 Water quality is recorded in accordance with enterprise

system performance
status

procedures

5.2 Water table depth, soil moisture and salinity are recorded in accordance with enterprise procedures

5.3 Strategies that minimise the negative environmental impacts and maximise the positive impacts of the drainage system, are documented

Required Skills and Knowledge

This section describes the skills and knowledge required for this Unit.

Required skills include:

Ability to:

- identify hazards and implement safe work procedures
- apply soil moisture testing techniques
- calculate water volumes from rate and depth
- measure water table depth, soil moisture and salinity
- clear and refill drainage lines
- isolate drainage lines
- clear blockages from drainage systems
- identify adverse environmental impacts of drainage systems and appropriate remedial action
- use computers for recording and reporting drainage system data
- implement and follow relevant enterprise OHS and environmental policies and procedures
- use literacy skills to read, interpret and follow organisational policies and procedures, follow sequenced written instructions, record accurately and legible information collected and select and apply procedures for a range of tasks
- use oral communication skills/language competence to fulfil the job role as specified by the organisation, including questioning techniques, active listening, clarifying information and consulting with supervisors as required
- use numeracy skills to estimate, calculate and record routine workplace measures
- use interpersonal skills to work with and relate to people from a range of cultural, social and religious backgrounds and with a range of physical and mental abilities.

Required knowledge includes:

Knowledge of:

- measuring and monitoring procedures for factors contributing to drainage system performance
- positive and negative environmental impacts of drainage systems
- water table and salinity measures
- water quality monitoring methods and techniques
- soil moisture measurement procedures
- water authority standards and procedures
- enterprise policies and procedures
- environmental role of drainage systems.
- drainage appliances/fixtures/fittings and related
- level and align site
- types and operational parameters of drains

- components used in drainage systems
- isolation processes and procedures
- levelling and alignment processes
- regulatory requirements, codes of practice and relevant enterprise service standards relating to blockage removal, disconnection and reconnection activities
- environmental impacts of drainage systems
- OHS legislative requirements.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this Unit	The evidence required to demonstrate competency in this Unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • identify and correcting system problems • measure, record and report soil moisture, salinity and water table depth • apply measuring and testing techniques • regulate drainage flows and clear blockages • record and report system performance.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

The range statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>Irrigation drainage systems</i> may include:	both surface and sub-surface drainage installed to handle water which is excess to plant requirements in an irrigated area.
<i>Drainage system structures</i> may include:	• surface drains • culverts • mole drains • sand slit • sub-surface traps • pit and trap systems • dune and swale systems • reed beds • water-recycling pumps and baffles.

Unit Sector(s)

Irrigation