

Federal Democratic Republic of Ethiopia  
**OCCUPATIONAL STANDARD**  
**NATURAL RESOURCES CONSERVATION  
AND DEVELOPMENT**  
NTQF Level I-IV



*Ministry of Labour and Skill*

*March 2022*

## 1. Introduction

Ethiopia has embarked on a process of reforming its Technical and Vocational Education and Training (TVET) System. Within the policies and strategies of the Ethiopian Government, technology transformation by using current international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labour market.

The Ethiopian Occupational Standard (EOS) is the core element of the Ethiopian National TVET Strategy and an important factor within the context of the National TVET Qualification Framework (NTQF). They are national Ethiopian standards, which define the current and future occupational requirements and expected outcome related to a specific occupation using distinct Unit of Competences without taking TVET delivery into account.

The whole package EOS document for an occupation is an integrated set of nationally endorsed core generic Unit of Competences organized in to different qualification levels built one upon the other below or side wise to make full occupational profile.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title and NTQF level
- Unit title
- Unit code
- Unit descriptor
- Element and Performance Criteria
- Range and Variables
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor/curriculum developer in determining the candidate training and assessment.

The ensuing sections of this EOS document comprise a description of the occupation with all the key components of a Unit of Competence:

- Chart with an overview of all Units of Competence with their Unit Codes and Titles
- Detail contents of each Unit of Competence
- Occupational map providing the TVET providers with information and important requirements to consider when designing training programs using this standards and show a career path

## 2. Modification History

### 2.1 Occupational Title:

This occupational Standard is set for **Natural Resource Conservation and Development Level I, II, III, and IV**. This occupational Standard is version **5** and revised in March 2022.

### 2.2. Description of the Occupation

#### 2.2.1 Level Description

##### Level I

Breadth, depth and complexity of competences would cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice. This would be applied at work on a defined range of activities under routine and predictable conditions. Low value of complexity, interconnection, in-transparency and dynamics; high degree of stability

Performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures under direct supervision

##### Level II

Breadth, depth and complexity of competences would cover selecting, adapting and transferring skills and knowledge to new environments and providing technical advice and some leadership in resolution of specified problems. This would be applied across a range of roles in a variety of contexts with some complexity in the extent and choice of options available.

Performance of a defined range of skilled operations, usually within a range of broader related activities involving known routines, methods and procedures, where some discretion and judgment is required in the selection of equipment, services or contingency measures and within known time constraints.

Applications may involve some responsibility for others. Participation in teams including group or team co-ordination may be involved.

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### **Level III**

Breadth, depth and complexity of knowledge and Competences would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organizing activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including the requirement to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills. Applications involve responsibility for, and limited organization of, others.

### **Level IV**

Breadth, depth and complexity of knowledge and Competences would cover a broad range of varied activities or application in a wider variety of contexts most of which are complex and non-routine. Leadership and guidance are involved when organizing activities of self and others as well as contributing to technical solutions of a non-routine or contingency nature.

Performance of a broad range of skilled applications including the requirement to evaluate and analyse current practices, develop new criteria and procedures for performing current practices and provision of some leadership and guidance to others in the application and planning of the skills. Applications involve responsibility for, and limited organization of, others.

## **2.2.2 Occupant Performance Profile**

### **Level I**

#### **Natural Resource Conservation and Development Level I**

Occupational standard for each level covers description of the competences (knowledge, skills and attitudes) to perform work activities to standard required at work places expressed as occupant performance profile:

- Perform Nursery Work
- Collect and process planting Materials
- Conduct survey and Navigation
- Undertake Plantation Work
- Perform Arboriculture Work
- Identify basic soil properties

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- Identify and maintain Indigenous Soil and Water Conservation Practices
- Undertake Irrigation Work
- Apply Basic First Aid Procedures
- Apply Agricultural Extension Service
- Implement Agribusiness Marketing
- Apply Basics of Human Nutrition Practices
- Apply 5S Procedures

## **Level II**

### **Natural Resource Conservation and Development level II**

Occupational standard for each level covers description of the competences (knowledge, skills and attitudes) to perform work activities to standard required at work places expressed as occupant performance profile:

- Rehabilitate and Restore Degraded Areas
- Apply in-situ Moisture Harvesting Technologies
- Conduct Erosion and Sediment Control Activities
- Conduct Agroforestry Practices
- Apply Forest Protection Strategies and Practices
- Apply Sustainable Wildlife Conservation and Development
- Operate and Maintain Irrigation works and Drainage Systems
- Apply Agricultural Extension service for Rural development
- Prevent and Eliminate MUDA

## **Level III**

Occupational standard for each level covers description of the competences (knowledge, skills and attitudes) to perform work activities to standard required at work places expressed as occupant performance profile:

### **Natural Resource Conservation and Development Level III**

- Prepare Watershed Management plan
- Prepare Land Use land capability Plan
- Undertake Environmental and Social management framework (ESMF)
- Design and Implement Soil & Water Conservation Measures
- Implement Soil Health and Plant Nutrition Program
- Implement integrated soil fertility management (ISFM)
- Undertake Water Harvesting Technologies

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- Implement and Monitor Agro-forestry Practices
- Conduct Forest Inventory
- Apply Appropriate Natural Resources Extension Packages
- Carryout Sustainable Non-wood Forest Product Utilization
- Apply Digital Technology in Agriculture

#### Level IV

Occupational standard for each level covers description of the competences (knowledge, skills and attitudes) to perform work activities to standard required at work places expressed as occupant performance profile:

- Carryout Climate Change Adaptation and Mitigation Techniques
- Conduct forest road construction and Maintenance
- Implement Natural Resources Policies and Legislations
- Apply Forest Management Practice
- Perform Forest Harvesting and Post harvesting Techniques
- Undertake Implementation of Property Rights, Land Laws and Regulations
- Prepare sustainable utilization plan for rehabilitated areas
- Develop value chain analysis

#### 2.2.2. Unit Code:

There are agreed conventions for the unit codes used for unit of competences organized for any specific occupational standard. Codes are given by considering international and national benchmarks.

#### Example:

Unit Title: Prepare sustainable utilization plan for rehabilitated areas

Unit Code: AGR NRC4 07 1221

Unit Coding is described here under:

Character	What it stands for:
<b>AGR</b>	First three characters signify <i>the priority/major industry/sector</i> acronym. <b>AGR</b> represents <i>Agriculture</i>
<b>NRC4</b>	Four characters in the second group signify the acronym of the occupational title expressed as a work function and qualification level written in numerical form shows the unit belongs. <b>NRC4</b> represents natural resource conservation

	<i>and number 4 represents that the occupational standard serves for Level IV</i>
<b>07</b>	Third group with two numbers signify the numerical order of the specific unit in the level occupational standard
<b>1221</b>	Fourth group of four characters signify the month and year of OS development. <i>E.g. March 2022</i>

### 2.2.3 Version Change

*This occupational standard is developed in the title of “Natural Resource Conservation and Development” for level I, II, III and IV. The title of the occupational standard for this version is maintained the existing title names (Level I, II, III and IV), to which the relevant sector for the occupation- Agricultural development sector belongs. Hence, units of competences considered from previous Natural Resource Conservation and Development (Level II, level III and level IV, 2018) and these versions are modified in to the above-mentioned occupations and can be considered as a new occupation by endorsing their own competence.*

The version number for future revision will either be changed or not, depending on the extent of the change. Thus, those who are responsible to undertake competence assessment and provide training should check for the version number and review date of the document to confirm the latest version number before developing assessment tools and commence training respectively. Users are also advised to contact the agency for any doubts they have on the document or may refer to the website.

The development date is the time the document is prepared and validated by relevant industry experts and approved by relevant sector leading the industry. It indicates the effective date to use the document for training and assessment purposes and termination of use of the previous version for any purposes.

The endorsed occupational standards and their components may remain current up to five years from the date of development. This version is developed in **March 2022**.

<b>Previous Occupational Standard</b>	<b>Modified Occupational standard</b>
Name and Level: Level I None	Name and Level: Natural Resource Conservation and Development: Level I
Name and Level: Natural Resource Conservation: Level II	Name and Level: Natural Resource Conservation and Development: Level II
Name and Level: Natural Resource Conservation and Development: Level III	Name and Level: Natural Resource Conservation and Development: Level III
Name and Level: Natural Resource Conservation and Utilization Management: Level IV	Name and Level: Natural Resource Conservation and Development: Level IV
version: Four	version: Five
Date of Development: March 2018	Date of Development: March 2022

### Revision Changes

<b>Level</b>	<b>Changes on the units</b>	<b>Justification/Remark</b>
I	<b>Endorsed Units:</b> <ul style="list-style-type: none"> <li>Apply Basic First Aid Procedures</li> </ul>	<ul style="list-style-type: none"> <li>Bench mark and existing document</li> </ul>
	<b>Merged Units:</b> <ul style="list-style-type: none"> <li>Support Nursery Establishment and Basic Nursery Work and perform nursery work</li> </ul>	<ul style="list-style-type: none"> <li>Perform Nursery Work</li> </ul>
	<b>Replaced Units:</b> <ul style="list-style-type: none"> <li>Support Arboriculture Work</li> <li>Support Irrigation Work</li> </ul>	<ul style="list-style-type: none"> <li>Perform Arboriculture Work</li> <li>Undertake Irrigation Work</li> </ul>



Level	Changes on the units	Justification/Remark
	<p>Removed Units:</p> <ul style="list-style-type: none"> <li>Support Integrated Soil Fertility Management (ISFM)</li> <li>Support Natural Resources Conservation Work</li> <li>Familiarize with Basic Facilities, Machinery and Equipment Operations</li> </ul>	<ul style="list-style-type: none"> <li>Support Integrated Soil Fertility Management (ISFM) moved to level III</li> <li>All concepts are included in the OS</li> <li>Included in each and every UC.</li> </ul>
	<p><i>New units Added</i></p> <ul style="list-style-type: none"> <li>Identify and maintain Indigenous Soil and Water Conservation Practices</li> <li>Conduct survey and Navigation</li> <li>Undertake Plantation Work</li> <li>Identify basic soil properties</li> <li>Collect and process planting Materials</li> </ul>	<ul style="list-style-type: none"> <li>From level II</li> <li>From level II 2013</li> <li>From level II</li> <li>New</li> <li>From level II</li> </ul>
II	<p><b>Endorsed Units:</b></p> <ul style="list-style-type: none"> <li>.....</li> </ul>	
	<p><b>Merged Units:</b></p> <ul style="list-style-type: none"> <li>-----</li> </ul>	
	<p><b>Replaced Units:</b></p> <ul style="list-style-type: none"> <li>Participate in Rehabilitation and Restoration of Degraded Areas</li> <li>Facilitate Agro-forestry Practices</li> <li>Assist Operation and Maintenance of Irrigation and Drainage Systems</li> <li>Assist Sustainable Wildlife Conservation and Development</li> </ul>	<ul style="list-style-type: none"> <li>Rehabilitate and Restore Degraded Areas</li> <li>Conduct Agroforestry Practices</li> <li>Operate and Maintain Irrigation works and Drainage Systems</li> <li>Apply Sustainable Wildlife Conservation and Development</li> </ul>
	<p><b>Removed Units:</b></p> <ul style="list-style-type: none"> <li>Assist in Planting Material Collection and Processing</li> <li>Assist Nursery Work</li> <li>Participate in Plantation Work</li> </ul>	<ul style="list-style-type: none"> <li>Move to level I</li> <li>Move to level I</li> <li>Move to level I</li> </ul>

Level	Changes on the units	Justification/Remark
	<ul style="list-style-type: none"> <li>Facilitate in Performing Ex-situ Conservation Measures</li> <li>Promote Implementation of Property Rights, Land Laws and Regulations</li> <li>Identify Different Water Sources and Irrigation Methods</li> <li>Demonstrate Routine Site Assessment and Measurements</li> </ul>	<ul style="list-style-type: none"> <li>Irrelevant</li> <li>Move to level IV</li> <li>Included in water harvesting UC in level III</li> <li>Included in soil and water conservation Ucs</li> </ul>
	<p><b><i>New units Added</i></b></p> <ul style="list-style-type: none"> <li>Conduct Erosion and Sediment Control Activities</li> <li>Apply in-situ Moisture Harvesting Technologies</li> <li>Apply Forest Protection Strategies and Practices</li> </ul>	<ul style="list-style-type: none"> <li>From SWC level III 2013</li> <li>From SWC level III 2013</li> <li>From level III</li> </ul>

Level	Changes on the units	Justification/Remark
III	<p><b><i>Endorsed Units:</i></b></p> <ul style="list-style-type: none"> <li>Apply Appropriate Natural Resources Extension Packages</li> <li>Implement of Soil Health and Plant Nutrition Practices</li> <li>Conduct Forest Inventory</li> </ul>	<ul style="list-style-type: none"> <li><i>Bench mark and existing document</i></li> </ul>
	<p><b><i>Merged Units:</i></b></p>	<ul style="list-style-type: none"> <li></li> </ul>
	<p><b><i>Replaced Units:</i></b></p> <ul style="list-style-type: none"> <li>Apply Watershed Management Core Principles</li> <li>Participate in Design and Implementation of Soil &amp; Water Conservation Measures</li> <li>Support Water Harvesting Technologies Application</li> <li>Participate in Preparation of Land Use Plan</li> <li>Monitor Agro-forestry Practices</li> <li>Participate in Environmental and Social Impact Assessment</li> <li>Promote Sustainable Non-wood Forest Product Utilization</li> </ul>	<ul style="list-style-type: none"> <li>Prepare Watershed Management plan</li> <li>Design and Implement Soil &amp; Water Conservation Measures</li> <li>Undertake Water Harvesting Technologies</li> <li>Prepare Land Use land capability Plan</li> <li>Implement and Monitor Agro-forestry Practices</li> <li>Undertake Environmental and Social management framework (ESMF)</li> <li>Carryout Sustainable Non-wood Forest Product</li> </ul>

Level	Changes on the units	Justification/Remark	
		Utilization	
	<p>Removed Units:</p> <ul style="list-style-type: none"> <li>• Conduct Surveying and Aerial Photo Interpretation</li> <li>• Promote Sustainable Utilization of Forest-Based Energy Sources</li> <li>• Facilitate Forest Road Construction and Maintenance</li> <li>• Perform Forest Harvesting and Post harvesting Techniques</li> <li>• Coordinate Sustainable Community-based Wildlife Resource Utilization and Ecotourism</li> <li>• Implement and Adjust Irrigation System and Schedule</li> </ul>	<ul style="list-style-type: none"> <li>• Moved to level I</li> <li>• Moved to level IV</li> <li>• Moved to level IV</li> <li>• Moved to level IV</li> <li>• Moved to level III</li> <li>• Irrelevant</li> </ul>	
	<p><i>New units Added</i></p> <ul style="list-style-type: none"> <li>• Implement integrated soil fertility management (ISFM)</li> </ul>	<ul style="list-style-type: none"> <li>• From level I</li> </ul>	
IV	<p><b>Endorsed Units:</b></p> <ul style="list-style-type: none"> <li>• Implement Natural Resources Policies and Legislations</li> <li>• Apply Forest Management Practice</li> </ul>	<i>Bench mark and existing document</i>	
	<p><b>Merged Units:</b></p>		
	<p><b>Replaced Units:</b></p> <ul style="list-style-type: none"> <li>• Promote Climate Change Adaptation and Mitigation Techniques</li> </ul>	<ul style="list-style-type: none"> <li>• Carryout Climate Change Adaptation and Mitigation Techniques</li> </ul>	
	<p><b>Removed Units:</b></p> <ul style="list-style-type: none"> <li>• Develop Participatory Management Plan for a Designated Area</li> <li>• Participate in Designing Sustainable Natural Resources Utilization</li> <li>• Manage Natural Resources Information System</li> <li>• Monitor and Evaluate Fire Potential and Prevention Method</li> <li>• Coordinate Natural Resources Infrastructure Development and Maintenance</li> <li>• Monitor and Evaluate Implementation of Land</li> </ul>	<ul style="list-style-type: none"> <li>• Irrelevant</li> <li>• Included in different UCs</li> <li>• Irrelevant</li> <li>• Include in Forest protection Strategy UC</li> <li>• Included in Forest road construction and maintenance UC</li> <li>• Included in land use land</li> </ul>	
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Level	Changes on the units	Justification/Remark
	Use Plan <ul style="list-style-type: none"> <li>• Coordinate Natural Area Restoration Program</li> </ul>	capability plan UC <ul style="list-style-type: none"> <li>• Included rehabilitate and restore degraded area UC</li> </ul>
	<i><b>New units Added</b></i> <ul style="list-style-type: none"> <li>• Perform Forest Harvesting and Post harvesting Techniques</li> <li>• Conduct forest road construction and Maintenance</li> <li>• Undertake Implementation of Property Rights, Land Laws and Regulations</li> <li>• Prepare sustainable utilization plan for rehabilitated areas</li> <li>• Sustainable Utilization of Forest-Based Energy Sources</li> </ul>	<ul style="list-style-type: none"> <li>• From level III</li> <li>• From level II</li> <li>• From level II</li> <li>• New</li> <li>• From level III</li> </ul>

## UNIT OF COMPETENCE CHART

**Occupational Standard: Natural Resources Conservation and development**

**Occupational Code: [AGR NRC1](#)**

**NTQF Level I**

**[AGR NRC1 01 0322](#)**

Perform Nursery Work

**[AGR NRC1 02 0322](#)**

Collect and process  
planting Materials

**[AGR NRC1 03 0322](#)**

Conduct survey and  
Navigation

**[AGR NRC1 04 0322](#)**

Undertake Plantation  
Work

**[AGR NRC1 05 0322](#)**

Perform Arboriculture  
Work

**[AGR NRC1 06 0322](#)**

Identify basic soil  
properties

**[AGR NRC1 07 0322](#)**

Identify and maintain  
Indigenous Soil and Water  
Conservation Practices

**[AGR NRC1 08 0322](#)**

Undertake Irrigation  
Work

**[AGR NRC1 09 0322](#)**

Apply Basic First Aid  
Procedures

**[AGR NRC1 10 0322](#)**

Apply Agricultural  
Extension Service

**[AGR NRC1 11 0322](#)**

Implement Agribusiness  
Marketing

**[AGR NRC1 12 0322](#)**

Apply Basics of Human  
Nutrition Practices

**[AGR NRC1 13 0322](#)**

Apply 5S Procedures

**Occupational Standard: Natural Resources Conservation and Development**

**Occupational Code: AGR NRC2**

*NTQF Level II*

**AGR NRC2 01 0322**

Rehabilitate and Restore Degraded Areas

**AGR NRC2 02 0322**

Apply in-situ Moisture Harvesting Technologies

**AGR NRC2 03 0322**

Conduct Erosion and Sediment Control Activities

**AGR NRC2 04 0322**

Conduct Agroforestry Practices

**AGR NRC2 05 0322**

Apply Forest Protection Strategies and Practices

**AGR NRC2 06 0322**

Apply Sustainable Wildlife Conservation and Development

**AGR NRC2 07 0322**

Operate and Maintain Irrigation works and Drainage Systems

**AGR NRC2 08 0322**

Apply Agricultural Extension service for Rural development

**AGR NRC2 09 0322**

Prevent and Eliminate MUDA

**Occupational Standard: Natural Resources Conservation and Development**

**Occupational Code: AGR NRC3**

***NTQF Level III***

**AGR NRC3 01 0322**

Prepare Watershed Management plan

**AGR NRC3 02 0322**

Prepare Land Use land capability Plan

**AGR NRC3 03 0322**

Undertake Environmental and Social management framework (ESMF)

**AGR NRC3 04 0322**

Design and Implement Soil & Water Conservation Measures

**AGR NRC3 05 0322**

Implement Soil Health and Plant Nutrition Program

**AGR NRC3 06 0322**

Implement integrated soil fertility management (ISFM)

**AGR NRC3 07 0322**

Undertake Water Harvesting Technologies

**AGR NRC3 08 0322**

Implement and Monitor Agro-forestry Practices

**AGR NRC3 09 0322**

Conduct Forest Inventory

**AGR NRC3 10 0322**

Carryout Sustainable Non-wood Forest Product Utilization

**AGR NRC3 11 0322**

Apply Digital Technology in Agriculture

**Occupational Standard: Natural Resources Conservation and Development**

**Occupational Code: AGR NRC4**

*NTQF Level IV*

**AGR NRC4 01 0322**

Carryout Climate Change Adaptation and Mitigation Techniques

**AGR NRC4 02 0322**

Conduct forest road construction and Maintenance

**AGR NRC4 03 0322**

Implement Natural Resources Policies and Legislations

**AGR NRC4 04 0322**

Apply Forest Management Practice

**AGR NRC4 05 0322**

Perform Forest Harvesting and Post harvesting Techniques

**AGR NRC4 06 0322**

Undertake Implementation of Property Rights, Land Laws and Regulations

**AGR NRC4 07 0322**

Prepare sustainable utilization plan for rehabilitated areas

**AGR NRC4 08 0322**

Implement Sustainable Utilization of Forest-based Energy Sources

**AGR NRC4 09 0322**

Develop value chain analysis



# LEVEL I

Occupational Standard: Natural Resources Conservation and Development Level I	
Unit Title	Perform Nursery work
Unit Code	<a href="#">AGR NRC1 01 0322</a>
Unit Descriptor	This unit covers the knowledge, skills and attitude required to perform nursery establishment and implement appropriate seedbed preparation and seedling producing techniques. It requires the ability to prepare, materials, tools and equipment to undertake nursery establishment and basic nursery work activities, store and stockpile materials.

Element	Performance Criteria
1. Prepare materials, tools and equipment for nursery establishment	<p>1.1. The required materials, <b>tools and equipment</b> are identified according to <b>tasks</b> and lists provided and/or supervisor's <b>instructions</b>.</p> <p>1.2. Checks are conducted on all materials, tools and equipment, with insufficient or faulty items reported to the supervisor.</p> <p>1.3. Correct manual handling and techniques for loading and unloading materials are used to minimize damage to the load and the vehicle according to standard operating procedures</p> <p>1.4. Suitable <b>Personal Protective Equipment (PPE)</b> are selected and checked prior to use.</p> <p>1.5. Nursery support is provided according to OHS requirements and <b>workplace information</b>.</p> <p>1.6. <b>OHS hazards</b> are identified and reported to the supervisor.</p>
2. Select appropriate site for nursery establishment	<p>2.1 The availability of water supply is confirmed according to organizational guidelines</p> <p>2.2 The <b>proximity of nursery</b> site is considered based on work manual</p> <p>2.3 <b>Favourable climatic and land features</b> are reviewed according to work manual</p> <p>2.4 The depth and fertility of the soil is identified according to organizational guideline</p> <p>2.5 Request for a plot of land is made and permission from concerned administrative body is obtained based on work procedure</p>
3. Demarcate the area and sketch the map	<p>3.1. The nursery area is surveyed using appropriate instruments in accordance to working manual</p> <p>3.2. The nursery site is calculated for demarcation according to work manual</p> <p>3.3. The area is fenced to secure from any unwanted animal and human interventions based on work manual</p>

	3.4. The sketch map is developed to demarcate its geographical boundaries based on organizational specification
4. Establish nursery	<p>4.1. Blocks for the construction of offices and store are selected and prepared according to the sketched map</p> <p>4.2. Blocks for the preparation of seed beds and transplanting beds are identified and selected according to the sketched map</p> <p>4.3. Block is left for damping materials according to the site plan designed</p> <p>4.4. Trial blocks are selected and identified according to the site plan designed</p> <p>4.5. Construction and installation of water system are developed and incorporated according to the site plan</p> <p>4.6. Access roads are incorporated according to the site plan</p> <p>4.7. Strips for hedges and wind breaks are incorporated according to the site plan</p>
5. Undertake basic nursery work	<p>5.1. The seed and transplanting blocks are ploughed manually, using farm animals or mechanically according to the work guideline of the organization</p> <p>5.2. Seeding and transplanting blocks are pulverized using the appropriate farm tools according to the organizational work manual</p> <p>5.3. Seeding and transplanting blocks are levelled and are prepared for bed lay out according to organizational work manual</p> <p>5.4. Seeding and transplanting beds are prepared according to organizational standard requirement</p> <p>5.5. <i>Nursery inputs</i> are sieved and prepared for mixture according to organizational work manual</p> <p>5.6. The nursery inputs are mixed and filled in polythene tubes according to the proper ratio required for seedling production</p> <p>5.7. The filled polythene tubes are arranged on beds for direct sowing according to the organization manual</p> <p>5.8. Sowing on beds and nursery tending operations carried out according to the standard requirements</p> <p>5.9. A clean and safe work site is maintained while undertaking nursery activities.</p>
6. Transplant the seedling	<p>6.1. Shading structures for transplanting beds are constructed according organizational specification</p> <p>6.2. Polythene tubes are filled and arranged in transplanting beds or blocks according to work manual</p> <p>6.3. Polythene tubes are watered before transplanting according organizational work schedules</p>

	6.4. The <b>transplanting tasks</b> are carried out according to work schedules
7. Maintain the nursery environment	<p>7.1. The perimeter of the nursery site is surveyed and packed out according to the work manual of the organization</p> <p>7.2. The pits are dug and prepared for plantation of wind breaks based on the standards of spacing and species arrangement</p> <p>7.3. Appropriate plant species are prepared and planted between the blocks and around the nursery based on organizational guideline</p> <p>7.4. Hedge rows are planted between the existing blocks and along the road sides according to the organizational <b>work order</b> manuals</p> <p>7.5. <b>Environmental protection measure</b> parameters are monitored against the needs of the plants and enterprise guidelines.</p> <p>7.6. <b>Environmental parameters</b> are altered, as required, to meet the needs of nursery plants and <b>market requirements</b></p>
8. Clean up and Store materials	<p>8.1. Plant debris and <b>waste materials</b> are disposed in an appropriate and safe manner according to supervisor's instructions.</p> <p>8.2. Surplus materials are stockpiled for removal according to supervisor's instructions.</p> <p>8.3. Tools and equipment are cleaned, maintained and stored according to manufacturer's specifications and supervisor's instructions.</p>
9. Record and report	<p>9.1. Nursery establishment and activities are recorded and documented in standard format</p> <p>9.2. Problems or difficulties in completing work to required standards or timelines are reported to supervisor.</p> <p>9.3. Materials, equipment and machinery condition after work is recorded and reported to supervisor</p> <p>9.4. Work completion and hazards information is communicated to work colleagues and the supervisor.</p> <p>9.5. Work outcomes are reported in standard format to the supervisor.</p>

Variable	Range
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Manual labelling equipment, compass, GPS, Clinometers, ranging pole, measuring tape,</li> <li>• Cutting tools - scissors, secateurs, knives, pruning knives, hand saw, sharpening stones, file, piano wire, polythene tube cutting roll.</li> <li>• Media trays, dibblers, and rubbish bins. Wheelbarrows, trowel, trolleys, hand sprayer,</li> <li>• Nylon rope, pegs, pots, hand lenses, germinating media,</li> </ul>

	<p>watering can, plastic bags, cleaning equipment,</p> <ul style="list-style-type: none"> <li>• Clearing hand tools(machete, axes etc),</li> <li>• First aid kits, hand gloves and helmet, safety equipment,</li> <li>• Fertilizers, herbicides, pesticides, compost,</li> <li>• Digging tools -, digging hoe, digging forks, machetes, rakes, digging forks, spade,</li> </ul>
Tasks	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Assisting with the display of nursery products (e.g., plant, goods and supplies) including unpacking, placing where directed, replenishing as required, preparing and placing price tickets, labels and other display materials.</li> <li>• Provide nursery plant care including watering, weeding, removing dead materials, staking, trimming, and potting on of plants as directed.</li> <li>• Load and unload nursery stock including preparing stock for dispatch, and checking stock on receipt or at dispatch against documentation.</li> <li>• Supporting propagation activities including assisting with preparing planting media, collecting propagating materials, and blocking up plants in correct patterns and spacing.</li> </ul>
Instructions	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Standard Operating Procedures (SOPs),</li> <li>• Company policy and procedures in regard to product merchandising and displays, specifications, work notes,</li> <li>• Material Safety Data Sheets (MSDSs)</li> <li>• Manufacturer’s instructions, product labels, or</li> <li>• Verbal directions from manager, supervisor, or senior operator.</li> </ul>
PPE	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Personal protective clothing and equipment steel capped boots/ shoes, overalls, gloves, sun hat, sunscreen lotion, safety goggles, face mask and ear protectors.</li> </ul>
Workplace information	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Procedures for disposing of waste materials,</li> <li>• Work instructions or verbal instructions from the supervisor,</li> <li>• OHS legislative requirements and relevant Codes of Practice.</li> </ul>
OHS hazards	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Heavy materials and equipment,</li> <li>• Slippery or uneven surfaces,</li> <li>• Moving machinery and vehicles,</li> <li>• Solar radiation, and</li> <li>• Potential dangers from handling potting media</li> <li>• Fertilizers, watering systems, and</li> <li>• Spider and insect bites.</li> </ul>
Proximity of nursery	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Plantation site</li> <li>• Market area</li> <li>• Road access</li> </ul>

Favourable climatic and land features	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Rainfall</li> <li>• Temperature</li> <li>• Humidity</li> <li>• Topography</li> <li>• Susceptibility of disease and pests</li> </ul>
Nursery inputs	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Water</li> <li>• Soil (Agricultural, forest and sand)</li> <li>• Compost</li> <li>• Polythene tube</li> </ul>
Nursery tending operation	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Mulching</li> <li>• Shading</li> <li>• Watering</li> <li>• Weeding</li> <li>• Pest and disease control</li> <li>• Hardening off</li> <li>• Thinning</li> </ul>
Transplanting tasks	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Remove vigorous seedling</li> <li>• Root pruning</li> <li>• Pricking</li> <li>• Placing the seedling into plantation pit</li> <li>• Firm the plantation pit</li> <li>• Watering</li> </ul>
Waste	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Prompt removal and/or disinfestations of organic waste, use of mixing site, neutralizing pits for disposal of chemicals and cleaning products, recycling seed trays, poly trays, bags, and recycling waste water or disposing using approved discharge system.</li> </ul>
Work order	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Details of organizational terminology,</li> <li>• Guidelines, plans, budgets, policies and timelines, internal memos,</li> <li>• Resources (people, plant and equipment, consumables)</li> </ul>
Environmental protection measure	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Relevant legislation and regulations</li> <li>• Hygiene of the area,</li> <li>• Ground growth, canopy, general forest lean, wind speed and direction, fallen trees, density of trees,</li> <li>• Ground slope, soil and water protection, ground hazards and obstacles.</li> <li>• Contingencies for modifying operations during wet or other</li> </ul>

	adverse weather conditions
Environmental parameters	May include, but not limited to: <ul style="list-style-type: none"> <li>• Light, temperature, humidity and wind.</li> </ul>
Market requirements	May include, but not limited to: <ul style="list-style-type: none"> <li>• Size of plant, extent of foliage, colour, time of sale, and number of blooms.</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	Must demonstrate knowledge and skills competence to: <ul style="list-style-type: none"> <li>• Identify materials, tools and equipment for nursery work.</li> <li>• Select an appropriate site for nursery to be established</li> <li>• Demarcate the area and sketch the map and divide the area into working blocks</li> <li>• Undertake nursery establishment &amp; perform nursery work</li> <li>• Perform nursery environment maintenance activities.</li> <li>• Record, report and maintain workplace information</li> </ul>
Required Knowledge and Attitudes	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• Safe work practices.</li> <li>• Nursery environment maintenance activities.</li> <li>• Nursery establishment and planning procedures</li> <li>• Nursery design and establishing strategies</li> <li>• Basic stock control procedures.</li> <li>• Techniques for seedbed preparation</li> <li>• Environmental protection requirements, including the safe disposal of waste material</li> <li>• Problem identification and resolution</li> <li>• Site preparation requirements for particular seed species</li> <li>• Raise seedling and planning procedures</li> <li>• Nursery tending operation for particular seed species</li> <li>• OHS legislative requirements and codes of practice.</li> <li>• Appropriate mathematical procedures for estimating and measuring, including calculating time to complete tasks</li> <li>• Recording, reporting and maintenance of workplace information</li> </ul>
Required Skills	Demonstrate skills to: <ul style="list-style-type: none"> <li>• Identify materials, tools and equipment for nursery work.</li> <li>• Prepare seed bed</li> <li>• Conduct blocking and compartmenting</li> <li>• Perform transplanting of seedling</li> <li>• Perform proper soil mixing and potting</li> <li>• Undertake nursery establishment &amp; nursery work.</li> <li>• Select an appropriate site for the nursery to be established</li> <li>• Demarcate the area and sketch the nursery area map</li> <li>• Clean up on completion of nursery work.</li> <li>• Apply communication systems.</li> <li>• Raise seedling design and establishing strategies</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information

	on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.



<b>Occupational Standard: Natural Resources Conservation and Development Level I</b>	
<b>Unit Title</b>	<b>Collect and process Planting Materials</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC1 02 0322</u></a>
<b>Unit Descriptor</b>	This unit covers knowledge, skills and attitude required to manage provenance of mother trees; plan and undertake seed and planting materials collection and processing activities.

<b>Element</b>	<b>Performance Criteria</b>
1. Identify mother trees.	<p>1.1. Provenances are identified and assessed for safe working conditions</p> <p>1.2. Equipment appropriate to work requirements are selected and checked for operational effectiveness in accordance with manufacturer's recommendations</p> <p>1.3. Site selection activities are planned in accordance with site procedures</p> <p>1.4. <b>Communication</b> with others is established and maintained in accordance with <b>OHS requirements</b></p> <p>1.5. <b>Environmental conditions</b> are assessed and used to plan the identification of mother trees based on the development of each tree stand</p> <p>1.6. Type and <b>quality of mother trees</b> are identified and assessed for safe working conditions</p> <p>1.7. Genetic variation and seed sources are assessed to collect quality seeds</p>
2. Plan seed collection	<p>2.1. Sowing and/or planting program is analyzed and required <b>seed characteristics</b> and <b>implementation issues</b> are identified</p> <p>2.2. Seed collection opportunities are identified and a suitable area for seed collection is determined and documented</p> <p>2.3. <b>Method of seed collection</b> is selected and quantity, cost and impacts on provenances and species to be collected are determined and documented</p> <p>2.4. Required <b>approvals</b> are identified, sought and obtained from relevant authorities</p> <p>2.5. Measurable performance indicators, specifications and targets are determined and documented</p> <p>2.6. Seed collection <b>plan</b> and its performance indicators are clearly documented and communicated to <b>appropriate personnel</b></p>
3. Implement seed collection plan	<p>3.1. <b>Equipment and resources</b> appropriate to work requirements are selected and checked for operational effectiveness in accordance with manufacturer's recommendations</p>

	<p>3.2. Relevant individuals, bodies and groups are liaised as required using appropriate interpersonal communication</p> <p>3.3. Plant species and condition are visually assessed and checked to ensure the collection of healthy seeds</p> <p>3.4. Method of seed collection is selected and applied without causing damage to <i>health of parent plant</i></p> <p>3.5. Seeds are collected from a range of plants and from different areas of plants to maintain genetic diversity</p> <p>3.6. Seed is placed in clean containers and accurately <i>labelled</i> in accordance with industry, site and <i>organizational requirements</i></p> <p>3.7. Seed collection is carried out in accordance with quality standards for seed collection</p> <p>3.8. Limitations are identified and assistance sought as required in accordance with workplace procedures</p>
4. Process and store seed	<p>4.1. Seeds are separated from other materials, weighed and stored in accordance with species requirements and site procedures</p> <p>4.2. <i>Seed treatment</i> is applied to prevent deterioration in accordance with seed species and site procedures</p> <p>4.3. Seeds are <i>packaged</i> for storage in accordance with industry, organizational and <i>legislative requirements</i></p> <p>4.4. <i>Seed information</i> is accurately recorded in accordance with site procedures</p> <p>4.5. Seed collection information and results are <i>recorded and reported</i> in accordance with site procedures</p>
5. Prepare seed sample for viability testing	<p>5.1. Seed sample for testing is identified and checked in accordance with <i>work order</i> requirements</p> <p>5.2. Seed sample is taken from lot and prepared for testing in accordance with site procedures and industry and organizational requirements</p> <p>5.3. Representative seed sample is clearly labelled and packaged for testing in accordance with site procedures</p> <p>5.4. Seed sample information is accurately recorded in accordance with site procedures</p>
6. Dispatch seed & record data	<p>6.1. Seed request specifications are interpreted and checked with appropriate personnel</p> <p>6.2. Seed is retrieved from storage and; quantity and species of seed is calculated to meet request specifications</p> <p>6.3. Each seed species is weighed, documented and placed in an appropriate container in accordance with request requirements and site procedures</p>

	<p>6.4. Multiple seed lots are thoroughly mixed as required in accordance with request specifications</p> <p>6.5. Seed and seed mixtures are accurately and clearly labelled in accordance with industry requirements and site procedures</p> <p>6.6. Dispatch of seed is organized and undertaken in accordance with request specifications and site procedures</p>
7. Prepare cuttings for planting activity	<p>7.1. Parent plant is prepared and suitable method applied to take the cutting which is appropriate to the species</p> <p>7.2. Work area is cleared and cleaned to eliminate contamination in accordance with hygiene practices and organizational requirements</p> <p>7.3. Cuttings are visually assessed and selected for propagation in accordance with work order requirements</p> <p>7.4. Correct <b>conditioning and storage</b> procedures appropriate to species requirements are identified and provided to maintain maximum viability of cuttings</p> <p>7.5. Method of cutting preparation is determined and applied without causing damage to parent plant and the cuttings</p> <p>7.6. Dispatch of cuttings is arranged and undertaken in accordance with request specifications and site procedures</p> <p>7.7. Discarded cutting material is disposed of in accordance with workplace waste disposal guidelines and organizational requirements</p>
8. Record and document information	<p>8.1. Seed collection, processing, sampling and dispatching activities are recording and documented</p> <p>8.2. Cutting preparation information and results are recorded and reported in accordance with site procedures</p> <p>8.3. Problems or difficulties in completing work to required standards or timelines are reported to supervisor.</p> <p>8.4. Materials, equipment and machinery wastage /damage are recorded and reported to supervisor</p> <p>8.5. Work completion and hazards information is communicated to work colleagues and the supervisor</p> <p>8.6. Work outcomes are reported in standard format to the supervisor.</p>

Variable	Range
Communication	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Verbal and non-verbal language,</li> <li>• Constructive feedback,</li> <li>• Active listening,</li> <li>• Questioning to clarify and confirm understanding,</li> </ul>

	<ul style="list-style-type: none"> <li>• Use of positive,</li> <li>• Confident and cooperative language,</li> <li>• Use of language and concepts appropriate to individual social and cultural differences,</li> <li>• Control of tone of voice and body language</li> </ul>
OHS requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• The use of PPE and clothing</li> <li>• Safety equipment</li> <li>• First aid equipment</li> <li>• Fire fighting equipment</li> <li>• Hazard and risk control</li> <li>• Elimination of hazardous materials and substances</li> <li>• Safe forest practices including required actions relating to Forest fire</li> <li>• Manual handling including shifting, lifting and carrying</li> <li>• Handling of minerals/chemicals used in the treatment of seed and planting material collection</li> </ul>
Environmental conditions	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Topography</li> <li>• Temperature</li> <li>• Humidity</li> <li>• Rainfall</li> <li>• Altitude</li> </ul>
Quality of mother trees	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Height</li> <li>• Pest and disease free</li> <li>• Straightness</li> <li>• Less branched</li> <li>• High performance</li> <li>• Enough seed producer</li> </ul>
Seed characteristics	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Provenance,</li> <li>• Potential growth characteristics,</li> <li>• Physiology/biology,</li> <li>• Dormancy,</li> <li>• Species</li> </ul>
Implementation issues	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Scheduling,</li> <li>• People and skills involved,</li> <li>• Materials,</li> <li>• Hazards,</li> <li>• Seed quantities and selection</li> </ul>
Method of seed collection	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Collecting from fallen seeds (after natural dispersal or shaking)</li> <li>• Collecting from the crown (High-powered rifles, Cherry-pickers, Bending by rope, Climbing and access from the ground)</li> </ul>

Approvals	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Licences and permits required for commercial or non-commercial seed collection and</li> <li>• Government permits and landholder permits</li> </ul>
Plan	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Consideration of seed collection seasons, when the required species have fruit at optimal condition</li> </ul>
Appropriate personnel	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Supervisors, suppliers, clients, colleagues, and managers</li> </ul>
Relevant authorities	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Local governments,</li> <li>• Parks/reserves managers,</li> <li>• Forestry managers</li> </ul>
Equipment and resources	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• PPE</li> <li>• Canvas, Ladders, Safety belts, Ropes, Helmet, Climbing, spurs, Shears, Hooks, Nets, Binoculars, Pruning saws, Rifles, elevating work platforms, Hessian Sacks, pole implements, Marker, Paper, Sensitive balance</li> </ul>
Health of parent plant	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Hand picking or careful and selective pruning</li> </ul>
Labelled	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Details seed location and genetic identity, germination rate, date of collection, altitude, name of collector, purity percentage</li> </ul>
Organizational requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Legal, organizational and site guidelines,</li> <li>• Policies and procedures relating to own role and responsibility, quality assurance,</li> <li>• Procedural manuals,</li> <li>• Quality and continuous improvement processes and standards,</li> <li>• OHS,</li> <li>• Ethical standards,</li> <li>• Recording and reporting,</li> <li>• Equipment use, maintenance and storage,</li> <li>• Environmental management (waste disposal, recycling and re-use guidelines)</li> </ul>
Seed treatment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Heat, mechanical or chemical protection against pests</li> </ul>
Packaging	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Vacuum sealing,</li> <li>• Use of inert atmospheres such as nitrogen and carbon dioxide,</li> <li>• Control of packing environment (temperature, light and moisture)</li> </ul>
Legislative requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Award and enterprise agreements</li> <li>• Industrial relations</li> <li>• Confidentiality and privacy</li> </ul>

	<ul style="list-style-type: none"> <li>• OHS</li> <li>• The environment</li> <li>• Relevant industry codes of practice</li> <li>• Duty of care</li> <li>• Heritage and traditional land holding issues</li> </ul>
Seed information	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Details of time/date of harvest,</li> <li>• Time/date of receipt into store,</li> <li>• Weight,</li> <li>• Species,</li> <li>• Place or origin of seed and Container identifier</li> </ul>
Recorded and reported	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Tally sheets, quality sheets and forms,</li> <li>• Production sheets and downtime sheets, and relate to production details,</li> <li>• Maintenance details, breakdowns or equipment faults, and interruptions to production</li> <li>• Recording and reporting media: <ul style="list-style-type: none"> <li>➤ May be manual, using a computer-based system or another appropriate organisational communication system maintained by electronic data base, card index, data sheets, and filing systems</li> <li>➤ May include, but not limited to: tally sheets, quality sheets and forms, production sheets and downtime sheets, and relate to production details, maintenance details, breakdowns or equipment faults, and interruptions to production</li> </ul> </li> <li>• Manual, using a computer-based system or another appropriate organizational communication system</li> </ul>
Work order	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Information and instructions for collecting,</li> <li>• Processing, treating and storing seed, plant species,</li> <li>• Required safety clothing and equipment,</li> <li>• Quality standard, stock,</li> <li>• Required height, species characteristics and requirements, nutrients, watering quantities and method,</li> <li>• Growing environment, weed retardants,</li> <li>• Cutting selection methodology,</li> <li>• Written instructions, diagrams</li> </ul>
Condition and storage	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• According to required species to allow for maximum viability</li> </ul>
Sterilization	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Destroy soil or media borne pathogens known to be harmful to plants or seedlings. The acceptable techniques May include, but not limited to: high temperature or chemicals.</li> </ul>
Production requirement	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• The production requirement is the recipe of component materials that provides the media with the physical, chemical</li> </ul>

	and biological characteristics required for the particular plant to grow.
Enterprise standards	May include, but not limited to: <ul style="list-style-type: none"> <li>• Enterprise standards constitute the normal practice for storage of materials. In this instance, it would include direction on OHS, equipment use, hygiene and maintenance of product, and recordkeeping guidelines.</li> </ul>
Environmental protection measures	May include, but not limited to:; <ul style="list-style-type: none"> <li>• Ground growth, canopy, general forest lean, wind speed and direction, fallen trees, density of trees, ground slope, soil and water protection, ground hazards and obstacles</li> <li>• May relate to hygiene of the area, relevant national, state and local legislation and regulations</li> <li>• Measures may also include contingencies for modifying operations during wet or other adverse weather conditions</li> </ul>
Separation methods	May include, but not limited to: <ul style="list-style-type: none"> <li>• Hand selection,</li> <li>• Wind separation/winning,</li> <li>• Sieving, vibrating, flotation, drying and crumbling of husks</li> </ul>
Growing environment	May include, but not limited to: <ul style="list-style-type: none"> <li>• Heat, light, humidity, wind, sun, moisture, topography, rainfall</li> </ul>
Weed retardants	May include, but not limited to: <ul style="list-style-type: none"> <li>• Weed-mat, slatted benches, chemical solutions</li> </ul>
Remedial action	May include, but not limited to: <ul style="list-style-type: none"> <li>• Removal of infected material, treatment with chemicals</li> </ul>

### Evidence Guide

Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>• Identify the type and quality of mother trees</li> <li>• Select and use resources and method of seed collection appropriate to work requirements</li> <li>• Apply safe and efficient techniques to collect, treat and store a range of seed species and cuttings</li> <li>• Describe seed treatment processes and safety measures</li> <li>• Perform seed sampling and testing</li> <li>• Demonstrate methods of cutting preparation</li> <li>• Communicate effectively and work safely with others in the work area</li> <li>• Accurately record seeds and cuttings collection information and results and maintain workplace information</li> </ul>
Required Knowledge and Attitude	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• Applicable legislative, regulatory or certification requirements</li> <li>• Codes of practice relevant to the full range of processes for collecting, treating and storing seed practice relevant to cutting, sorting and setting cuttings</li> <li>• Organizational and site standards, requirements,</li> <li>• Policies and procedures for collecting seed, cuttings,</li> <li>• Principles of cultural diversity, access and equity</li> </ul>

	<ul style="list-style-type: none"> <li>• Environmental requirements for the collecting, treating and storing of seed; cut, sort and set cuttings; growing media; and the disposal of waste material</li> <li>• Communication channels and protocols</li> <li>• Problem identification and resolution</li> <li>• Types of seed collection and cuttings preparation resources and equipment and procedures for their safe use, operation and maintenance</li> <li>• Hazards associated with the seeds and cuttings collection, treatment and storage</li> <li>• Range of seed species and cuttings appropriate collection, treatment and packaging processes</li> <li>• Types of diseases and pests likely to infect a range of seed species</li> <li>• Growing environments and weed retardants that are suitable to plant and cutting species</li> <li>• Pre-planting treatments, water and nutrients that are suitable to plant and cutting species</li> <li>• OHS requirements in relation to chemical use.</li> <li>• Procedures for the recording, reporting and maintenance of workplace records and information</li> <li>• Determine requirements and schedules of other work colleagues</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Plan and organize activities in the correct sequence for collecting, treating and storing seed and cuttings</li> <li>• Comply with legislation, regulations, standards, codes of practice and established safe practices and procedures for collecting seed</li> <li>• Identify a range of seed and cutting species and apply accurate identifying information</li> <li>• Use a range of seed collection and cuttings preparation methods and related equipment</li> <li>• Identify problems and equipment faults and demonstrate appropriate response procedures</li> <li>• Use and maintain relevant tools, and equipment and other resources</li> <li>• Use appropriate communication and interpersonal techniques with colleagues and others</li> <li>• Carry out seed collection and cuttings preparation procedures</li> <li>• Read and interpret information from tables and charts</li> <li>• Prepare and maintain a clean and hygienic work environment</li> <li>• Recognise common diseases, pests and nutrition deficiencies</li> <li>• Collect, analyze data and organize, store and report information</li> <li>• Record and maintain information including details of seed and cutting species, weight and place of origin</li> <li>• Solve problems by establishing safe and effective processes for collecting seed which anticipate likely problems to avoid wastage and lost time</li> </ul>



	<ul style="list-style-type: none"> <li>• Use technology by selecting and using appropriate equipment and resources to collect, treat and store seed</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Natural Resources Conservation and Development Level I	
Unit title:	Conduct survey and Navigation
Unit Code	<a href="#">AGR NRC1 03 0322</a>
Unit Descriptor	This unit competence covers skill, knowledge & attitude of surveying and navigation in untracked, remote areas. It requires the ability to undertake surveying activities in the field and developing map in the office; interpretation and use of maps and other navigation aids; evaluating activities related with surveying.

Elements	Performance criteria
1. Prepare for surveying	<p>1.1 Applicable <b>Occupational Health and Safety (OHS)</b>, <b>legislative</b> and <b>organizational</b> requirements relevant to surveying are specified and complied</p> <p>1.2 <b>Information</b> is gathered and <b>relevant factors</b> identified and checked with <b>appropriate personnel</b></p> <p>1.3 Suitable <b>tools, equipment</b> and surveying <b>aids</b> are selected and checked for accuracy, currency and operational effectiveness in accordance with manufacturer's recommendations</p> <p>1.4 Faults or errors in tools and equipment are detected and corrected</p> <p>1.5 <b>Communication</b> with others is established and maintained in accordance with OHS requirements</p>
2. Perform survey techniques	<p>2.1 Different surveying methods are identified according to required information</p> <p>2.2 Work procedures are prepared to perform surveying techniques.</p> <p>2.3 Surveying techniques are applied according to work place procedures.</p>
3. Apply levelling & topographic survey	<p>3.1 Leveling and topographic techniques are identified based on required information.</p> <p>3.2 Procedures are prepared based available resources.</p> <p>3.3 Tools and equipment are collected based on requirements.</p> <p>3.4 Techniques are applied following work procedures.</p>
4. Develop map	<p>4.1 Procedures are prepared according to required information.</p> <p>4.2 Materials are collected based on requirements.</p> <p>4.3 <b>Map</b> is developed based on guidelines.</p>
5. Plan the route and Conduct navigation	<p>5.1 Route is planned in accordance with assignment instructions and OHS requirements</p> <p>5.2 Maps are examined to identify relevant <b>symbols and information</b> and <b>navigation data</b></p> <p>5.3 Accurate grid and magnetic bearings are calculated using maps and equipment in accordance with assignment instructions</p> <p>5.4 Emergency or contingency exit routes are planned and other <b>risks</b> planned</p> <p>5.5 Navigation is undertaken in accordance with planned route and schedule</p> <p>5.6 Maps are correctly orientated to <b>surroundings</b> in accordance with planned route</p>

	<p>5.7 Equipment and <i>navigation aids</i> are used in accordance with manufacturer's recommendations</p> <p>5.8 Alternative routes are navigated to bypass <i>obstacles</i> and improve efficiency of route or course</p>
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Variable	Range statement
Occupational Health & safety	<p>may include</p> <ul style="list-style-type: none"> <li>• OHS hazard identification, risk assessment and control</li> <li>• implement procedures for dealing with hazardous events</li> <li>• Hazards may include disturbance or interruption of services, solar radiation, dust, soil- and water-borne micro-organisms, sharp hand tools and equipment, manual handling, falling objects, and uneven Surfaces.</li> </ul>
<i>Legislative Requirements</i>	<p>may include:</p> <ul style="list-style-type: none"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Ethiopian Standards</li> <li>• confidentiality and privacy</li> <li>• OHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul>
<i>Organizational requirements</i>	<p>may include:</p> <ul style="list-style-type: none"> <li>• legal, organizational and site guidelines, policies and procedures relating to own role and responsibility,</li> <li>• quality assurance, procedural manuals, quality and continuous improvement processes and standards,</li> <li>• OHS, emergency and evacuation,</li> <li>• ethical standards, recording and reporting,</li> <li>• access and equity principles and practices,</li> <li>• equipment use, maintenance and storage,</li> <li>• environmental management (waste disposal, recycling and re-use guidelines)</li> </ul>
Information	<p>may relate to:</p> <ul style="list-style-type: none"> <li>• local inhabitants, type of terrain or features of the route, access and exit routes, natural protection or shelter, land management and legislative requirements, guide books</li> </ul>
Types and Sources of Information	<p>may include :</p> <ul style="list-style-type: none"> <li>• Organizational rules, regulation and guidelines</li> <li>• Internet, related books and related materials</li> <li>• Technical manuals</li> <li>• sharing best practice</li> <li>• Virtual library</li> <li>• Workplace guidelines</li> </ul>

	<ul style="list-style-type: none"> <li>Recorded documents/logo/history</li> </ul>
Relevant factors	<p>may relate to:</p> <ul style="list-style-type: none"> <li>types of terrain and gradient, weather conditions, obstacles, hazards and access to required resources and facilities, distance, estimated travelling time and magnetic bearings</li> </ul>
Appropriate personnel	<p>may include:</p> <p>supervisors, suppliers, clients, colleagues and managers</p>
Tools and equipments	<p>may include but not limited to:</p> <ul style="list-style-type: none"> <li>Line level, String, Graduated staff, Clinometers, Measuring tape, Digging instruments, Ranging pole, Pegs, Compass, GPS, Top maps, Automatic level, clip board, drawing materials, First aid kit and Helmet.</li> </ul>
Communication	<p>may include</p> <ul style="list-style-type: none"> <li>verbal and non-verbal language,</li> <li>constructive feedback, active listening,</li> <li>questioning to clarify and confirm understanding,</li> <li>use of positive, confident and cooperative language,</li> <li>use of language and concepts</li> <li>appropriate to individual social and cultural differences,</li> <li>control of tone of voice and body language</li> </ul>
Maps	<p>may include:</p> <ul style="list-style-type: none"> <li>cadastral and topographic maps, charts, guide books, sketches and cave maps, and diagrams</li> </ul>
Symbols and information	<p>may include:</p> <ul style="list-style-type: none"> <li>grid lines and numbers, contour lines, magnetic variation, scale, map legend, topographic features, markers and beacons, water depth</li> </ul>
Navigation data	<p>may include:</p> <ul style="list-style-type: none"> <li>grid reference points, grid and magnetic bearings, distances, estimated travelling times, height gain/loss, gradient, identifiable features and exit routes</li> </ul>
Risks	<p>may include:</p> <ul style="list-style-type: none"> <li>weather, obstacles, availability of resources (water, campsites, rest stops), type of terrain, access and exit routes, natural protection or shelter</li> </ul>
Surroundings	<p>may include:</p> <ul style="list-style-type: none"> <li>ground/terrain, bodies of water, beacons and markers, natural formations, landmarks and man-made features</li> </ul>
Navigation aids	<p>may include :</p> <ul style="list-style-type: none"> <li>track and creek junctions and crossings, survey markers, beacons, track markers, cairns, paths, signs, arrows, compass and man-made objects or features</li> </ul>
Obstacles	<p>may include:</p> <ul style="list-style-type: none"> <li>thick vegetation, drops and climbs, marshes and bogs, fog, rivers, lakes and dams, tides, hazards (such as rocks)</li> </ul>
<i>Attributes</i>	<p>may include:</p> <p>properties associated with an entity and include layer or level, line type,</p>

	line width, colour and text
<i>Supplementary data</i>	may include: areas, lengths, angles and perimeters
<i>Records and reports</i>	<ul style="list-style-type: none"> <li>• may include the specified drawings, product type, sizes and quality outcomes</li> <li>• may be manual, using a computer-based system or another appropriate organizational communication system</li> </ul>
Equipment	may include: <ul style="list-style-type: none"> <li>• compass, track and survey markers, beacons, personal protective equipment and clothing, GPS units</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of competence	must demonstrate knowledge and skills competence to: <ul style="list-style-type: none"> <li>• prepare work procedure</li> <li>• measure distance and angles</li> <li>• apply surveying techniques</li> <li>• identify levelling and topographic techniques</li> <li>• collect tools and equipment</li> <li>• select, interpret, develop and apply maps and other relevant information in written, diagrammatic and oral form</li> <li>• Comply with applicable legislative and regulatory requirements and codes of practice, including OHS, environmental and organizational policies and procedures, relevant to creating drawings using computer aided design systems</li> <li>• Communicate effectively and work safely with others in the work area</li> <li>• Effectively produce linked materials lists</li> <li>• demonstrating the correct orientation and use of maps, plans and compass for navigate in a remote or trackless area</li> <li>• Plan and conduct an efficient navigation effectively bypassing obstacles within designated timeframes</li> </ul>
Required Knowledge	Demonstrate Knowledge of: <ul style="list-style-type: none"> <li>• Basic principle of survey</li> <li>• Operating different survey instrument</li> <li>• Proper handling techniques of instrument</li> <li>• Map development techniques</li> <li>• Map reading techniques</li> <li>• Applicable legislative, regulatory or certification requirements and codes of practice relevant to</li> <li>• Organizational and site standards, requirements, policies and procedures for applying basic principle of survey and navigating in remote or trackless areas</li> <li>• Environmental protection requirements, including the safe disposal of waste material</li> <li>• Established communication channels and protocols</li> </ul>

	<ul style="list-style-type: none"> <li>● Problem identification and resolution</li> <li>● types of tools and equipment and procedures for their safe use, operation and maintenance</li> <li>● Types of maps, charts and scales and their uses</li> <li>● Representation of topographic features on maps and plans</li> <li>● Common scales used on maps and plans</li> <li>● Features and use of a compass and factors that affect their accuracy</li> <li>● Advantages and disadvantages of different map and chart types and sources of error</li> <li>● Techniques for estimating distance traveled within a particular activity context</li> <li>● Procedures for recording, reporting and maintaining workplace records and information</li> <li>● Appropriate mathematical procedures for estimation and measurement</li> </ul>
Required skills	<p>Demonstrate Skills to:</p> <ul style="list-style-type: none"> <li>● Apply levelling &amp; topographic survey</li> <li>● Perform survey techniques</li> <li>● Develop map</li> <li>● Use and maintain relevant tools, and equipment</li> <li>● Identify problems and equipment faults and demonstrate appropriate response procedures</li> <li>● Use appropriate communication and interpersonal techniques with colleagues and others</li> <li>● Accurately record and report workplace information, and maintain documentation</li> <li>● Comply with legislation, regulations, standards, codes of practice and established safe practices and procedures for navigating in remote or trackless areas</li> <li>● Accurately interpret maps, charts, distances, grid references, relevant symbols, map meaning and line types</li> <li>● Accurately estimate resource and equipment requirements</li> <li>● Effectively solve problems and bypass obstacles</li> <li>● Accurately locate own position on a map</li> </ul>
Resource Implication	<p>The following resources MUST be provided. Workplace or fully equipped assessment location with necessary tools and equipment as well as consumable materials, and documented organizational requirements</p>
Method of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>● Demonstration/direct observation of tasks</li> <li>● Written exam/test</li> </ul>
Context of Assessment	<p>Competence may be assessed in the work place or in conjunction with other relevant units in this occupation</p>

Occupational Standard: Natural Resources Conservation and Development Level I	
Unit Title	Undertake Plantation Work
Unit Code	<a href="#">AGR NRC1 04 0322</a>
Unit Descriptor	This unit covers knowledge, skills and attitude required to undertake tree planting and tending operations.

Element	Performance Criteria
1. Prepare for planting operations	<p>1.1. Applicable <b>OHS</b>, legislative, <b>organizational and environmental requirements</b> relevant to planting trees by hand are identified and complied with</p> <p>1.2. <b>Planting requirements</b> and <b>factors</b> are identified from work order and applied in accordance with site and quality control requirements</p> <p>1.3. <b>Equipment</b> appropriate to work requirements are selected, checked and used for operational effectiveness in accordance with manufacturer's recommendations</p> <p>1.4. Potential and existing risks, hazards and site conditions are identified and assessed in accordance with OHS requirements</p> <p>1.5. Planting stock is appropriately stored in accordance with operational requirements</p> <p>1.6. <b>Communication</b> with others is established and maintained in accordance with OHS requirements</p>
2. Plant forest tree seedlings	<p>2.1. Planting site is <b>assessed</b> for suitability and <b>prepared</b> in accordance with tree stock and work order requirements</p> <p>2.2. Tree seedlings planting methods and patterns are selected to suit particular operation and make efficient use of equipment and available time and resources</p> <p>2.3. Tree stock is <b>selected</b> and <b>planted</b> in accordance with production target, quality, safety and specific job requirements</p> <p>2.4. <b>Problems</b> are identified and resolved in accordance with site procedures</p> <p>2.5. Equipment is maintained and stored in accordance with manufacturer's recommendations and workplace procedures</p>
3. Perform tending operations	<p>3.1. Applicable OHS, legislative and organizational requirements relevant to <b>tending operation</b> are identified and complied with</p> <p>3.2. Site <b>environmental protection measures</b> are identified and adhered to in accordance with relevant legislation and regulations</p>

	<p>3.3. Tending operation requirements are determined from <b>work order</b> and checked with <b>appropriate personnel</b> based on the types of <b>pruning</b> in question</p> <p>3.4. Equipment appropriate to work requirements is selected and checked for operational effectiveness in accordance with manufacturer's recommendations</p> <p>3.5. <b>Hazards</b> and site conditions are inspected and assessed in accordance with regulations and site procedures</p> <p>3.6. Communication with others is established and maintained in accordance with OHS requirements</p>
4. Clean up and store	4.1. Equipment is maintained and stored in accordance with manufacturer's recommendations and workplace procedures
5. Record, document and report	<p>5.1. Problems and equipment faults are identified and reported in accordance with site procedures</p> <p>5.2. All field forest tree seedlings planting and tending activities are recorded and documented on daily basis in standard organizational formats</p> <p>5.3. Problems or difficulties or hazards information in completing work to required standards or timelines are reported to appropriate personnel.</p> <p>5.4. Work outcomes are <b>recorded and reported</b> in standard format to the supervisor.</p>

Variable	Range
OHS requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• The use of PPE and clothing</li> <li>• Safety equipment</li> <li>• First aid equipment</li> <li>• Fire fighting equipment</li> <li>• Hazard and risk control</li> <li>• Elimination of hazardous materials and substances</li> <li>• Safe forest practices including required actions relating to</li> <li>• Forest fire</li> <li>• Manual handling including shifting, lifting and carrying</li> </ul>
Legislative requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Award and enterprise agreements</li> <li>• Industrial relations</li> <li>• Confidentiality and privacy policies</li> <li>• OHS regulation</li> <li>• Environmental protection codes</li> <li>• Equal opportunity</li> <li>• Anti-discrimination rules &amp; regulations</li> <li>• Relevant industry codes of practice</li> <li>• Duty of care procedures</li> </ul>



	<ul style="list-style-type: none"> <li>Heritage and traditional land holding issues</li> </ul>
Organizational requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Legal, organizational and site guidelines, policies and procedures relating to own role and responsibility,</li> <li>Quality assurance, procedural manuals, quality and continuous improvement processes and standards,</li> <li>OHS, emergency and evacuation,</li> <li>Ethical standards, recording and reporting,</li> <li>Access and equity principles and practices, equipment use, maintenance and storage,</li> <li>Environmental management (waste disposal, recycling and re-use guidelines, moisture, temperature, soil condition, topography, pests)</li> </ul>
Planting requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Planting site requirements, and examination of stock sampling, examination and assessment criteria</li> </ul>
Planting factors	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Planting depth,</li> <li>Spacing,</li> <li>Root placement,</li> <li>Firmed vertical and undamaged</li> </ul>
Equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Spade, planting frame, harness, seedlings box, auger, and PPE</li> <li>Weeding, slashing, surface cultivation, climber cutting: hoes, spades, machetes, sickles, axes, clippers</li> <li>Pruning: pruners, jack saw, pouch, steps, epicormics remover, pole saw, ladder, climbing gear, elevated platform, cherry picker</li> <li>Thinning: axes, machetes, two-man cross-cut saws, chain saws,</li> </ul>
Communication	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Verbal and non-verbal language,</li> <li>Constructive feedback,</li> <li>Active listening, questioning to clarify and confirm understanding,</li> <li>Use of positive, confident and cooperative language, use of language and concepts</li> <li>Appropriate to individual social and cultural differences, control of tone of voice and body language, and systems between the driver and planter</li> </ul>
Assessment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Checking for appropriate atmosphere moisture content and season, and appropriate spacing and growth suitability for each tree</li> </ul>
Preparation	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Hole depth, width, cultivation, planting bag</li> </ul>
Selecting	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Dominance and vigour, leader defects, straightness, lean, size,</li> </ul>

	angle, number of branches, spacing and overall tree health, stocking, green crowns, spacing and quality requirements
Planting	May include, but not limited to: <ul style="list-style-type: none"> <li>• Minimal handling of tree stock to minimize foliage and root damage, and monitoring planting tonsure quality</li> </ul>
Problems	May include, but not limited to: <ul style="list-style-type: none"> <li>• Equipment faults and malfunctions,</li> <li>• Quality of stock,</li> <li>• Unsuitability of stock,</li> <li>• Common diseases, pests,</li> <li>• Nutritional deficiencies,</li> <li>• Communication misunderstandings,</li> <li>• Environmental issues or damage,</li> <li>• Production quality and safety</li> </ul>
Tending operation	May include, but not limited to: <ul style="list-style-type: none"> <li>• Weeding/ slashing, surface cultivation, climber cutting tree pruning, and thinning</li> </ul>
Environmental protection measures	May include, but not limited to: <ul style="list-style-type: none"> <li>• Hygiene of the area, relevant national legislation and regulations</li> <li>• Ground growth, canopy, general forest lean, wind speed and direction, fallen trees, density of trees, ground slope, soil and water protection, ground hazards and obstacles. Measures may also include contingencies for modifying operations during wet or other adverse weather conditions</li> </ul>
Work order	May include, but not limited to: <ul style="list-style-type: none"> <li>• Tree species, required safety clothing and equipment, required tending equipment, tree selection, production target, required tending quality</li> </ul>
Appropriate personnel	May include, but not limited to: <ul style="list-style-type: none"> <li>• Supervisors, clients, colleagues, line management</li> </ul>
Pruning	May include, but not limited to: <ul style="list-style-type: none"> <li>• Removing branches, epicormics and green shoots to ensure quality requirements</li> </ul>
Hazards	May include, but not limited to: <ul style="list-style-type: none"> <li>• Slope, water, rock, undergrowth, slash, depressions/holes, falling or fallen branches, ladder placement, climbing ladders, ladder instability, loss of balance and damp conditions</li> </ul>
Recording and reporting	May include, but not limited to: <ul style="list-style-type: none"> <li>• Tending outcomes and processes, production and quality, hazards, incidents or equipment malfunctions</li> <li>• May be manual, using a computer-based system or another appropriate organizational communication system</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Plant trees by hand in accordance with organizational and environmental requirements</li> <li>• Comply with applicable legislative and regulatory requirements and codes of practice, including OHS, environmental and organizational policies and procedures, relevant to planting trees by hand</li> <li>• Select, check and use equipment appropriate to work requirements</li> <li>• Select and plant tree stock in accordance with production target, quality, safety and specific job requirements</li> <li>• Identify and resolve problems accurately including potential site or equipment hazards, unsuitable planting stock, pests, disease and nutritional deficiencies</li> <li>• Assess pruned and thinned trees against work order and rectify incorrect tending outcomes</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Applicable legislation, regulations, standards and codes of practice</li> <li>• Organizational and site standards, requirements, policies and procedures relating to pruning and thinning trees and planting trees by hand</li> <li>• Principles of cultural diversity and access and equity</li> <li>• Environmental protection requirements, including the safe disposal of waste material</li> <li>• Communication channels and protocols</li> <li>• Problem identification and resolution</li> <li>• Types of tools and equipment and procedures for their use, operation and maintenance</li> <li>• Hazards associated with pruning and thinning of trees</li> <li>• Typical stock defects including pests, diseases and nutritional deficiencies</li> <li>• Techniques for operation in forest settings</li> <li>• Appropriate mathematical procedures for estimating and measuring,</li> <li>• Procedures for recording and reporting workplace information</li> </ul>
Required Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> <li>• Plan and organize activities in the correct sequence for tree planting operations to be completed within the designated timeframes</li> <li>• Comply with site, OHS and environmental legislation, regulations, standards, codes of practice and established safe practices and procedures for planting trees by hand and trees tending</li> <li>• Review and accurately identify work requirements</li> <li>• Use and maintain relevant planting and trees tending</li> </ul>

	<p>equipment</p> <ul style="list-style-type: none"> <li>• Identify problems and equipment faults and demonstrate appropriate response procedures</li> <li>• Use appropriate communication and interpersonal techniques with colleagues and others during tree planting and trees tending operations</li> <li>• Accurately recognize common diseases, pests and nutritional deficiencies</li> <li>• Accurately identify and select and handle tree stock</li> <li>• Collect, analyze and organize information to undertake tree planting and trees tending operations</li> <li>• accurately locate, Record and report information</li> <li>• Apply pruning and thinning techniques</li> <li>• Apply mathematical ideas and techniques to complete tasks and estimating tools, equipment and stock requirements</li> <li>• Solve problems by establishing safe and effective tree planting processes</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

**Occupational Standard: Natural Resources Conservation and Development Level I**

<b>Unit Title</b>	<b>Perform Arboriculture Work</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC1 05 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to practice in an arboriculture work unit. Arboriculture work requires checking tools and equipment, maintaining a clear work site during operations, communicating with and observing above ground workers, assisting climbers by sending up tools and equipment, and receiving and processing tree pruning.

<b>Element</b>	<b>Performance Criteria</b>
1. Prepare for ground support operations	1.1. <b>Instructions</b> for ground support operations are received and clarified prior to work being undertaken. 1.2. <b>OHS hazards</b> related to the work are identified. 1.3. <b>Tools, equipment and machinery</b> are selected that are appropriate to the task being undertaken. 1.4. Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturer’s specifications and enterprise work procedures. 1.5. Suitable <b>safety equipment</b> and <b>Personal Protective Equipment (PPE)</b> are selected, checked, used and maintained.
2. Maintain a clear work site during operations	2.1. Persons not involved in the work program are kept away from the site during operations. 2.2. <b>Rescue equipment</b> is placed within easy access. 2.3. <b>Drop zone</b> is kept free of debris according to enterprise guidelines.
3. Provide ground support for tree climbers	3.1. Communication links between ground crew and operator are clearly maintained at all times according to enterprise guidelines. 3.2. <b>Non-verbal signs of communication</b> are received and clarified according to enterprise guidelines. 3.3. Equipment is raised and lowered to climber using <b>safe working procedures</b> . 3.4. <b>Rope handling techniques</b> are performed according to safe working practices.
4. Receive and process tree during operations	4.1. Tools and equipment are used according to supervisor’s instructions and manufacturers guidelines. 4.2. Tree pruning is received and stacked according to enterprise guidelines. 4.3. Tree pruning is prepared for processing according to enterprise

	<p>guidelines.</p> <p>4.4. <b>Processing of tree pruning</b> is undertaken according to supervisor's instructions and/or manufacturer's instructions.</p> <p>4.5. Surrounding environment is maintained in a damage free condition.</p>
5. Clean up and store work place	<p>5.1. Tools, equipment and machinery are checked for wear/damage, prepared for transporting/storage, and stored according to enterprise policy and procedures.</p> <p>5.2. Tools, equipment and machinery are stored clear of debris and the drop zone.</p> <p>5.3. <b>Waste material</b> is collected and disposed of, or recycled to minimize damage to the environment.</p>
6. Record and report support activities	<p>6.1. Information such as site details, tree inspection results, safety issues and work schedules are recorded and documented</p> <p>6.2. <b>Records</b> of ground support operations are maintained in the appropriate format and reported to supervisor</p> <p>6.3. Work completion and hazards information are communicated to work colleagues and the supervisor.</p>

Variable	Range
Instructions	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• SOPs or verbal directions from manager, supervisor, or senior operator;</li> <li>• Work notes, routine maintenance schedules;</li> <li>• Manufacturers service specifications and operators manuals;</li> <li>• Waste disposal, recycling and re-use guidelines; and</li> <li>• OHS procedures.</li> </ul>
OHS hazards	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Working near power lines, tree integrity, climbing, traffic,</li> <li>• Manual handling,</li> <li>• Moving equipment and vehicles,</li> <li>• Sharp hand tools,</li> <li>• Falling branches and equipment,</li> <li>• UV radiation, heat and cold,</li> <li>• Fatigue, working alone, noise,</li> <li>• Insects and animals</li> </ul>
Tools, equipment and machinery	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Ropes , safety lines, safety harness, saddle, lanyard, karabiners, rope grabs, pole belts and other climbing gear; chipper;</li> <li>• Small chainsaw and appropriate maintenance equipment; ladder, handsaw, secateurs, elevating work platform (EWP), and</li> <li>• Vehicles for loading and removing pruning.</li> </ul>
Safety equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Safety equipment pedestrian barriers, traffic barriers,</li> </ul>

	<ul style="list-style-type: none"> <li>Warning signs, road signs, danger signs, flashing lights, traffic bollards, safety mesh, and witches hats.</li> </ul>
PPE	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Steel cap, boots, six point safety helmet, ear protection, eye protection, cut resistant trousers or chaps, reflective vest, close fitting work clothes, gloves and sunscreen lotion</li> </ul>
Rescue equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>First aid kit, emergency contact numbers, harness, lifeline, prussik loop, karabiners, climbing spurs, flip line/ poles-trap, pulleys and tube tape.</li> </ul>
Drop zone	<p>Calculated by:</p> <ul style="list-style-type: none"> <li>Establishing a radius in which tree pruning are expected to fall and adding a safety margin.</li> <li>May be marked out by witches hats, signs and barriers.</li> </ul>
Non -verbal signs of communication	<p>May include, but not limited to:</p> <p>Hand signals, whistles, and signage.</p>
Safe working practices	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>The use of clove hitch knots when sending up tools and equipment on ropes,</li> <li>Double checking ropes for faults, and</li> <li>Correct manual handling.</li> </ul>
Rope handling techniques	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Keeping climbing ropes clear of saws,</li> <li>Falling timber, and</li> <li>Ground level obstacles.</li> </ul>
Process tree pruning	<p>Processing methods May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Chipping,</li> <li>Burning and Removal.</li> </ul>
Waste material	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Large branches, processed plant debris, broken equipment or components, and litter.</li> <li>Plant-based material may be used as mulch or compost, or recycled as firewood;</li> <li>Plastic, metal, paper-based materials may be recycled, re-used, returned to the manufacturer, or</li> <li>Disposed of according to enterprise work procedures</li> </ul>
Records	<p>My include, but not limited to:</p> <ul style="list-style-type: none"> <li>Equipment safety checklist and hours.</li> </ul>

### Evidence Guide

Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> <li>monitor a climber during tree works,</li> <li>Maintain a safe work site,</li> <li>Communicate effectively with both climbers and other members of the ground support team.</li> <li>Calculate or estimate fuel levels, exclusion zones, distance, and quantities of tree pruning to be processed</li> </ul>
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Required Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Basic operational and maintenance requirements of arboriculture equipment</li> <li>• Safety procedures and potential hazards of working in trees</li> <li>• Non-verbal communication protocols and techniques used for tree work</li> <li>• Principles and methods of rope handling techniques</li> <li>• The effect of adverse outdoor climatic conditions which may prevent or impede arboricultural operations (steady rain, lightning, excessive heat).</li> </ul>
Required Skills	<p>Demonstrate Skills to:</p> <ul style="list-style-type: none"> <li>• Interpret work procedures including hazard and risk analysis and maintenance schedules</li> <li>• Participate in teams and contribute to team objectives</li> <li>• Monitor and maintain arboriculture tools and equipment.</li> <li>• Communicate of ideas and information about specific tasks associated with the job,</li> <li>• Collect, analyze and organize information</li> <li>• Plan and organize activities,</li> <li>• Establish Green house net shed for</li> <li>• Undertake pre-operational checks and organization of tools, calculate rope lengths and distances, the area of exclusion and drop zones, fuel volumes, and quantity of tree pruning and processed plant material.</li> <li>• Prepare, use and maintain arboriculture tools and equipment,</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.



<b>Occupational Standard: Natural Resource Conservation and Development Level I</b>	
<b>Unit Title</b>	<b>Identify Basic Soil Properties</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC1 06 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to determine the basic properties of soil. It requires the ability to collect samples and perform basic tests and It also requires knowledge of sample collection techniques, basic soil properties, and basic understanding of soil and plant relationships. Determining the basic properties of soil is likely to be under supervision from others, with checking related to overall progress.

<b>Element</b>	<b>Performance Criteria</b>
1. Collect soil samples for testing	<p>1.1. <b>Tools and equipment</b> for collecting soil samples are prepared.</p> <p>1.2. Area from which soil samples are to be collected is identified from workplace records or supervisors instructions.</p> <p>1.3. <b>Services</b> are located using site plans and in consultation with the supervisor.</p> <p>1.4. <b>OHS hazards</b> are identified, risks assessed and controls implemented and reported to the supervisor.</p> <p>1.5. Suitable safety and <b>PPE</b> are selected, used and maintained.</p> <p>1.6. <b>Samples</b> are taken randomly from the designated area according to recognized sampling techniques and are prepared for on site or off site analysis</p> <p>1.7. Samples are <b>labelled</b> and recorded according to organizational procedures.</p>
2. Perform basic soil tests	<p>2.1. Soil profile is determined, where appropriate.</p> <p>2.2. <b>Soils are tested</b> or inspected for physical properties</p> <p>2.3. Results are recorded according to organizational procedures.</p>
3. Complete soil testing operation	<p>3.1. Equipment is cleaned in accordance with manufacturer's specifications, organizational procedures and regulations.</p> <p>3.2. All containers, leftover fluids and waste are disposed of safely and appropriately.</p>

<b>Variable</b>	<b>Range</b>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Spades, augers, soil sample storing and recording materials, field test kits and interpreting charts, ph meter, litmus paper, polythene bags....</li> </ul>
Services	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Water supply</li> <li>• Gas</li> <li>• Electricity</li> <li>• Telecommunications</li> </ul>

	<ul style="list-style-type: none"> <li>• Irrigation</li> <li>• Storm water and drainage</li> </ul>
OHS hazards	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Disturbance or interruption of services</li> <li>• Solar radiation, dust, noise, soil- and water-borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving machinery and machinery parts, falling objects, and uneven surfaces.</li> </ul>
PPE	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and helmets.</li> </ul>
Samples	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Collecting, preparing, packaging and labelling soil samples for off-site testing and/or on-site testing and analysis.</li> </ul>
Label	<p>May include, but not limited</p> <ul style="list-style-type: none"> <li>• Site, code, slope, collection date, depth, name of collector</li> </ul>
Testing soils	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Soils may be tested for depth, colour, texture, structure, compaction, air-filled, porosity.</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> <li>• Describe sampling techniques</li> <li>• Collect soil/media samples</li> <li>• Test physical soil properties,</li> <li>• Label and pack soil samples</li> <li>• Interpreting and recording techniques have been successfully and appropriately carried out</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Soil sampling techniques</li> <li>• Soil physical properties</li> <li>• Soil-plant relationships</li> <li>• Basic soil field tests</li> <li>• Techniques to ameliorate soil properties</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Collect soil samples</li> <li>• Perform basic soil tests</li> <li>• Record and store information</li> <li>• Communicate of ideas and information through reporting results of soil tests to supervisor or others orally or in writing</li> <li>• Collect, analyse and organize information through recording, interpreting and filing soil results from own results</li> <li>• Plan and organize activities according to workplace procedures work in team with other to achieve an outcome</li> <li>• Use of mathematical ideas and techniques through the use of accepted soil tests and by carrying out the required number of samples from a designated area and in a manner that is random</li> </ul>

	<p>across the designated area</p> <ul style="list-style-type: none"> <li>• Apply problem-solving skills through identifying and resolving problems with the sampling process</li> <li>• Use of technology through the use of standard soil testing equipment</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Natural Resources Conservation and Development Level I	
Unit Title	Identify and maintain Indigenous Soil and Water Conservation Practices
Unit Code	<a href="#">AGR NRC1 07 0322</a>
Unit Descriptor	This unit covers the knowledge, skills and attitude required to identify and undertake maintenance of indigenous soil and water conservation measures specified on plans.

Element	Performance Criteria
1. Explore Indigenous soil and water management practices	<p>1.1. Relevant <i>information sources</i> are identified, accessed and utilized</p> <p>1.2. Relevant contemporary <i>indigenous soil and water management</i> practices are outlined according to community guidelines and cultural protocols.</p> <p>1.3. Relevant issues connected with this practice are defined.</p> <p>1.4. Relevant and appropriate people are consulted according to community guidelines and cultural protocols.</p> <p>1.5. Associated issues related to contemporary Indigenous soil and water management practices are identified.</p> <p>1.6. Details of consultation/research are documented.</p>
2. Establish role of group in community	<p>2.1. Potential roles of program and <i>range of groups</i> to community are identified for use in group <i>activities</i>.</p> <p>2.2. Interaction with community is managed to build rapport with individuals and groups.</p> <p>2.3. <i>Consultation processes</i> are established and maintained with community members and groups.</p> <p>2.4. Image of group and program in community is maintained by acknowledging community concerns and promoting positive image of group and program.</p>
3. Prepare for implementation of indigenous soil and water conservation measures	<p>3.1. Indigenous soil and water conservation plan and schedule of works are matched with site conditions.</p> <p>3.2. Survey pegs and site indicators are identified on site.</p> <p>3.3. <i>Equipment and tools</i> are matched to program works and terrain on site.</p> <p>3.4. <i>OHS procedures</i>, practices, policies, and precautions are observed and followed.</p> <p>3.5. Work readiness of selected equipment and tools are verified as directed by supervisors</p> <p>3.6. Materials are selected to complete proposed works in line with construction schedule.</p>
4. Implement and maintain Indigenous	<p>4.1. Indigenous conservation practices are constructed in accordance with details specified in the plan, OHS procedures and to</p>

erosion control structures	<p>industry standards.</p> <p>4.2. Breaches of <i>erosion control</i> regulations and manuals are noted and reported.</p> <p>4.3. Industry practices for erosion control are applied in the work place</p> <p>4.4. Site works maintenance inspection schedule is applied to re-establish operating effectiveness of indigenous soil and water conservation measures on site.</p>
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Variable	Range
Sources of Information	<p>May be:</p> <ul style="list-style-type: none"> <li>• Organizational rules, regulation and guidelines</li> <li>• Internet, related books and related materials</li> <li>• Technical manuals</li> <li>• Workplace guidelines</li> </ul>
Indigenous soil and water management	<p>Refers to:</p> <ul style="list-style-type: none"> <li>• Traditional soil and water conservation practices (e.g. stone bund and bench terraces of Konso, grass strip, fallowing, crop rotation)</li> </ul>
Range of groups	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Formal or informal groupings based on social activities and interests,</li> <li>• Family and community history</li> <li>• Cultural backgrounds including ethnicity,</li> <li>• Sex and age</li> </ul>
Activities	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Form and/or develop a community group,</li> <li>• Promote solutions or explain issues relating to the environment or other government</li> <li>• Program, project activities, and fund raising and submissions</li> </ul>
Consultation processes	<p>Involve:</p> <ul style="list-style-type: none"> <li>• Complying with values and respecting cultural authority,</li> <li>• Addressing issues that may impact on values, including discussion where relevant with communities and groups on natural resource and environment management</li> </ul>
Equipment and tools	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Knives, trowels, spades, forks, hammer, rakes, hoes, pegs, shovels, buckets, brooms, wheelbarrows, sand bags, stationery, measuring tapes, spades, GPS, Gabion wire</li> <li>• Stationery, digital cameras, internet, telephone</li> </ul>
OHS procedures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• The use of PPE and clothing</li> <li>• The use of safety and first aid equipment</li> <li>• Forest pest and disease fighting measures</li> <li>• Hazard and risk control</li> <li>• Elimination of hazardous materials and substances</li> </ul>

	<ul style="list-style-type: none"> <li>• Appropriate fitness for the task</li> <li>• OHS hazard identification,</li> <li>• Risk assessment and control procedures for dealing with hazardous events</li> </ul>
Erosion control	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Land shaping including batter stabilization, banks, channels.</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Apply OHS procedures, practices, policies, and precautions</li> <li>• Describe erosion control structures/ measures/ practices.</li> <li>• Construct indigenous soil and water conservation measures/structures.</li> <li>• Communicate ideas and information</li> <li>• Collect, analyze and organize information</li> <li>• Select materials for proposed works in line with construction schedule</li> <li>• Use mathematical ideas and techniques to measurement</li> <li>• Describe community values.</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Indigenous soil and water management practices</li> <li>• Cultural customs and heritage</li> <li>• Application of protocols</li> <li>• Relevant federal/ regional state land acts/legislation</li> <li>• Research processes</li> <li>• Interaction between natural and cultural processes</li> <li>• Agents/processes of erosion and sedimentation.</li> <li>• Erosion and sedimentation cost to the community: <ul style="list-style-type: none"> <li>➤ Loss of production/asset/amenity.</li> <li>➤ Re-occurring maintenance/repair/monitoring</li> <li>➤ Loss of habitat.</li> <li>➤ Water quality</li> </ul> </li> <li>• Basic catchments issues.</li> <li>• Role of vegetation.</li> <li>• Characteristics of soils with an emphasis on erodible soils</li> <li>• Regulation and guidelines on soil and water conservation practices</li> <li>• Potential diversity of values</li> <li>• Planning of promotional and group activities</li> <li>• Relevant documents, symbols, places of value and oral traditions</li> <li>• Role of formal or informal groupings</li> <li>• Consultation processes</li> <li>• Promoting positive image of group and program</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Explore contemporary indigenous soil and water conservation practices</li> <li>• Identify erosion control structures/ measures/ practices.</li> </ul>

	<ul style="list-style-type: none"> <li>• Carry out construction, repair and maintenance procedures of indigenous soil and water conservation structures</li> <li>• Undertake activities in accordance with legislation/ community expectation and project specifications.</li> <li>• Communicate ideas and information</li> <li>• Collect, analyze and organize information</li> <li>• Identify and apply community values</li> <li>• Explore community history and plans.</li> <li>• Establish role of group in community</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Natural Resources Conservation and Development Level I	
Unit Title	Conduct Irrigation Work
Unit Code	<a href="#">AGR NRC1 08 0322</a>
Unit Descriptor	This unit covers the knowledge, skills and attitude to conduct the irrigation and maintenance of watering and drainage systems. It requires the ability to prepare materials, tools and equipment for irrigation work, undertake irrigation activities, handle materials and equipment, and clean up on completion of work.

Element	Performance Criteria
1. Prepare materials, tools and equipment for irrigation work	<p>1.1. The required materials, <i>tools and equipment</i> for irrigation <i>tasks</i> are identified according to lists provided and/or supervisor's <i>instructions</i>.</p> <p>1.2. Checks are conducted on all materials, tools and equipment with insufficient or faulty items reported to the supervisor.</p> <p>1.3. Correct manual handling and techniques for loading and unloading materials are used to minimize damage to the load and the vehicle according to standard operating procedures</p> <p>1.4. Suitable <i>Personal Protective Equipment (PPE)</i> are selected and checked prior to use.</p> <p>1.5. Irrigation support is provided according to OHS requirements and according to <i>workplace information</i>.</p> <p>1.6. <i>OHS hazards</i> are identified and reported to the supervisor.</p>
2. Undertake irrigation work	<p>2.1. Instructions and directions provided by supervisor are followed, and clarification sought when necessary.</p> <p>2.2. Arrange small scale irrigation water lifting devices according to the instruction.</p> <p>2.3. Fit the different irrigation kits in their position according to enterprise guidelines.</p> <p>2.4. Align and maintain drainage lines/waterways as needed</p> <p>2.5. Interactions with other staff and farmers are carried out in a positive and professional manner.</p> <p>2.6. Enterprise/farm policy and procedures in relation to workplace practices, handling and disposal of materials are observed.</p>
3. Handle & clean up and store materials and equipment	<p>3.1. <i>Waste material</i> and debris produced during irrigation work are stored in a designated area according to supervisor's instructions.</p> <p>3.2. Materials, equipment and machinery are cleaned and stored according to supervisor's instructions and enterprise guidelines</p>



	3.3. <b>Good Site</b> is made according to supervisor's instructions and good environmental practices.
4. Complete documentation	<p>4.1. Problems or difficulties in completing work to required standards or timelines are reported to supervisor.</p> <p>4.2. Malfunctions, faults, wear or damage to facilities, machinery and equipment are identified and reported in line with enterprise requirements</p> <p>4.3. Work outcomes are reported in standard format to the supervisor</p>

Variable	Range
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Levelling equipment, string lines, tape measures, marking gauges,</li> <li>• Wheelbarrow, spades, shovels, crow bars, rakes, brooms, sanding blocks and hacksaws.</li> </ul>
Tasks	<p>May be:</p> <ul style="list-style-type: none"> <li>• Identify and arrange irrigation fittings and/or drainage pipes and components for gravity fed or pressurized systems.</li> <li>• Align and maintenance of irrigation and/or drainage systems including clearing blockages, and completing other basic tasks as instructed.</li> <li>• Work with a range of materials including plastic and metal pipes and components using hand tools commonly used in irrigation work.</li> <li>• Associated irrigation activities including in establishing work base, clearing site, erecting barriers and signs, unloading and loading of materials, setting out of works, cleaning up site and disposal of debris and materials.</li> </ul>
Instructions	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Standard Operating Procedures (SOPs),</li> <li>• Enterprise policy and procedures, specifications, work notes, Material Safety Data Sheets (MSDSs), manufacturer's instructions, or</li> <li>• Verbal directions from manager or supervisor.</li> </ul>
PPE	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Steel capped boots/shoes, overalls, gloves, sun hat, sunscreen lotion, safety goggles, face mask and ear protectors.</li> </ul>
Workplace information	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Procedures for disposing of waste materials,</li> <li>• Work instructions or verbal instructions from the supervisor.</li> </ul>
OHS Hazards	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Solar radiation, dust,</li> <li>• Noise, air- and soil-borne micro-organisms,</li> <li>• Chemicals and hazardous substances,</li> <li>• Sharp hand tools and equipment,</li> </ul>

	<ul style="list-style-type: none"> <li>Holes and slippery and uneven surfaces.</li> </ul>
Waste materials	<p>May apply to:</p> <ul style="list-style-type: none"> <li>Plant debris, litter and broken components, mulches, compost,</li> <li>Plastic, metal, and paper-based materials.</li> <li>These may be recycled, re-used, returned to the manufacturer, or disposed of according to enterprise work procedures.</li> </ul>
Good Site	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Paths are swept and cleaned,</li> <li>Work area is left in a good state,</li> <li>Disturbed areas are repaired,</li> <li>All materials, debris, tools and equipment are removed from site,</li> <li>Other signs of disturbance or damage are corrected.</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> <li>Apply basic irrigation devices fitting techniques</li> <li>Demonstrate safe work practices</li> <li>Perform basic repair and maintenance of irrigation components and systems.</li> <li>Collect, analyse and organize information</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>Safe work practices</li> <li>Identifying and arranging irrigation devices and components</li> <li>Irrigation tools and equipment</li> <li>Maintenance practices for planted areas</li> <li></li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>Identifying and arranging irrigation devices and components</li> <li>Align and maintain drainage lines.</li> <li>Handle materials and equipment</li> <li>Repair and maintenance of irrigation components and systems.</li> <li>Plan and organize activities in order to complete tasks efficiently in a logical sequence and in a timely manner.</li> <li>Communicate and co-operate with other staff in completing irrigation tasks.</li> <li>Collect, analyse and organize information</li> <li>Clean up on completion of work.</li> </ul>
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>Interview/Written Test</li> <li>Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Natural Resource Conservation and Development Level I	
Unit Title	Apply Basic First Aid Procedures
Unit Code	<a href="#">AGR NRC1 09 0322</a>
Unit Descriptor	This unit covers the knowledge, skills and attitude required to apply basic first aid procedures in recognizing and responding to an emergency using basic life support measures.

Element	Performance Criteria
1. Assess the situation	1.1. <b>Emergency situation</b> is recognized from the incidence. 1.2. <b>Hazards</b> to personal and others health and safety are identified. 1.3. Immediate risk to self and casualty's health and safety are minimized by isolating the hazard. 1.4. The casualty's physical condition and vital signs are assessed.
2. Apply basic first aid techniques	2.1. Suitable <b>Personal Protective Equipment (PPE)</b> are selected and checked prior to use. 2.2. <b>Casualty</b> is reassured in a caring and calm manner and made comfortable using available resources. 2.3. First aid care is provided in accordance with established first aid procedures.
3. Apply monitoring and evaluation	3.1. First aid provision activities are reviewed to comply with appropriate techniques and OHS 3.2. First aid assistance is sought from others as appropriate 3.3. Activities are documented and reported

Variable	Range
Emergency situation	May include, but not limited to: <ul style="list-style-type: none"> <li>• Fire, fuel spillage, anhydrous ammonia emergencies and chemical spillage.</li> <li>• Emergency situations can also arise due to trauma, e.g., road accidents, snakebite or poisoning, respiratory or cardiac arrest, and electrocution.</li> </ul>
Hazard	May include, but not limited to: <ul style="list-style-type: none"> <li>• Proximity of other people, lack of oxygen, vehicles and machinery, fire, gas, fume and electrical situations.</li> </ul>
PPE	May include, but not limited to: <ul style="list-style-type: none"> <li>• Boots, overalls, gloves, respirators</li> </ul>
Casualty	May include, but not limited to: <ul style="list-style-type: none"> <li>• Bleeding and shock, burns, fits, choking, heart attack, fractures, poisoning and drowning.</li> </ul>

Evidence Guide	
Critical Aspects of Competence	Must demonstrate knowledge and skills competence to: <ul style="list-style-type: none"> <li>• Describe first aid casualty management techniques</li> <li>• Apply basic first aid casualty management techniques</li> <li>• Apply safe working practices</li> <li>• Review &amp; report for further treatment of the injured one</li> </ul>
Required Knowledge	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• Basic first aid procedures/techniques</li> <li>• Application of safe working practices.</li> <li>• Emergency network.</li> </ul>
Required Skills	Demonstrate skills to: <ul style="list-style-type: none"> <li>• Respond positively to emergencies in line with practiced actions.</li> <li>• apply basic first aid casualty management techniques</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard : Natural Resource Conservation and Development level I	
Unit Title	Apply Agricultural Extension Service
Unit Code	<a href="#">AGR NRC1 10 0322</a>
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to understand the Concept and evolution of agricultural Extension, apply extension methods and Approaches, apply Agricultural extension Communication and facilitation for technology promotion, Conduct training and record and document data

Element	Performance Criteria
1. Understand the Concept and evolution of Agricultural Extension	<p>1.1 The <i>concept of Agricultural extension</i> is understood to gain relevant knowledge</p> <p>1.2 The <i>evolution and progress of agricultural extension</i> is expressed to understand the concept of Agricultural Extension</p> <p>1.3 The <i>role of extension</i> in agricultural development is understood to deliver effective extension services</p> <p>1.4 The <i>importance of Agricultural extension</i> is determined to have appropriate knowledge,</p> <p>1.5 <i>Extension planning</i> is understood to determine extension activities</p>

2. Apply Extension methods and Approaches	<p>2.1. <b>Extension methods</b> are understood to provide Extension services based on organizational standard, extension systems, extension strategy and extension guide lines</p> <p>2.2. <b>Extension approaches</b> are understood for implementation of extension services</p> <p>2.3. The <b>importance of extension methods and approaches</b> are understood for Agricultural extension service delivery</p> <p>2.4. Appropriate extension methods and approaches are applied to transfer agricultural technologies, based on organizational standard, extension systems, extension strategy and extension guide lines,</p>
3. Apply Agricultural Extension Communication and Facilitation for technology promotion	<p>3.1. The concept, <b>principle</b> and <b>type of communication</b> is understood to have good extension communication knowledge &amp; skill</p> <p>3.2. <b>Communication barriers</b> are identified, understood and solved to undertake effective communication</p> <p>3.3. <b>Elements of extension communication</b> are defined and used to create positive environment for communication</p> <p>3.4. <b>Audio visual techniques</b> are understood to provide Agricultural Extension and communication delivery services</p> <p>3.5. <b>Roles</b> and <b>characteristics of extension communicator</b> are recommended to improve the communicator's performance</p> <p>3.6. The <b>basic concept of facilitation</b> is understood to improve facilitation skills</p> <p>3.7. The <b>roles and responsibilities of a facilitator</b> is applied to progress facilitation skills</p> <p>3.8. Conflict resolution skill is understood to enhance homogeneity</p> <p>3.9. The <b>skills of a facilitator</b> are applied for communication &amp; technology promotion</p>
4. Conduct Training	<p>4.1. <b>Need assessment</b> is conducted to provide appropriate training</p> <p>4.2. <b>Preparation</b> is carried-out to facilitate the training process</p> <p>4.3. Implementation is conducted to capacitate trainees based on organizational training guide line</p> <p>4.4. <b>Evaluation is carried-out</b> to understand the outcome</p>
5. Record and Document Data	<p>5.1 <b>Data collecting formats</b> are developed</p> <p>5.2 Appropriate data are collected and organized</p> <p>5.3 Collected and organized data are documented and <b>reported</b></p>

Variable	Range
Concept of Agricultural Extension	May include but not limited to: <ul style="list-style-type: none"> <li>• Definition of agricultural extension</li> <li>• Purpose of agricultural extension</li> </ul>

Evolution and progress of agricultural extension	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• National Agricultural Extension systems</li> <li>• Related reading materials</li> <li>• Professionals</li> <li>• Electronic mail</li> <li>• Briefing notes</li> <li>• Journal articles</li> <li>• Code of conduct</li> </ul>
Role of extension	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Situation analysis</li> <li>• Awareness creation</li> <li>• Training</li> <li>• Facilitation</li> <li>• Demonstrations</li> <li>• Field day exchange visit</li> <li>• Establish farmers group</li> <li>• Link farmers with relevant stakeholders</li> <li>• Monitoring and evaluation</li> <li>• Experience sharing</li> <li>• Assist and provide extension services for farmers</li> </ul>
Importance of Agricultural extension	<p>May include but not limited to;</p> <ul style="list-style-type: none"> <li>• Identify problem</li> <li>• Find solution</li> <li>• Bring behavioural change</li> <li>• Transfer of technology</li> <li>• Assist farmers to help themselves</li> </ul>
Extension planning	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Conduct survey</li> <li>• Identification of activities</li> <li>• Data collection</li> <li>• Development of formats</li> <li>• develop the plan</li> </ul>
Extension methods	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Individual</li> <li>• Group</li> <li>• Mass</li> </ul>

Extension approaches	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Participatory</li> <li>• Pluralistic</li> <li>• Farmers field school</li> <li>• Pastoral field school</li> <li>• Mobile extension</li> <li>• Model village</li> <li>• Cluster approaches</li> <li>• Scaling/up/out/down</li> <li>• Market oriented extension</li> </ul>
Importance of extension methods and approaches	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Information and technology dissemination</li> <li>• Deliver extension message effectively</li> <li>• Increase knowledge of farmers</li> <li>• Bring attitude change</li> <li>• Formation of opinion</li> <li>• Encourage farmers to raise issues</li> <li>• To get/provide possible alternative solutions</li> </ul>
Type of communication	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>• Intra personal communication</li> <li>• Inter personal communication</li> <li>• Organizational communication</li> </ul>
Principles of communication	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Awareness creation</li> <li>• Designed message with respect to objectives and respective audience</li> <li>• Message content should suite to the target audience</li> </ul>
Communication barriers	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• The use of jargons words/terms</li> <li>• Cultural differences</li> <li>• Lack of attention, interest, distractions</li> <li>• Differences in perception and viewpoint</li> <li>• Physical disabilities</li> <li>• Physical barriers to non-verbal communication</li> <li>• Language differences and the difficulty in understanding unfamiliar accents</li> <li>• Expectations and prejudices</li> <li>• Emotional barriers and taboos</li> </ul>

Elements of extension communication	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Source</li> <li>• Sender</li> <li>• Message</li> <li>• Channel</li> <li>• Receiver</li> </ul>
Audio visual techniques	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Audio visual aids</li> <li>• Assembling</li> <li>• Character</li> <li>• Advantages</li> <li>• Uses</li> </ul>
Characteristics of extension communicator	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Confident</li> <li>• Friendly/ welcoming</li> <li>• Observant</li> <li>• Appreciative</li> <li>• Respectful</li> <li>• Organized</li> <li>• Good judgment</li> <li>• Consistent</li> <li>• Honest</li> </ul>
Role of extension communicator	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Create motivation and feeling</li> <li>• Be aware of problem of the local people</li> <li>• Priority of direct needs</li> <li>• Create self-belief in rural people</li> <li>• Emphasis on self-depend aces</li> <li>• Change in social attitude</li> <li>• Rebuilding of the village</li> <li>• Full uses of local resources</li> </ul>
Basic concept of facilitation	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Definition of facilitation</li> <li>• Purpose of facilitation</li> <li>• Evolution and progress of facilitation</li> </ul>



Role and responsibility of facilitator	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Does not evaluate group ideas</li> <li>• Helps the group focus its energies on a task</li> <li>• Suggests methods and procedures</li> <li>• Protects all members of the group from attack</li> <li>• Helps find win/win solutions</li> <li>• Makes sure that everyone has the opportunity to participate</li> <li>• Periodically summarizes the group consensus on issues to validate and clarify the progress of the discussion</li> <li>• Encouraging of every one's knowledge</li> </ul>
Conflict resolution skill	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Recognize</li> <li>• Resolve conflicting needs</li> <li>• Relieve stress</li> <li>• Recognize and manage emotions</li> <li>• Improve nonverbal communication skills</li> <li>• Use humor and play to deal with challenges</li> </ul>
Skill of facilitator	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Active Listening</li> <li>• Summarizing</li> <li>• Synthesis</li> <li>• Conflict resolution</li> </ul>
Need assessment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Identification of areas</li> <li>• Selection of respondents</li> <li>• Preparation of tools</li> <li>• Conduct the assessment</li> <li>• Organize data</li> </ul>
Preparation	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Identify trainees and trainers</li> <li>• Organize logistics</li> <li>• Select Venue</li> <li>• Selecting and organize training materials</li> <li>• Select and Organize training aids</li> <li>• Prepare schedule and others</li> <li>• Implement</li> </ul>

Evaluation	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Preparation of evaluating formats</li> <li>• Identify sample</li> <li>• Conduct evaluation</li> <li>• Organize result</li> <li>• Report</li> <li>• Plan the lesson learnt</li> </ul>
Data collecting formats	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Recording formats</li> <li>• Writing formats</li> </ul>
Reporting	<p>May include but not limited:</p> <ul style="list-style-type: none"> <li>• Organizing</li> <li>• Writing</li> <li>• Submitting/transfer</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrates knowledge , attitude and skill of :</p> <ul style="list-style-type: none"> <li>• Understands the role of Agricultural Extension</li> <li>• Understands Evolution and progress of agricultural</li> <li>• Understands Extension method and Approaches</li> <li>• Understands Agricultural Extension Communication and Facilitation</li> <li>• Develops Extension planning</li> <li>• Understands Conflict resolution</li> <li>• Understands collecting, recording, organizing and documenting of data</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrates knowledge and attitude of :</p> <ul style="list-style-type: none"> <li>• Agricultural extension</li> <li>• Conflict resolution</li> <li>• Extension method and Approaches</li> <li>• Agricultural Extension Communication and Facilitation</li> <li>• collecting, recording, organizing and documenting of data</li> </ul>
Required Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> <li>• Conflict resolution</li> <li>• Develops Extension planning</li> <li>• Extension method and Approaches</li> <li>• Agricultural Extension Communication and Facilitation</li> <li>• Collecting, recording, organizing and documenting of data</li> </ul>

Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and Occupational health and safety (OHS) practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Written Test, Interview, quiz, practical assignment</li> <li>• Observation, Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

<b>Occupational Standard: Natural Resource Conservation and Development level I</b>	
<b>Unit Title</b>	<b>Implement Agribusiness Marketing</b>
<b>Unit Code</b>	<b><a href="#">AGR NRC1 11 0322</a></b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to Understand concept of agricultural marketing Understand concepts of agribusiness Identify marketing targets for Agricultural products Implement marketing strategy . Establish contract farming, and Apply Agricultural marketing services.

<b>Element</b>	<b>Performance Criteria</b>
1. Understand concept of agricultural marketing	<p>1.1 <b>.Concept of agricultural marketing</b> is understood for Agricultural marketing</p> <p>1.2 Importance of agricultural marketing is understood to provide agricultural marketing services</p> <p>1.3 <b>.Roles of agricultural market-oriented service</b> is identified and understood</p> <p>1.4 <b>.Principles of agricultural marketing</b> and strategies are identified and understood</p> <p>1.5 <b>Marketing mix</b> is understood to implement agricultural marketing activities</p> <p>1.6 <b>Types of marketing</b> are understood and identified to implement the appropriate marketing services</p>
2. Understand concepts of agribusiness	<p>2.1. <b>Concept of agribusiness</b> is understood for Agricultural marketing</p> <p>2.2 Importance of agribusiness is understood to provide agribusiness services</p> <p>2.3 <b>Roles of agribusiness-oriented service</b> is identified and understood</p> <p>2.4 <b>Principles of agribusiness</b> and strategies are identified and understood</p> <p>2.5. <b>Characteristic of Agribusiness</b> are understood to implement Agribusiness</p> <p>2.6. <b>Dimension and structures</b> of Agribusiness are understood and distinguished</p>
3. Identify marketing targets for Agricultural products	<p>3.1 <b>Marketing targets</b> are identified for Agricultural products and services</p> <p>3.2 <b>Approaches of agricultural market</b> are understood for agricultural market product and service.</p> <p>3.3 <b>Segment descriptors</b> are used to display the targets of agricultural market</p> <p>3.4 <b>Strategic of agricultural marketing options</b> are identified to develop agricultural marketing plan</p> <p>3.5 Business plans are prepared to perform cost and benefit analysis</p>
4. Implement marketing	<p>4.1 .Agricultural marketing functions strategy is designed to perform agriculture business.</p> <p>4.2 <b>Action plan</b> is developed to implement Agricultural marketing strategies.</p>

strategy	4.3 .Require resource are identified and coordinated to implement agricultural marketing 4.4 Marketing mix is implemented according to the strategy Agricultural.
5. Establish contract farming	5.1 Concept of <b>contract farming</b> is understood to enhance market oriented production 5.2 <b>Types of contract farming</b> are identified to select the appropriate approach 5.3 <b>Models of Contract</b> farming are understood and identified 5.4 Steps and procedures of contract farming establishments are identified 5.5 Contract farming <b>requirements</b> are identified and applied based on the organizational standard 5.6 Contract farming systems are established
6. Apply agricultural marketing services	6.1. Agricultural products are identified to delivered provided marketing services 6.2. Need assessment is conducted to identify <b>marketing conditions</b> 6.3. <b>Market strategies</b> are developed to implement the Agricultural marketing services 6.4. Customer feedbacks are collected and organized to improve Agricultural marketing services 6.5. Data is organized and documented to report the appropriate body.

Variable	Range
Concept agricultural marketing	May include, but not limited to: <ul style="list-style-type: none"> <li>• Needs</li> <li>• Product</li> <li>• Demand</li> <li>• Value</li> <li>• Transaction</li> <li>• Satisfaction and Quality</li> <li>• Exchange</li> <li>• Market</li> </ul>
Roles marketing	May include but not limited to: <ul style="list-style-type: none"> <li>• Determine price</li> <li>• Consumer choice</li> <li>• Increase efficiency</li> <li>• Improve scarcity</li> </ul>
Principles agricultural marketing	May include but not limited to: <ul style="list-style-type: none"> <li>• Product</li> <li>• Price</li> <li>• promotion</li> <li>• Place</li> <li>• People</li> <li>• Process</li> </ul>
Marketing mix	<ul style="list-style-type: none"> <li>• May include, but not limited to:</li> <li>• Price</li> </ul>

	<ul style="list-style-type: none"> <li>• Promotion</li> <li>• Place</li> <li>• Product</li> </ul>
Types of marketing	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Perfect competitive</li> <li>• Monopoly</li> <li>• Oligopoly</li> <li>• Monopolistic</li> </ul>
Concept of Agribusiness	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Agricultural impute supply</li> <li>• Farmer producer</li> <li>• Process of wholesaler</li> <li>• Distribution and retailer</li> </ul>
Characteristic of Agribusiness	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Existence around production areas</li> <li>• Variety and size of Ag organization</li> <li>• Scale and type of competition</li> <li>• Conservativeness of Ag:</li> <li>• Decision making:</li> <li>• Community oriented business</li> </ul>
Dimension	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Agricultural sector and their interdependence</li> <li>• farm either private or government</li> <li>• Market oriented.</li> <li>• Dynamic sector and continuously meets current demands of consumers</li> <li>• Provides forward and backward linkages</li> </ul>
Structures	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Input sector:</li> <li>• Farm/production sector:</li> <li>• Product sector:</li> </ul>
Marketing targets	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Demographic</li> <li>• Geographic</li> <li>• Psychographic</li> <li>• Behaviours pattern</li> </ul>
Marketing conditions	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Government</li> <li>• International transaction</li> <li>• Speculation and expectation</li> <li>• Supply and demand</li> </ul>

Agricultural Market strategies	<ul style="list-style-type: none"> <li>• May include, but not limited to:</li> <li>• Analyse agricultural market</li> <li>• Analyse competition</li> <li>• Define market mix</li> <li>• Determine position</li> <li>• Marketing budget</li> <li>• Execution plan understand potential customers</li> </ul>
Approaches for agricultural market	<ul style="list-style-type: none"> <li>• May include, but not limited to:</li> <li>• Functional</li> <li>• Institution</li> <li>• Commodity</li> <li>• Behavioural</li> </ul>
Segment descriptors	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Demographic</li> <li>• Behavioural</li> <li>• Geographic</li> <li>• Psychographic</li> </ul>
Marketing plans	<ul style="list-style-type: none"> <li>• May include, but not limited to</li> <li>• Function of marketing</li> <li>• Market program</li> <li>• Achieve the market objectives</li> </ul>
Action plan	<ul style="list-style-type: none"> <li>• May include, but not limited to:</li> <li>• Resource</li> <li>• Budget</li> <li>• Times</li> <li>• Output</li> </ul>
Contract farming	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Agreement between buyer and seller</li> <li>• Farmer and processing making firms for production</li> <li>• Supplies of agricultural product</li> </ul>
Types of contract farming	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Market specifying</li> <li>• Recourse providing</li> <li>• Production management</li> </ul>
Models of Contract	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Full model contract farming</li> <li>• Specific</li> </ul>

Requirements	<ul style="list-style-type: none"> <li>• Traceability</li> <li>• Site history and management</li> <li>• Propagation material</li> <li>• Soil/substrate management</li> <li>• Fertilizer use</li> <li>• Irrigation</li> <li>• Crop protection</li> </ul>
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<b>Evidence Guide</b>	
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Critical Aspects of Competence	<p>Must demonstrate the knowledge, attitude and skill to:</p> <ul style="list-style-type: none"> <li>• Understand Concept of agribusiness to apply agribusiness marketing</li> <li>• Identify Principles of agribusiness and strategies to implement Agribusiness marketing</li> <li>• Determine Agricultural Marketing targets for provide products and services</li> <li>• Develop Action plan to implement Agricultural marketing strategies.</li> <li>• Prepare Business plans to perform cost and benefit analysis</li> <li>• Apply marketing conditions to conducted Need assessment for products and service</li> <li>• Understand concept of contract farming to enhance market oriented production</li> <li>• Apply appropriate models to established contract farming</li> <li>• Contract farming requirements are identified and applied based on the organizational guide line</li> <li>• Established Contract farming systems based on the organizational standard</li> </ul>
Required Knowledge and Attitude	<p>A candidate must demonstrate the knowledge and attitude to :</p> <ul style="list-style-type: none"> <li>• Identify Principles agricultural marketing to implement marketing strategy</li> <li>• Understand Concept of agribusiness to apply agribusiness marketing</li> <li>• Analyze the roles of agribusiness to perform agricultural marketing.</li> <li>• Identify Principles of agribusiness and strategies to implement Agribusiness marketing</li> <li>• Identified Agricultural Marketing targets provide products and services</li> <li>• Identify Require resource to implement agricultural marketing</li> <li>• Understand concept of contract farming to enhance market oriented production</li> <li>• Identify appropriate models to established contract farming</li> <li>• Recognize Contract farming systems based on the organizational standard</li> </ul>
Required Skills	A candidate must demonstrate the Skills to :

	<ul style="list-style-type: none"> <li>• Determine <i>marketing options</i> to design marketing plan</li> <li>• Implement Agricultural marketing strategies develop action plan</li> <li>• Identified Agricultural Marketing targets for provide products and services</li> <li>• Select <i>Approaches</i> of agricultural market to implement product and service.</li> <li>• <i>Use segment descriptors</i> to display the targets of agricultural market</li> <li>• Develop Action plan to implement Agricultural marketing strategies.</li> <li>• Prepare Business plans to perform cost and benefit analysis</li> <li>• Apply marketing conditions to conducted Need assessment for products and service</li> <li>• Organize customer feedbacks to improve Agricultural marketing services</li> <li>• Apply appropriate models to established contract farming</li> <li>• Contract farming requirements to applied based on the organizational guide line</li> <li>• Established Contract farming systems based on the organizational standard</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

<b>Occupational Standard: Natural Resource Conservation and Development level I</b>	
<b>Unit Title</b>	<b>Apply Basics of Human Nutrition Practices</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC1 12 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skill and attitude required to categorize agricultural foods items, recognize malnutrition in the community, identify the role of agriculture in nutrition and contribute to the awareness creation of the community in utilization of agricultural products.

<b>Element</b>	<b>Performance Criteria</b>
1. Identify Categories of agricultural foods items	1.1. Basic <i>terminologies and concepts</i> in nutrition are identified and explained 1.2. <i>Food groups, nutrient and their sources</i> of balanced diet are identified and explained 1.3. <i>Origin</i> and composition of food stuffs are identified and described



	1.4. <b>Energy dense</b> and <b>nutrient dense</b> food sources are identified and explained
2. Recognize malnutrition in the community	<p>2.1. Physical signs of malnutrition are identified and explained</p> <p>2.2. Forms, causes and consequences of <b>malnutrition</b> in different groups of community are identified</p> <p>2.3. Measures to overcome malnutrition, importance of maintenance of adequate and balanced diet are promoted</p> <p>2.4. Contribution is made in elders, family heads and women awareness creation programs</p>
3. Identify the role of agriculture in nutrition	<p>3.1. The role of agriculture as source of variety foods is recognized and promoted</p> <p>3.2. The contribution of agriculture sector in nutrition sensitive intervention is described</p> <p>3.3. <b>Nutrition sensitive agricultural practices</b> are identified and communicated as per the nutrition program guideline</p>
4. Demonstrate diversified Agricultural food production and consumption techniques	<p>4.1. Importance of diet diversification is identified and discussed with family holds and community according to the program guideline</p> <p>4.2. Techniques of diversified food production are identified and demonstrated to farmers and family members</p> <p>4.3. <b>Techniques of enhancing</b> the nutrient content of family foods are assessed and implemented according to the program guideline and cultural requirements of the rural community</p> <p>4.4. Utensils are identified and cooking techniques demonstrated for specific agricultural products</p> <p>4.5. PPE are selected and used in accordance to OHS requirement and code of ethics</p> <p>4.6. Balanced and nutrient dense diet preparation is demonstrated using food stuff ingredients</p>
5. Perform proper handling and storage of agricultural food products	<p>5.1. Importance of <b>hygiene</b> for nutrition is explained</p> <p>5.2. <b>Storage facilities</b> are identified and family holds supported in construction.</p> <p>5.3. Agricultural products are <b>safely handled and stored</b></p> <p>5.4. Methods and techniques of safely handling and storing agricultural products are demonstrated in accordance products requirement</p>

6.Document and report food production, consumption and difficulties	<p>6.1. Diversified food production and consumption activities are documented</p> <p>6.2. Difficulties happened in the processes are reported to the respective authorities.</p>
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<b>Variable</b>	<b>Range</b>
Terminologies and concepts	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Food</li> <li>• Diet</li> <li>• Nutrient</li> <li>• Balanced Diet</li> <li>• Nutritious food</li> <li>• Hidden hunger</li> <li>• Malnutrition</li> <li>• Stunting</li> <li>• Underweight</li> <li>• Overweight</li> <li>• Nutrition</li> <li>• Diversification</li> <li>• Body growth</li> <li>• Body Development</li> <li>• Food fortification</li> <li>• Bioavailability</li> <li>• Food taboos</li> <li>• Window of opportunity</li> <li>• Fortification</li> <li>• Food security</li> <li>• Nutrition security</li> <li>• Small holder farmer</li> <li>• Cretinism</li> </ul>
Food groups	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Vegetables food group</li> <li>• Fruits food group</li> <li>• Legumes and nuts food group</li> <li>• Animal source food group</li> <li>• Fats oils and sweets food group</li> <li>• Staples food group</li> </ul>
Nutrient and their sources	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Carbohydrates</li> <li>• Lipids/Fats</li> <li>• Proteins</li> <li>• Minerals</li> </ul>

	<ul style="list-style-type: none"> <li>• Vitamins</li> </ul>
Food origin	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Animal</li> <li>• Plant</li> </ul>
Energy dense	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Calories</li> <li>• Nutrient</li> </ul>
Nutrient dense	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Vitamins</li> <li>• Minerals</li> <li>• Fibbers</li> </ul>
Malnutrition	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Under nutrition may be: <ul style="list-style-type: none"> <li>➢ stunting</li> <li>➢ wasting</li> <li>➢ underweight</li> </ul> </li> <li>• Over nutrition may be: <ul style="list-style-type: none"> <li>➢ obesity</li> <li>➢ overweight</li> </ul> </li> </ul>
Nutrition sensitive agricultural practices	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Nutrition sensitive agricultural intervention</li> <li>• Diversification in: <ul style="list-style-type: none"> <li>➢ Production of fruits, vegetable, nutritious roots, cereals, pulse, and mushroom</li> <li>➢ Animal source foods (Dairy, poultry, shoat, fish)</li> </ul> </li> </ul>
Techniques of enhancing	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Fortification,</li> <li>• Germination,</li> <li>• Fermentation,</li> <li>• Roasting and Cooking</li> </ul>
Hygiene	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Food hygiene</li> <li>• Personal hygiene</li> <li>• Environmental hygiene</li> </ul>
Storage facilities	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Bins</li> <li>• Refrigerator</li> <li>• Shelf</li> <li>• Rack and Barn</li> </ul>
Safely handling and storing	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Sanitation</li> <li>• Ventilation</li> </ul>

## Evidence Guide

<p>Critical Aspects of Competence</p>	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Use utensils and prepare balanced nutrition</li> <li>• Distinguish and demonstrate energy dense and nutrients- dense foods and preparation techniques</li> <li>• Demonstrate food storing and preserving techniques</li> <li>• Explain the need for variety and diversification of foods</li> <li>• Explain agricultural food types, and sources</li> <li>• Describe forms, causes and consequences of excess or deficient intake of certain food types</li> <li>• Maintain personal hygiene to minimize risk to food product safety</li> </ul>
<p>Required Knowledge and Attitude</p>	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Terminologies and concepts of nutrition</li> <li>• OHS requirements</li> <li>• Food groups and nutrient composition and diet requirement</li> <li>• Adequate and balanced diets</li> <li>• Agricultural food types, and sources</li> <li>• Need for variety and diversification of family diet with a variety of agricultural food products</li> <li>• Basic principles of producing quality/ nutritious agricultural products</li> <li>• Effect of food production and /or preparation on nutrient content of a variety of energy- dense and nutrients- dense foods</li> <li>• Child and maternal nutrition</li> <li>• Forms, causes and consequences of malnutrition</li> <li>• Basic food safety principles and requirements</li> <li>• Hygiene and food safety procedures</li> <li>• food safety recording requirements</li> <li>• Common hazards and sources of contamination in area of work</li> <li>• Legal and regulatory requirements pertaining to food production, storage, handling and packaging relevant to area of work</li> <li>• Personal hygiene practices and clothing requirements relevant to area of work.</li> </ul>
<p>Required Skills</p>	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Categorize agricultural food items into major food groups based on their nutrient contents</li> </ul>

	<ul style="list-style-type: none"> <li>• Identify local varieties of animal and plant products,</li> <li>• Demonstrate production and /or preparation of nutrient rich diets</li> <li>• Communicate appropriate information with regard to diversified foods for pregnant women and children</li> <li>• Demonstrate various methods of integrated nutritious agricultural products production</li> <li>• Identify the consequences of excess or deficient intake of certain food types</li> <li>• Demonstrate how to enhance nutrient content using different food groups</li> <li>• Handle food products to prevent damage, spoilage and waste</li> <li>• Identify hazards, contaminants and risks or control points</li> <li>• Document and report food safety hazards and risks to appropriate personnel</li> <li>• Store food products in appropriate areas at correct temperatures</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

**Occupational Standard: Natural Resource Conservation and Development level I**

<b>Unit Title</b>	<b>Apply 5S Procedures</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC1 13 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to apply 5S techniques to his/her workplace. It covers responsibility for the day-to-day operations of the workplace and ensuring that continuous improvements of Kaizen elements are initiated and institutionalized.

<b>Elements</b>	<b>Performance Criteria</b>
1. Prepare for work.	1.1. Work instructions are used to determine job requirements, including method, material and equipment. 1.2. Job specifications are read and interpreted following working manual. 1.3. <b>OHS requirements</b> , including dust and fume collection, breathing apparatus and eye and ear personal protection needs are observed throughout the work.

	<p>1.4. <b>Tools and equipment</b> are prepared and used to implement 5S.</p> <p>1.5. <b>Safety equipment and tools</b> are identified and checked for safe and effective operation.</p> <p>1.6. Kaizen Board (Visual Management Board) is prepared and used in harmony with different workplace contexts.</p>
2. Sort items.	<p>2.1. Plan is prepared to implement sorting activities.</p> <p>2.2. Cleaning activities are performed.</p> <p>2.3. All <b>items</b> in the workplace are identified following <b>the appropriate procedures</b>.</p> <p>2.4. Necessary and <b>unnecessary items</b> are listed using the <b>appropriate format</b>.</p> <p>2.5. <b>Red tag</b> strategy is used for unnecessary items.</p> <p>2.6. Unnecessary items are evaluated and placed in an appropriate place other than the workplace.</p> <p>2.7. <b>Necessary items</b> are recorded and quantified using appropriate format.</p> <p>2.8. Performance results are reported using appropriate formats.</p> <p>2.9. Necessary items are regularly checked in the workplace.</p>
3. Set all items in order.	<p>3.1. Plan is prepared to implement set in order activities.</p> <p>3.2. General cleaning activities are performed.</p> <p>3.3. Location/Layout, storage and indication methods for items are decided.</p> <p>3.4. Necessary tools and equipment are prepared and used for setting in order activities.</p> <p>3.5. Items are placed in their assigned locations.</p> <p>3.6. After use, the items are immediately returned to their assigned locations.</p> <p>3.7. Performance results are reported using appropriate formats.</p> <p>3.8. Each item is regularly checked in its assigned location and order.</p>
4. Perform shine activities.	<p>4.1. Plan is prepared to implement shine activities.</p> <p>4.2. Necessary tools and equipment are prepared and used for shinning activities.</p> <p>4.3. <b>Shine activity</b> is implemented using appropriate procedures.</p> <p>4.4. Performance results are reported using appropriate formats.</p> <p>4.5. Regular shining activities are conducted.</p>
5. Standardize 5S.	<p>5.1. Plan is prepared and used to standardize 5S activities.</p>

	<p>5.2. <b>Tools and techniques to standardize 5S</b> are prepared and implemented based on <b>relevant procedures</b>.</p> <p>5.3. Checklists are followed for standardize activities and <b>reported to relevant personnel</b>.</p> <p>5.4. The workplace is kept to the specified standard.</p> <p>5.5. Problems are avoided by standardizing activities.</p>
6. Sustain 5S.	<p>6.1. Plan is prepared and followed to sustain 5S activities.</p> <p>6.2. Tools and techniques to sustain 5S are discussed, prepared and implemented based on relevant procedures.</p> <p>6.3. Workplace is inspected regularly for compliance to specified standard and sustainability of 5S techniques.</p> <p>6.4. Workplace is cleaned up after completion of job and before commencing next job or end of shift.</p> <p>6.5. Situations are identified where compliance to standards is unlikely and actions specified in procedures are taken.</p> <p>6.6. Improvements are recommended to lift the level of compliance in the workplace.</p> <p>6.7. Checklists are followed to sustain activities and report to relevant personnel.</p> <p>6.8. Problems are avoided by sustaining activities.</p>

Variable	Range
OHS requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Legislation/Regulations/Codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances.</li> <li>• Personal protective equipment is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices.</li> <li>• Safe operating procedures are to include, but are not limited to the conduct of operational risk assessment and treatments associated with workplace organization.</li> <li>• Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements and site evacuation.</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Paint</li> <li>• Hook</li> <li>• Sticker</li> </ul>

	<ul style="list-style-type: none"> <li>• Signboard</li> <li>• Nails</li> <li>• Shelves</li> <li>• Chip wood</li> <li>• Sponge</li> <li>• Broom</li> <li>• Pencil</li> <li>• Shadow board/Tools board</li> </ul>
Safety equipment and tools	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Dust masks/goggles</li> <li>• Glove</li> <li>• Working cloth</li> <li>• First aid and safety shoes</li> </ul>
Items	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Tools</li> <li>• Jigs/Fixtures</li> <li>• Materials/components</li> <li>• Machine and equipment</li> <li>• Manuals</li> <li>• Documents</li> <li>• Personal items (e.g. Bags, lunch boxes and posters)</li> <li>• Safety equipment and personal protective equipment</li> <li>• Other items which happen to be in the work area</li> </ul>
The appropriate procedures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Steps for implementing 5S (sort, set in order and shine) activities.</li> <li>• Written, verbal and computer based or in some other format.</li> </ul>
Unnecessary items	<p>Are not needed for current production or administrative operation and include but not limited to:</p> <ul style="list-style-type: none"> <li>• Defective or excess quantities of small parts and inventory</li> <li>• Outdated or broken jigs and dies</li> <li>• Worn-out bits</li> <li>• Outdated or broken tools and inspection gear</li> <li>• Old rags and other cleaning supplies</li> <li>• Electrical equipment with broken cords</li> <li>• Outdated posters, signs, notices and memos</li> <li>• Some locations where unneeded items tend to accumulate</li> <li>• In rooms or areas not designated for any particular purpose</li> <li>• In corners next to entrances or exists</li> <li>• Along interior and exterior walls</li> <li>• Next to partitions and behind pillars</li> <li>• Under the eaves of warehouses</li> <li>• Under desks and shelves and in desk and cabinet drawers</li> <li>• Near the bottom of tall stacks of items</li> <li>• On unused management and production schedule boards</li> <li>• In tools boxes that are not clearly sorted</li> </ul>
Appropriate format	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• All items, necessary and unnecessary items.</li> </ul>



Red tag	<p>A format prepared with a red color paper or card which is filled and attached temporarily on the unnecessary items until decision is made. The red tag catch people’s attention because red is a color that stands out. So to fill and attach red tag on items, asks the following three questions:</p> <ul style="list-style-type: none"> <li>• Is this item needed?</li> <li>• If it is needed, is it needed in this quantity?</li> <li>• If it is needed, does it need to be located here?</li> </ul>
Necessary items	Are required in the workplace for current production or administrative operation in the amount needed.
Shine activity	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Inspection</li> <li>• Cleaning</li> <li>• Minor maintenance May include, but not limited to: <ul style="list-style-type: none"> <li>➢ Tightening bolts</li> <li>➢ Lubrication and Replacing missing parts</li> </ul> </li> </ul>
Tools and techniques to standardize 5S	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• 5S Job Cycle Charts</li> <li>• Visual 5S</li> <li>• The Five Minute 5S</li> <li>• Standardization level checklist</li> <li>• 5S checklist</li> <li>• The five Whys and one How approach(5W1H)</li> <li>• Suspension</li> <li>• Incorporation and Use Elimination</li> <li>• 5S slogans</li> <li>• 5S posters</li> <li>• 5S photo exhibits and storyboards</li> <li>• 5S newsletter</li> <li>• 5S maps</li> <li>• 5S pocket manuals</li> <li>• 5S department/benchmarking tours</li> <li>• 5S months</li> <li>• 5S audit</li> <li>• Awarding system</li> <li>• Big cleaning day</li> <li>• Patrolling system May include, but not limited to: <ul style="list-style-type: none"> <li>➢ Top management Patrol</li> <li>➢ 5S Committee members and Promotion office Patrol</li> <li>➢ Mutual patrol</li> <li>➢ Self-patrol</li> </ul> </li> <li>• Checklist and Camera patrols</li> </ul>
Relevant procedures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Assign 5S responsibilities</li> <li>• Integrate 5S duties into regular work duties</li> <li>• Check on 5S maintenance level</li> <li>• OHS measures such as signage, symbols / coding and labelling of</li> </ul>

	workplace and equipment <ul style="list-style-type: none"> <li>• Creating conditions to sustain your plans</li> <li>• Roles in implementation</li> </ul>
Reporting	May include, but not limited to: <ul style="list-style-type: none"> <li>• Verbal responses</li> <li>• Data entry into enterprise database</li> <li>• Brief written reports using enterprise report formats</li> </ul>
Relevant personnel	May include, but not limited to: <ul style="list-style-type: none"> <li>• Supervisors, managers and quality managers</li> <li>• Administrative, laboratory and production personnel</li> <li>• Internal/external contractors, customers and suppliers</li> </ul>

### Evidence Guide

Critical Aspects of Competence	Demonstrates skills and knowledge to: <ul style="list-style-type: none"> <li>• Discuss how to organize KPT.</li> <li>• Describe the pillars of 5S.</li> <li>• Discuss the relationship between Kaizen elements.</li> <li>• Implement 5S in own workplace by following appropriate procedures and techniques.</li> </ul>
Required Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> <li>• Kaizen principle, pillars and concept</li> <li>• Key characteristic of Kaizen</li> <li>• Elements of Kaizen</li> <li>• Wastes/MUDA</li> <li>• Basics of KPT</li> <li>• Aims, benefits and principles of KPT</li> <li>• Stages of KPT</li> <li>• Structure and role of the components of Junior KPT</li> <li>• Concept and parts of Kaizen board</li> <li>• Concept and benefits of 5S</li> <li>• The pillars of 5S</li> <li>• Three stages of 5S application</li> <li>• Benefits and procedure of sorting activities</li> <li>• The concept and application of Red Tag strategy</li> <li>• Relevant Occupational Health and Safety (OHS) and environment requirements</li> <li>• Benefits and procedure of set in order activities</li> <li>• Set in order methods/techniques</li> <li>• Benefits and procedure of shine activities</li> <li>• Inspection methods</li> <li>• Planning and reporting methods</li> <li>• Method of Communication</li> <li>• Benefits of standardizing and sustaining 5S</li> <li>• Tools and techniques to sustain 5S</li> <li>• Ways to improve Kaizen elements</li> <li>• Benefits of improving kaizen elements</li> <li>• Relationship between Kaizen elements</li> </ul>

Required Skills	<p>Demonstrates skills of:</p> <ul style="list-style-type: none"> <li>• Technical drawing</li> <li>• Communication skills</li> <li>• Planning and reporting own tasks in implementation of 5S</li> <li>• Following procedures to implement 5S in own workplace</li> <li>• Using sorting formats to identify necessary and unnecessary items</li> <li>• Improving workplace layout following work procedures</li> <li>• Preparing labels, slogans, etc.</li> <li>• Reading and interpreting documents</li> <li>• Observing situations</li> <li>• Gathering evidence by using different means</li> <li>• Recording activities and results using prescribed formats</li> <li>• Working with others</li> <li>• Solving problems by applying 5S</li> <li>• Preparing and using kaizen board</li> <li>• Preparing and using tools and equipment to implement and sustain 5S</li> <li>• Improving Kaizen elements by applying 5S</li> <li>• Standardizing and sustaining procedures and techniques to avoid problems</li> <li>• Analyzing and preparing shop layout of the workplace</li> <li>• Standardizing and sustaining checklists</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

# LEVEL II

<b>Occupational Standard: Natural Resources Conservation and Development Level II</b>	
<b>Unit Title</b>	<b>Rehabilitate and Restore Degraded Areas</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC2 01 0322</u></a>
<b>Unit Descriptor</b>	This unit covers knowledge, skills and attitude required to demarcate and Implement of rehabilitation and restoration of degraded areas.

<b>Element</b>	<b>Performance Criteria</b>
1. Prepare for rehabilitation of degraded area	<p>1.1. <b>Baseline information</b> is gathered using site rehabilitation and restoration plans and in consultation with the local community</p> <p>1.2. <b>OHS hazards</b> are identified, risks assessed and reported to appropriate personnel in standard format</p> <p>1.3. The environmental implications of rehabilitation and restoration works are identified and the likely outcomes assessed and reported according to organizational guideline</p> <p>1.4. Natural area restoration <b>tools, equipment</b> and machinery are selected and prepared for use according to procedures and plant species to be established</p> <p>1.5. Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures</p> <p>1.6. Suitable safety and <b>PPE (PPE)</b> are selected, used and maintained</p>
2. Demarcate area to be rehabilitated	<p>2.1. Organizational OHS procedures, practices, policies, and precautions are observed and followed</p> <p>2.2. Soil and existing vegetation are assessed according to sampling procedures</p> <p>2.3. Area demarcation activity is conducted and the site is closed based on the site demarcation procedure and a map is developed</p>
3. Implement rehabilitation and restoration activities	<p>3.1. Sample soil is analyzed for <b>seed bank</b> according to sample test procedures.</p> <p>3.2. Existing species are identified to restore the degraded area according to soil seed bank test result</p> <p>3.3. <b>Potential species</b> are selected to enrich the degraded area according to the existing indicator species.</p> <p>3.4. Best type and species of trees for afforestation purpose of degraded land are planned to improve water absorption and permeability characteristics of the soil.</p> <p>3.5. Community participation is enhanced to implement the <b>rehabilitation</b> activity on a sustainable basis according to the work plan.</p> <p>3.6. Rehabilitation activity progress is followed up and evaluated for any amendment according to the organizational procedures.</p>

4.Document and report information	<p>4.1. Problems or difficulties or hazards information in completing work to required standards or timelines are reported to appropriate personnel.</p> <p>4.2. All rehabilitation and restoration activities are recorded and documented on daily basis in standard organizational formats</p> <p>4.3. Work outcomes are documented and reported according to organizational guideline</p>
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Variable	Range
Baseline information	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Organizational rules, regulation and guidelines</li> <li>• Internet, related books and related materials</li> <li>• Technical manuals</li> <li>• Sharing best practice</li> <li>• Virtual library</li> <li>• Workplace guidelines</li> <li>• Recorded documents/logo/history</li> </ul>
OHS hazards	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Forest fire incidence, flooding, pest and disease incidences.</li> <li>• Control may include to precautions to prevent and control the incidences</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Site cultivation tools, and wheelbarrow.</li> </ul>
PPE	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Gloves, shoes, clothes and helmets.</li> </ul>
Seed bank	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Imply the seeds that exist in soil area</li> </ul>
Potential species	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Species that are used to rehabilitate a degraded area (acacia species)</li> </ul>
Rehabilitation	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Improvement of site condition</li> </ul>

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Gather baseline information</li> <li>• Analyze seed bank</li> <li>• Delineate degraded area demarcation activity</li> <li>• Describe rehabilitation and restoration of degraded area techniques</li> <li>• Describe potential species for specific degraded area</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Resource survey and inventory</li> <li>• Socio-economic and ecological principles</li> <li>• Species identification</li> </ul>
Required skills	<p>Demonstrate skills to:</p>

	<ul style="list-style-type: none"> <li>• Identify and organize tools, and equipment</li> <li>• Prepare for rehabilitation of degraded area</li> <li>• Demarcate area to be rehabilitated</li> <li>• Implement rehabilitation and restoration of degraded area</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Natural Resource Conservation and Development Level II	
Unit Title	Apply In-Situ Moisture Harvesting Technologies
Unit Code	<a href="#">AGR NRC2 02 0322</a>
Unit Descriptor	This unit covers the ability of designing, constructing and maintaining appropriate In-situ moisture harvesting technologies micro catchments, macro catchments and flood water harvesting structures.

Element	Performance Criteria
1. Prepare for work	1.1 Different <i>in-situ moisture harvesting technologies</i> are identified 1.2 Ecological and socio-economic factors required for in situ moisture harvesting technologies are assessed 1.3 <i>Tools and equipment</i> necessary for in-situ moisture harvesting technologies are identified and prepared
2. Plan design requirements	2.1 Cost elements and work norm are determined in accordance with the new watershed guideline 2.2 Technical design requirements are planned in accordance with the new watershed guideline specifications 2.3 Period of implementation across seasons are determined based on standard operating procedures
3. Identify benefits and limitations of in-situ moisture harvesting technologies	3.1 Benefits of in-situ moisture harvesting technologies are identified according to the guideline 3.2 Limitations of in-situ moisture harvesting technologies are identified according to the guideline
4. Design and implement in-situ moisture harvesting technologies	4.1 Appropriate in situ moisture harvesting technologies are selected in accordance with standard specification 4.2 In-situ moisture harvesting technologies are designed with relation to organizational guideline 4.3 The designed in situ moisture harvesting technologies are constructed
5. Manage and maintain in-situ moisture harvesting technologies	5.1 Implemented in-situ moisture harvesting technologies are managed in accordance with the organizational standard 5.2 Implemented in-situ moisture harvesting technologies are maintained in accordance with the organizational standard
6. Finalize work and report	6.1. Tools and equipment are cleaned, maintained and stored according to enterprise work procedures. 6.2. Layout and implementation faults are identified and reported to supervisor and/or corrective actions taken. 6.3. Problems or difficulties or hazards information in completing work to required standards or timelines are reported to appropriate personnel. 6.4. Work outcomes are documented and reported according to organizational guideline



Variable	Range
In-situ moisture harvesting technologies	May include but not limited to:- Ridges and tie ridging, micro trenches, deep trenches, micro basin, eyebrow basins (EBs) or Eyebrow terraces, Herring bones (HBs), Semi-circular bunds, Runoff-Run-on Area Bunds/ Barrier Lines, Runoff-Run-on Strips, Percolation Pits
Tools and equipment	May include but not limited to:- Water level, meter tape, sledge hammers, shovels, pick axes, rope, ranging pole, pegs...

Evidence Guide	
Critical Aspects of Competence	<p>A candidate must demonstrate ability to:</p> <ul style="list-style-type: none"> <li>• Prepare for in-situ moisture harvesting technologies according to community and agency guidelines and best practice procedures</li> <li>• Identify and describe tools and equipment used for in-situ moisture harvesting technologies.</li> <li>• Undertake activities in accordance with legislation/ community expectation and project specifications.</li> <li>• Communicate ideas and information</li> <li>• Collect, analyse and organize information</li> <li>• Plan and organize in-situ moisture harvesting technology activities on development sites</li> <li>• Layout and construct in-situ moisture harvesting technologies in accordance with the guideline</li> <li>• Work with others and in teams</li> <li>• Use mathematical ideas and techniques to measurement and timing</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> <li>• Identification of different in-situ moisture harvesting technologies.</li> <li>• Design requirements of in-situ moisture harvesting technologies</li> <li>• Plan preparation for in-situ moisture harvesting technologies.</li> <li>• Land laws/legislation</li> <li>• Moisture stress areas</li> <li>• Layout and construction procedures</li> <li>• Period of implementation across seasons</li> <li>• Maintenance/repair/monitoring</li> <li>• Basic catchments issues</li> <li>• Benefits and limitation of in-situ moisture harvesting technologies</li> <li>• Characteristics of soils with an emphasis on erodible soils</li> </ul>
Required Skills	<p>Skills include the ability to:</p> <ul style="list-style-type: none"> <li>• Identify in-situ moisture harvesting technologies.</li> </ul>

	<ul style="list-style-type: none"> <li>• Carryout routine work with in-situ moisture harvesting technologies.</li> <li>• Undertake activities in accordance with legislation/ community expectation and project specifications.</li> <li>• Communicate ideas and information</li> <li>• Collect, analyze and organize information</li> <li>• Plan and organize in-situ moisture harvesting technology activities</li> <li>• Conduct in-situ moisture harvesting technologies on development sites</li> <li>• Solve technical and organizational problems while conducting in-situ moisture harvesting technologies on development sites,</li> </ul>
Resources Implication	<p>The following resources must be provided.</p> <ul style="list-style-type: none"> <li>• Access is required to real or appropriately simulated situations, including work areas, materials and equipment,</li> <li>• Documentation and information on workplace practices and OHS practices.</li> <li>• Specifications and work instructions</li> <li>• Approved assessment tools</li> <li>• Certified assessor /Assessor’s panel</li> </ul>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Practical assessment by direct observation of tasks through simulation/Role-plays</li> <li>• Written exam/test on Required knowledge</li> <li>• Questioning or interview on Required knowledge</li> <li>• Project-related conditions (real or simulated) and require evidence of process</li> <li>• Case studies</li> <li>• Portfolio Assessment (e.g. Certificate from training providers or employers)</li> </ul> <p>Assessment methods must confirm the ability to access and correctly interpret and apply the essential Required knowledge</p>
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting. This Competence standard could be assessed on its own or in combination with other Competences relevant to the job function.</p>

<b>Occupational Standard: Natural Resources Conservation and Development Level II</b>	
<b>Unit of competence</b>	<b>Conduct Erosion and Sediment Control Activities</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC2 03 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the process of carrying out erosion and sediment control activities in both urban and rural environments. It requires the ability to identify erosion and sediment control structures, carry out routine work in compliance with control measures. Undertake work following legislation and community expectation and project specifications.

<b>Element</b>	<b>Performance Criteria</b>
1. Align worksite practices with erosion and sediment control principles	<p>1.1 <i>Erosion types</i> and <i>causes of erosion</i> are identified according to guideline</p> <p>1.2 Erosion and sedimentation legislation have adhered to the worksite as a part of contract works.</p> <p>1.3 Procedures relating to erosion and sediment control are applied on the worksite to align with industry standards.</p>
2. Implement erosion and sediment control measures	<p>2.1 <i>Erosion and sediment control measures</i> are implemented.</p> <p>2.2 Industry practices for erosion and sediment control are applied in the workplace.</p>
3. Finalize erosion and sediment control work	<p>3.1 All equipment and materials are checked, cleaned, and stored appropriately</p> <p>3.2 All assessments &amp; measurements are recorded, documented, and reported following industry requirement</p> <p>3.3 The use of resources is documented to industry requirements.</p>

<b>Variable</b>	<b>Range</b>
Erosion types	<p>May include but not limited to: -</p> <ul style="list-style-type: none"> <li>• Splash</li> <li>• Sheet</li> <li>• Rill</li> <li>• Gully</li> </ul>
Causes of erosion	<p>May include but not limited to: -</p> <ul style="list-style-type: none"> <li>• Natural (wind, water)</li> <li>• Artificial (deforestation, overgrazing)</li> </ul>
Erosion and sediment control measures	<p>May include but not limited: -</p> <p>Land shaping includes grade stabilizing structures, outlet protection structures, Sediment basin, filters, dust control measures, and rural roads and tracks. Also includes re-vegetation.</p>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>A candidate must demonstrate the ability to:</p> <ul style="list-style-type: none"> <li>• complete erosion and sediment control work properly according to community and agency guidelines and best practice procedures</li> <li>• Identify and describe erosion and sediment control structures/ measures/ practices.</li> <li>• Undertake activities following legislation/ community expectations and project specifications.</li> <li>• Communicate ideas and information</li> <li>• Collect, analyze and organize information</li> <li>• Plan and organize erosion and sediment control activities on development sites</li> <li>• Work with others and in teams</li> <li>• Conduct erosion and sediment control activities on development sites</li> <li>• Use mathematical ideas and techniques to measurement and timing</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> <li>• Relevant legislation.</li> <li>• Cost to the community of erosion and sedimentation.</li> <li>• Loss of habitat.</li> <li>• Water quality.</li> <li>• Loss of production/asset/amenity.</li> <li>• Re-occurring maintenance/repair/monitoring.</li> <li>• Agents/processes of erosion and sedimentation.</li> <li>• Basic catchments issues.</li> <li>• Role of vegetation.</li> <li>• Characteristics of soils with an emphasis on erodible soils.</li> </ul>
Required Skills	<p>skills include the ability to:</p> <ul style="list-style-type: none"> <li>• Identify erosion and sediment control structures/ measures/ practices.</li> <li>• Carryout routine work with control measures and structures.</li> <li>• Undertake activities in accordance with legislation/ community expectation and project specifications.</li> <li>• Communicate ideas and information</li> <li>• Collect, analyze and organize information</li> <li>• Plan and organize erosion and sediment control activities on development sites</li> <li>• Conduct erosion and sediment control activities on development sites</li> <li>• Apply mathematical ideas and techniques to measurement and timing</li> <li>• Solve technical and organizational problems while conducting</li> </ul>

	erosion and sediment control activities on development sites,
Resources Implication	<p>The following resources must be provided.</p> <ul style="list-style-type: none"> <li>• Access is required to real or appropriately simulated situations, including work areas, materials, and equipment,</li> <li>• Documentation and information on workplace practices and OHS practices.</li> <li>• specifications and work instructions</li> <li>• Approved assessment tools</li> <li>• Certified assessor /Assessor’s panel</li> </ul>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Practical assessment by direct observation of tasks through simulation/Role-plays</li> <li>• Written exam/test on Required knowledge</li> <li>• questioning or interview on Required knowledge</li> <li>• project-related conditions (real or simulated) and require evidence of process</li> <li>• case studies</li> <li>• Portfolio Assessment (e.g. Certificate from training providers or employers)</li> </ul> <p>Assessment methods must confirm the ability to access and correctly interpret and apply the essential Required knowledge</p>
Context of Assessment	<p>Competence may be assessed in the workplace or a simulated workplace setting. This Competence standard could be assessed on its own or in combination with other Competences relevant to the job function.</p>

<b>Occupational Standard: Natural Resources Conservation and Development Level II</b>	
<b>Unit Title</b>	<b>Conduct Agroforestry Practices</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC2 04 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills, and attitude required to apply Agroforestry techniques and practices to promote Agroforestry to the community.

<b>Element</b>	<b>Performance Criteria</b>
1. Classify the Agro forestry systems	1.1. Agroforestry systems are identified based on the presence of components 1.2. Agroforestry systems are identified depending on their benefits 1.3. Agroforestry systems are identified depending on the arrangements of components.
2. Identify Agroforestry species	2.1. Agro-forestry species are identified based on growth character and potential productivity 2.2. Identified species are matched with site based on species requirement and environmental condition
3. Characterize traditional agroforestry potentials	3.1. Agroforestry potentials are characterized based on edaphic and climatic factors 3.2. Agroforestry potentials are characterized based on farming practice
4. Apply Agro-Forestry technology for soil productivity and protection	4.1. Different Agroforestry practices are identified and promoted. 4.2. Agroforestry technologies are identified based on their ecological and socio-economic importance 4.3. Agroforestry technologies are practiced for soil productivity and protection.
5. Identify and manage component inter-action in agroforestry system	5.1. Agroforestry <i>components of positive and negative interactions</i> are identified 5.2. Component interactions are managed
6. Record and report information	6.1. All activities are assessed for any changes 6.2. Agroforestry component interaction management activities are documented and reported 6.3. Problems or difficulties or hazards <i>information</i> in completing work to required standards or timelines are reported to appropriate personnel. 6.4. Work outcomes are documented and reported according to organizational guideline

<b>Variable</b>	<b>Range</b>
Component of positive and negative interactions	May include, but not limited to: <ul style="list-style-type: none"> <li>• Competition for nutrient, light, water, and space</li> <li>• Allelopathy</li> <li>• Shading effect</li> <li>• Host for disease and pest</li> <li>• Nitrogen fixation</li> <li>• Nutrient uptake facilitation</li> <li>• Fungal association facilitation</li> </ul>
Types and Sources of Information	May include, but not limited to: <ul style="list-style-type: none"> <li>• Organizational rules, regulations and guidelines</li> <li>• Technical manuals</li> <li>• Sharing best practice</li> <li>• Workplace guidelines</li> <li>• Recorded documents/logo/history</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>• Classify agroforestry systems</li> <li>• Identify agroforestry species</li> <li>• Describe agroforestry technologies</li> <li>• Identify agroforestry component interactions</li> </ul>
Required Knowledge and Attitude	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• The role of agroforestry for soil productivity and conservation.</li> <li>• Component interaction.</li> <li>• Species identification.</li> </ul>
Required skills	Demonstrate skills to: <ul style="list-style-type: none"> <li>• Classify the agroforestry systems</li> <li>• Identify agroforestry species</li> <li>• Characterize traditional agroforestry potentials</li> <li>• Apply agro-forestry technology for soil productivity and protection</li> <li>• Identify component interaction in agroforestry system</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials, and equipment, and information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or in a simulated workplace setting.

Occupational Standard: Natural Resources Conservation and Development Level II	
Unit Title	Apply Forest Protection Strategies and Practices
Unit Code	<a href="#">AGR NRC2 05 0322</a>
Unit Descriptor	This unit covers the knowledge, skills, and attitude required to apply the preventive and controlling mechanism to detect, protect and control forest pests, diseases, invasive species, and forest fires.

Element	Performance Criteria
1. Apply disease and pest preventive and/or control mechanism	<p>1.1. <b>Disease and pest</b> surveillance is conducted according to disease and pest control work procedures and supervisor instruction.</p> <p>1.2. Assessment of disease and pest is conducted according to the assessment procedures</p> <p>1.3. Important diseases and pests are identified according to disease and pest control work procedures.</p> <p>1.4. <b>Preventive techniques</b> are identified to protect pest and disease occurrence in the forest according to forest pest and disease prevention guidelines</p> <p>1.5. Control mechanisms are applied to control pests and disease in the forest according to forest pest and disease control guidelines and as directed by the supervisor</p>
2. Implement prevention and controlling program of invasive species	<p>2.1. <b>Quarantine</b> procedures are designed to be followed during the introduction of new species</p> <p>2.2. Guidelines prepared by appropriate personnel are applied to conduct quarantine for specific species according to the quarantine procedures</p> <p>2.3. Community awareness creation is supported and conducted as directed by the supervisor</p> <p>2.4. <b>Necessary materials and facilities</b> are prepared to conduct the quarantine based on the requirements.</p> <p>2.5. Baseline information that helps in <b>invasive</b> prevention and control is gathered according to invasive control procedures</p> <p>2.6. Invasive species are identified following the international guidelines and as directed by the supervisor</p> <p>2.7. Controlling mechanisms are applied to prevent their further expansion according to working documents</p> <p>2.8. Assessment is conducted according to the prevention and monitoring principles as directed by the supervisor.</p>
3. Implement fire	3.1. Applicable <b>OHS, legislative and organizational requirements,</b>



prevention and controlling program	<p>certification, and environmental requirements relevant to <b><i>detecting fires</i></b> are identified and complied with</p> <p>3.2. <b><i>Smoke</i></b> and current position in the field are identified using landmarks and key geographical features</p> <p>3.3. The current position in the field is located on a map or plan following site procedures</p> <p>3.4. <b><i>Communication</i></b> with others is established and maintained following OHS requirements</p> <p>3.5. <b><i>Communication equipment</i></b> is used to relay information accurately and follow <b><i>safe working practices, training,</i></b> and site procedures</p> <p>3.6. Location of own position and sightings are accurately and relayed to fire command or control using conventional descriptions</p> <p>3.7. <b><i>Sighting details</i></b> are recorded following required formats, conventions, and site procedures</p> <p>3.8. Situations requiring <b><i>specialist advice</i></b> are identified and assistance sought as required following site procedures</p>
4. Record and report information	<p>4.1. Disease and pest assessment result is recorded, documented, and reported to appropriate personnel</p> <p>4.2. <b><i>Relevant information</i></b> and conditions are accurately recorded and relayed using required formats and conventions following instructions</p> <p>4.3. Fire detecting processes and outcomes are <b><i>recorded and reported</i></b> to the <b><i>appropriate personnel</i></b></p>

Variable	Range
Disease and pest	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Those organisms that affect the normal growths of the forest abnormalities are caused by biotic and abiotic factors.</li> </ul>
Preventive techniques	<p>May include, but not limited to:</p> <p>Physical mechanism (barriers, trap)</p> <p>Cultural practice (mulching, changing planting date, burning, flooding, Changing tree species)</p> <p>Chemical mechanism (pesticide, insecticide)</p> <p>Biological (use of natural enemies, use of predators, parasite)</p>
Quarantine	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Checking for healthiness before taking to other areas</li> </ul>
New materials and facilities	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Tools that are used during an activity</li> </ul>
Invasive	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>Species that invades an area</li> </ul>
OHS	<p>May include, but not limited to:</p>

	<ul style="list-style-type: none"> <li>• The use of PPE and clothing</li> <li>• Safety equipment</li> <li>• First aid equipment</li> <li>• Forest pest and disease-fighting equipment</li> <li>• Hazard and risk control</li> <li>• Elimination of hazardous materials and substances</li> <li>• Appropriate fitness for the task</li> </ul>
Legislative requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Award and enterprise agreements</li> <li>• Industrial relations</li> <li>• Ethiopian standards</li> <li>• Confidentiality and privacy</li> <li>• OHS regulation</li> <li>• The environment protection</li> <li>• Equal opportunity</li> <li>• Anti-discrimination</li> <li>• Relevant industry codes of practice</li> <li>• Duty of care</li> <li>• Heritage and traditional landowner issues</li> </ul>
Organizational requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Legal, organizational and site guidelines, policies and procedures relating to own role and responsibility,</li> <li>• Quality assurance, procedural manuals, quality, and continuous improvement processes and standards,</li> <li>• OHS, emergency, and evacuation,</li> <li>• Ethical standards, recording, and reporting,</li> <li>• Access and equity principles and practices,</li> <li>• Equipment use, maintenance, and storage,</li> <li>• Environmental management (waste disposal, recycling, and re-use guidelines)</li> </ul>
Detecting fires	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• From all types and locations commonly found in forested and grassland country, towers or aircraft</li> </ul>
Smoke	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Assessed for color, type, and meaning</li> </ul>
Communication	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Verbal and non-verbal language,</li> <li>• Relaying of information using prescribed formats and conventions, constructive feedback, active listening, questioning to clarify and confirm understanding,</li> <li>• Use of positive, confident, and cooperative language,</li> <li>• Use of language and concepts appropriate to individual social and cultural differences, control of the tone of voice and body language</li> </ul>
Communication equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Public radio and telephone networks or those used by the organization, local fire brigades, emergency management</li> </ul>

	organizations
Safe working practices	May include, but not limited to: <ul style="list-style-type: none"> <li>• Evacuation procedures when threatened by fire, wind, appropriate clothing, hydration, and nutrition requirements</li> </ul>
Training	May include, but not limited to: <ul style="list-style-type: none"> <li>• From fire command/control, supervisor or colleagues</li> </ul>
Sighting details	May include, but not limited to: <ul style="list-style-type: none"> <li>• Locations, bearings, and estimated distances</li> </ul>
Specialist advice	May include, but not limited to: <ul style="list-style-type: none"> <li>• Sought from a supervisor, fire command/control, colleagues, local fire brigade</li> </ul>
Relevant information	May include, but not limited to: <ul style="list-style-type: none"> <li>• Meteorological readings and satellite imagery</li> </ul>
Recording and reporting	May include, but not limited to: <ul style="list-style-type: none"> <li>• A chronological log of sightings and noteworthy events such as significant changes in smoke column color or size, locations and bearings of sightings, estimated distances to sightings, meteorological readings, and conditions</li> <li>• Manual, using a computer-based system or another appropriate organizational communication system</li> </ul>
Appropriate personnel	May include, but not limited to: <ul style="list-style-type: none"> <li>• Supervisors, fire control, colleagues, and managers</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>• Follow forest disease and pest prevention and control mechanisms following environmental legislation and workplace procedures</li> <li>• Identify, prevent and control mechanism of invasive species</li> <li>• Detect fires and accurately report and record details of sightings</li> </ul>
Required Knowledge	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• Disease and pest detection and identification</li> <li>• Relevant organizational rules, regulations, and guidelines.</li> <li>• Using guidelines to handle tools</li> <li>• Invasive species identification and control</li> <li>• Applicable legislation, regulations, standards, and codes of practice relevant to detecting fires</li> <li>• Site standards, requirements, policies, and procedures for detecting fires</li> <li>• Principles of cultural diversity and access and equity</li> <li>• Environmental protection requirements, including the safe disposal of waste material</li> <li>• Communication channels and protocols</li> <li>• Types of communication equipment and procedures for their use</li> <li>• Problem identification and resolution</li> <li>• Procedures for measuring and recording meteorological data</li> </ul>

	<ul style="list-style-type: none"> <li>• Precautions which must be taken in a range of extreme weather conditions</li> <li>• Smoke types, color, and meaning</li> <li>• Fire command or control conventions for recording and reporting fire sightings in an emergency</li> <li>• Common scales used on maps and plans and procedures for their use and manipulation map types and features</li> <li>• Appropriate mathematical procedures for estimating and measuring,</li> <li>• Procedures for recording and reporting workplace information</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Plan and organize activities for fire detecting in the correct sequence for the process to be completed within the designated time frames</li> <li>• Apply preventive and /or control mechanism</li> <li>• Use guidelines to handle tools</li> <li>• Identify invasive species and control mechanisms</li> <li>• Identify pest and disease and control mechanisms</li> <li>• Comply with legislation, regulations, standards, codes of practice and established safe practices and procedures for detecting fires</li> <li>• Demonstrate appropriate response procedures</li> <li>• Use effective communication systems, equipment and interpersonal techniques with colleagues and others to maximize safety, confidence, satisfaction and emergency response during the fire detecting process</li> <li>• Effectively use landmarks and geographical features to locate position</li> <li>• Effectively and safely climb fire towers</li> <li>• Accurately interpret map details and features</li> <li>• Use mathematical ideas and techniques time to complete tasks and measuring meteorological data and estimate distances</li> <li>• Accurately locate, record and report information</li> <li>• Accurately read a compass and estimate distances</li> <li>• Collect, analyze and organize information including interpretation of maps, plans, landmarks, geographical features and meteorological data</li> <li>• Solve problems by establishing safe and effective fire detecting processes which anticipate and identify likely problems, hazards and emergencies</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.

Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated

	work place setting.
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<b>Occupational Standard: Natural Resources Conservation and Development Level II</b>	
<b>Unit Title</b>	<b>Apply Sustainable Wildlife Conservation and Development</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC2 06 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to recognize protected areas and non protected wildlife management activities, maintain wildlife habitats to conserve endangered, threatened, and endemic species.

<b>Element</b>	<b>Performance Criteria</b>
1. Identify and recognize wild species	<p>1.1. <b>Resources and equipment</b> for use in recognition activity are located and identified.</p> <p>1.2. Available <b>processes</b> for wild animals' recognition are identified, selected, and prepared for use.</p> <p>1.3. Wild animals are identified according to their behavior and home range</p> <p>1.4. Specified animals are recognized and named according to their <b>identifiable characteristics</b>.</p> <p>1.5. Brief descriptions of wild animal habits, characteristics, and significant features are recorded and <b>documented</b>.</p> <p>1.6. Handling, transporting, and housing wild animals are conducted in compliance with animal ethics guidelines, wild animal welfare regulations, and statutory requirements.</p>
2. Establish and manage wildlife conservation areas	<p>2.1. Protected areas designated for wildlife conservation are identified according to their potential resources and aims.</p> <p>2.2. Characteristics of wildlife habitat refugees are identified.</p> <p>2.3. Location and boundaries for the wildlife habitat refuge maintenance job are determined following the vertebrate pest management strategy and monitoring program.</p> <p>2.4. The time and resources need to complete the <b>wildlife habitat maintenance</b> job are identified.</p> <p>2.5. Environmental risks and hazards associated with the wildlife habitat refuge maintenance job are identified following OHS standards, statutory and local authority requirements.</p> <p>2.6. <b>Desirable animal species</b> are protected and habitat refuges that protect desirable animal species are maintained following industry practice and environmental statutory requirements.</p>
3. Carry out conservation of endangered and endemic species	<p>3.1. <b>Materials or tools</b> and suitable <b>PPE</b> are selected, used, and maintained where required.</p> <p>3.2. Conservation systems for endangered and endemic species are</p>

	<p>identified and applied as directed</p> <p>3.3. <b>Data</b> is recorded to conservation plan and database requirements.</p> <p>3.4. Location and times of observations are recorded to organization requirements.</p> <p>3.5. OHS requirements are followed by legislative requirements and organizational policies and procedures.</p>
4. Collect and record wildlife resource data	<p>4.1. Specific requirements of the data to be collected are determined by discussion with the supervisor or by reading work instructions.</p> <p>4.2. <b>Wildlife resource data</b> collection methods are selected and record the data in the correct format to meet specific requirements.</p> <p>4.3. <b>Advice</b> about proposed data collection is communicated to others as required</p> <p>4.4. Difficulties that may be encountered in collecting data are identified and advice is sought from the supervisor if needed.</p> <p>4.5. Legible and accurate records are completed in the standard format.</p>
5. Utilize Consumptive and Non-Consumptive Wildlife	<p>5.1. Ways of consumptive wildlife utilization will be identified.</p> <p>5.2. Relevant <b>sources of information</b> are identified and used for the purpose</p> <p>5.3. Appropriate <b>OHS requirements</b> are identified and followed throughout work processes</p> <p>5.4. Rules and regulations for wildlife resource utilization are identified and applied.</p> <p>5.5. Needs of customers' wildlife hunting are implemented sustainably according to established regulation</p> <p>5.6. <b>Ways of non-consumptive wildlife utilization</b> are identified and applied considering cultural diversity</p> <p>5.7. Civet musk collection, tourism, and photography are conducted according to work ethics and established regulations.</p>

6. Establish and manage wild animal farming	<p>6.1. Sites for wildlife farming are identified and proposed based on climatic conditions and animal requirement</p> <p>6.2. Materials, <b>tools, and equipment</b> relevant to work activities are identified and prepared according to organizational guideline</p> <p>6.3. Rearing habitats are constructed based on the objective of the organization and wildlife protection rules</p> <p>6.4. Feed, water, and shelter are provided to wild animals considering animal population and distance to be traveled</p> <p>6.5. <b>Wild animals trophies</b> are harvested, processed, and marketed according to organizational policy and established regulation</p>
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<b>Variable</b>	<b>Range</b>
Resources	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Human, financial, physical (traps, firearms, ammunition, poisons, fencing materials, veterinary products),</li> <li>• Land, air, and water transport facilities and</li> <li>• Plant (excavators, front-end loaders), and plant materials.</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Computer, software</li> <li>• Stationary, brochures, booklets and pamphlets, field books</li> <li>• Cable and its accessories for internet networking</li> <li>• TV, radio, internet</li> <li>• Binoculars, GPS, maps</li> <li>• Mountain bicycle</li> <li>• Field bags and tents, sleeping bag, sponge mattress</li> <li>• Digital camera</li> <li>• Abattoirs</li> <li>• Knife, scissors</li> <li>• Dart gun</li> <li>• Musk collection dish</li> <li>• Mesh wire, nails, barbed wire</li> <li>• Hammer</li> </ul>
Wild animals	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Crocodiles</li> <li>• Ostrich</li> <li>• Civet cat</li> </ul>
Wild animals trophies	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Civet musk</li> <li>• Ivory</li> <li>• Crocodile skin</li> <li>• Ostrich meat and egg</li> </ul>
Equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Cameras, video recorders, binoculars, GPS, field guides,</li> <li>• Protective gloves and clothing, boats, wetsuits, and skin-diving</li> </ul>

	gear, and <ul style="list-style-type: none"> <li>• Animal trapping and catching kit.</li> </ul>
Processes available for aid in the recognition of wild animals	May include, but not limited to: <ul style="list-style-type: none"> <li>• Literature searches, internet browsing, personal consultation with experts, specimen collections, field guides, workplace notes, and the use of simple keys.</li> </ul>
Identifiable characteristics	May include the shape, size, color, texture, hair, movement, habitat, and behavior.
Documentation	May include, but not limited to: <ul style="list-style-type: none"> <li>• A written description of the animal species including common and scientific names,</li> <li>• Visible characteristics, and details of the occurrence,</li> <li>• Photographs and reports according to the requirements of the organization sector.</li> </ul>
Wildlife habitat maintenance	May include, but not limited to: <ul style="list-style-type: none"> <li>• Monitoring of vertebrate pest occurrence,</li> <li>• Trapping of pest animals,</li> <li>• Removal of pest habitats,</li> <li>• Planting of vegetation including re-vegetation of open areas,</li> <li>• Installation of structures including exclusion fencing.</li> </ul>
Desirable animal Species	May include, but not limited to: <ul style="list-style-type: none"> <li>• Native animals that are not targeted as vertebrate pests.</li> </ul>
Materials and tools	May include, but not limited to: <ul style="list-style-type: none"> <li>• GPS, darting gun, anesthesia, tranquilizer, paper, pens, drugs</li> </ul>
PPE	May include, but not limited to: <ul style="list-style-type: none"> <li>• Hat, boots, overalls, gloves, apron, waterproof clothing, spray clothing, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion, hard hat, etc...</li> </ul>
Data	May be: <ul style="list-style-type: none"> <li>• Recorded, compiled, and presented in specified written or</li> <li>• Electronic/computerized formats. Results may be presented orally and/or in written paper to supervisors and/or workgroups.</li> </ul>
Sources of wildlife resource data	Data may be obtained from a variety of sources, such as; <ul style="list-style-type: none"> <li>• Counting wild animals at particular stages of growth, those with particular characteristics or at specified locations, feeding rates, and mixes,</li> <li>• Wildlife marking systems, reproductive data (mating, birthing, defects, individual traits, and sport hunting),</li> <li>• Disease prevention and control mechanisms,</li> <li>• Medications administered by veterinary units, with the necessary equipment.</li> </ul>
Ways of consumptive wildlife utilization	May include, but not limited to: <ul style="list-style-type: none"> <li>• Direct hunting</li> <li>• Ranching</li> <li>• Trapping</li> </ul>
Ways of non-consumptive	May include, but not limited to:



wildlife utilization	<ul style="list-style-type: none"> <li>• Civet musk</li> <li>• Wild fruit collection</li> <li>• Bird watching</li> </ul>
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<b>Evidence Guide</b>	
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Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Describe wild animal behavior, habitats, tracks, and traces.</li> <li>• Describe techniques for observing, collecting/catching, and reporting wild animals</li> <li>• Use and maintain tools and equipment.</li> <li>• Describe basic contents of international conventions, treaties, and agreements</li> <li>• Identify conservation systems for endangered and endemic flora and fauna</li> </ul>
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Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Describe wild animal features and main occurrence</li> <li>• Wild animal identification techniques and nomenclature.</li> <li>• Wild animal behavior, habitats, tracks, and traces.</li> <li>• Techniques for observing, collecting/catching, and reporting wild animals</li> <li>• Common law principles relating to a property, stock, duty of care, and due diligence.</li> <li>• Risks to land users' posed by vertebrate pests include exotic diseases and zoonosis.</li> <li>• Vertebrate pest life cycles and behaviors’.</li> <li>• Harbors are used by vertebrate pests.</li> <li>• Wildlife habitats used by desirable animal species</li> <li>• Wildlife habitat modification techniques</li> <li>• Consumptive and non-consumptive wildlife utilization</li> <li>• Wildlife farming</li> <li>• Ecosystems: <ul style="list-style-type: none"> <li>➤ Plant and animal classification.</li> <li>➤ international conventions, treaties, and agreements</li> <li>➤ conservation systems for endangered and endemic flora and fauna</li> <li>➤ Accepted scientific processes.</li> <li>➤ Parks/reserves, conservation, environmental protection, and heritage and tenure systems.</li> <li>➤ threats to places of natural significance from both natural and from human activities,</li> <li>➤ Recorded data might be used software programs used for recording or storing data.</li> <li>➤ Compiling and presenting data in the required format.</li> <li>➤ Working with others to minimize disruption to routine wildlife activities and the data collection.</li> <li>➤ Count individual items/animals and groups of items according to requirements.</li> </ul> </li> </ul>
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	<ul style="list-style-type: none"> <li>➤ Rearranging data collection activities to fit in with other planned or unplanned wildlife resource activities.</li> <li>➤ Using data loggers and personal computers to record and store data.</li> </ul>
Required Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> <li>• Use simple keys.</li> <li>• Maintain wildlife habitat refuges for the protection of desirable animal species from predators.</li> <li>• Develop conservation techniques.</li> <li>• Prepare equipment and resources.</li> <li>• Conserve unique biodiversity.</li> <li>• Summarize data. Count moving animals in herds, groups pride,</li> <li>• Operate data loggers</li> <li>• Enter data accurately into specified written or electronic/computerized formats</li> <li>• Calibrate tools and equipment.</li> <li>• Undertake consumptive and non-consumptive wildlife utilization</li> <li>• Establish wildlife farming</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials, and equipment, and information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or a simulated workplace setting.

Occupational Standard: Natural Resources Conservation and Development Level II	
Unit Title	Operate and Maintain irrigation and Drainage Systems
Unit Code	<a href="#">AGR NRC2 07 0322</a>
Unit Descriptor	This unit covers the knowledge, skills, and attitude required to operate and maintain micro-irrigation and drainage systems. It requires the ability to organize equipment for installation work, set out and prepare site, and communicate with work team members.

Element	Performance Criteria
1. Prepare tools and materials for installation work	<p>1.1. Materials, <i>tools, equipment, and machinery</i> are identified and selected according to irrigation design requirements and the supervisor's instructions.</p> <p>1.2. The site for installation of the <i>micro-irrigation system</i> is identified according to the site and irrigation system plans and <i>enterprise work procedures</i>.</p> <p>1.3. Power requirement for suction and delivery head is adjusted using the standard technique as directed by the supervisor.</p> <p>1.4. The irrigation system after pumping is carried out based on local topographic conditions as directed by the supervisor.</p> <p>1.5. Parts and <i>equipment</i> delivered to the site are checked according to system drawings and specifications.</p> <p>1.6. <i>The water supply</i> is checked to ensure that it is compatible with system specifications.</p>
2. Set out and prepare the site	<p>2.1. Pre-operational and safety checks are carried out on tools, equipment, and machinery according to the manufacturer's specifications and enterprise work procedures.</p> <p>2.2. Measurement and marking out of irrigation lines are undertaken as directed by the supervisor.</p> <p>2.3. Equipment operation and work practices are confirmed to enterprise and legislative OHS requirements.</p>
3. Install irrigation components	<p>3.1. Work is undertaken according to plan and supervisor's instructions</p> <p>3.2. Components are assembled and connected according to plan, joints are completed and tested as directed by the supervisor.</p> <p>3.3. A <i>clean and safe work area</i> is maintained while installation work is carried out.</p> <p>3.4. The site is restored and <i>waste material</i> is removed from the site and disposed of in an environmentally aware and safe manner according to enterprise work procedures.</p>
4. Maintain drainage systems	<p>4.1 Tools and equipment used to maintain drainage system is prepared</p>

	<p>4.2 Drainage systems are checked to ensure there are no <i>defects</i> according to organizational standards</p> <p>4.3. Drainage systems are maintained according to inspected defects</p> <p>4.4. Work outcomes are documented and reported according to organizational guideline</p>
5. Lower and position pipes & clean up	<p>5.1. Bedding materials are laid and consolidated to specified depths and grades.</p> <p>5.2. Pipes are installed/ lowered into position with appropriate mechanical equipment according to specifications.</p> <p>5.3. Pipe joints and fittings are installed to the job specification.</p> <p>5.4. Pipes are backfilled to specifications and cover the left level with the surrounding ground.</p> <p>5.5. The site is cleared and excess soil, debris, and unwanted materials removed following organizational procedures and environmental requirements.</p>
6. Finalize work and report	<p>6.5. Tools, equipment, and machinery are cleaned, maintained, and stored according to enterprise work procedures.</p> <p>6.6. Operating faults are identified and reported to the supervisor and/or corrective actions taken.</p> <p>6.7. Problems or difficulties or hazards information in completing work to required standards or timelines are reported to appropriate personnel.</p> <p>6.8. Work outcomes are documented and reported according to organizational guideline</p>

Variable	Range
Tools, equipment, and machinery	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Surveying and leveling equipment such as - automatic level, laser level, dumpy level, staff, boning rods, pegs, notebook, pencil, and calculator;</li> <li>• Hand tools such as rakes, shovels, spades, rollers, wheelbarrows, hoses, and hose fittings;</li> <li>• Machinery such as ditch witches, backhoes, front-end loaders, graders, mechanical rollers, trucks, hydraulic trailers, and tractors and 3-point linkage equipment;</li> <li>• Pumps and pump fittings; and</li> <li>• Fitting and welding tools appropriate to the irrigation system.</li> </ul>
Micro-irrigation system	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Low-pressure micro-sprays and drippers.</li> </ul>
Enterprise work procedures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Supervisors oral or written instructions,</li> <li>• Installation program,</li> <li>• Enterprise Standard Operating Procedures (SOP), specifications,</li> </ul>

	<ul style="list-style-type: none"> <li>• Routine maintenance schedules,</li> <li>• Work notes, product labels, and Material Safety Data Sheets (MSDS),</li> <li>• Manufacturers service specifications and operator’s manuals,</li> <li>• Waste disposal, recycling, and re-use guidelines, and</li> <li>• OHS procedures.</li> </ul>
Equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Pumps, delivery equipment, and system controllers.</li> </ul>
Water supply	<p>May be underground, mains, or surface storage including fixtures such as dams, bores, windmills, tanks, and channels.</p>
Tasks for maintaining a clean and safe work area	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Disabling unused tools, equipment, and machinery and storing neatly out of the way of installation activities;</li> <li>• Safely storing materials on site;</li> <li>• Using signage and safety barriers during and removing after construction activities are completed; and</li> <li>• Swiftly and efficiently removing and processing debris and waste from the work area.</li> </ul>
Waste material	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Unused construction and excavated materials,</li> <li>• Plant debris,</li> <li>• Litter and broken components.</li> <li>• Waste may be removed to designated areas for recycling, reuse, and return to the manufacturer or disposal.</li> <li>• Plant-based material may be mulched or composted,</li> <li>• Plastic, metal, paper-based materials may be recycled, reused, returned to the manufacturer, or disposed of according to enterprise work procedures.</li> </ul>
Defects	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Blockage</li> <li>• Leaks</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Describe, operate and maintain methods, components, and techniques of micro-irrigation</li> <li>• Describe installation and maintenance procedures and processes of micro-irrigation</li> <li>• Operate pumps and adjust water flow rates</li> <li>• Communicate with work team members, supervisors</li> <li>• Clean up the site, tools, and equipment to workplace standards</li> <li>• Keep records and report in the standard format</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Methods and techniques of micro-irrigation</li> </ul>

	<ul style="list-style-type: none"> <li>• Components of a micro-irrigation system</li> <li>• Characteristics and operation of joints, valves, and sprinkler components</li> <li>• Operation of pumps and water flow rates</li> <li>• The behavior of water on varying terrain and soil types</li> <li>• Soil water retention testing techniques</li> <li>• Enterprise OHS procedures</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Apply enterprise OHS procedures</li> <li>• Operate and maintain micro-irrigation</li> <li>• Install and undertake maintenance of components of micro-irrigation as directed</li> <li>• Operate pumps and adjust water flow rates</li> <li>• Communicate with work team members, supervisors</li> <li>• Clean up the site, tools, and equipment to workplace standards</li> <li>• Keep records and report in the standard format</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials, and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or a simulated workplace setting.

<b>Occupational Standard : Natural Resource Conservation and Development level II</b>	
<b>Unit Title</b>	<b>Apply Agricultural Extension service for Rural development</b>
<b>Unit Code</b>	<b><a href="#">AGR NRC2 08 0322</a></b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitudes required to promote the use of digital technology agricultural extension, understand adult learning, integrated gender agricultural extension and recognize indigenous knowledge.

<b>Element</b>	<b>Performance Criteria</b>
1. Promote the use of digital technology in Agricultural Extension	<p>1.1 The <i>use of Digital technology in Agricultural extension</i> is introduced to familiarize its importance</p> <p>1.2 <i>Skills in using digital technology</i> is built to strengthen agricultural extension services</p> <p>1.3 The <i>role of digital technologies in agricultural extension</i> services is understood to enhance agricultural development.</p>
2. Understand Adult Learning	<p>2.1 The <i>concept of adult learning</i> is understood to bring behavioural changes</p> <p>2.2 <i>Principles of Adult learning</i> is determined for the implementation</p>

	<p>of extension services</p> <p>2.3 The <b>importance of Adult learning</b> in Agricultural Extension is understood to enhance agricultural extension services</p> <p>2.4 <b>Adult learning methods</b> are understood to enhance the knowledge and skills of extension beneficiaries</p> <p>2.5 <b>The role of adult learning</b> is understood to allow farmers develop knowledge and skills</p>
3. Integrate Gender in Agricultural Extension	<p>3.1 The <b>concept of gender</b> is understood to provide inclusive agricultural extension services</p> <p>3.2 Gender awareness and sensitization is created to increase the contribution of gender in agricultural development</p> <p>3.3 The <b>role of gender in agriculture</b> is determined to enhance agricultural development.</p> <p>3.4 <b>Gender mainstreaming</b> is implemented for effective outcome of extension services</p>
4. Recognize Indigenous Knowledge	<p>4.1. The <b>concept of indigenous knowledge</b> is understood to strengthen the service of agricultural extension</p> <p>4.2. <b>Characters of indigenous knowledge</b> are understood to promote local experience</p> <p>4.3. <b>Exchange of indigenous knowledge</b> is promoted to enhance community development</p> <p>4.4. The <b>importance of indigenous knowledge</b> is understood to facilitate its contribution to the development processes.</p> <p>4.5. The <b>controversial issues of the debate on indigenous knowledge</b> are further studied to propose the urgent need, to document, learn, preserve, and exchange indigenous knowledge</p>

Variable	Range
Use of Digital technology in Agricultural extension	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Define Digital Technology</li> <li>• Evolution and progress of digital technologies</li> <li>• Digital technology for Agricultural Extension</li> <li>• Tools for digital technology</li> <li>• Utilization of digital technologies</li> </ul>
Skills in using digital technology	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Demonstrate digital technologies</li> <li>• Practice digital technologies</li> <li>• Apply digital technologies</li> <li>• Maintain and manage digital technologies</li> </ul>

Role of digital technologies in agricultural extension	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Provide diverse knowledge to beneficiaries</li> <li>• Supply Efficient information products</li> <li>• Provide technology-related advice</li> <li>• provide location-specific market information</li> <li>• enhance technology adoption in agriculture</li> </ul>
Concept of adult learning	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Adult learning theories</li> <li>• Characteristics</li> <li>• Adult learning approaches</li> <li>• Purpose of Adult learn</li> <li>• Adult learning practices</li> </ul>
Principles of Adult learning	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Self-directed</li> <li>• Experiential</li> <li>• Problem-centered</li> <li>• Motivated to learn</li> <li>• Learner oriented</li> <li>• Practice Oriented</li> <li>• looks for help and mentorship</li> <li>• Open for modern ways of learning</li> <li>• Choose how to learn</li> </ul>
Importance of Adult learning	<p>May include but not limited to;</p> <ul style="list-style-type: none"> <li>• Increase effective participation in decision making</li> <li>• Improves individuals' technology utilization</li> <li>• Enhances working efficiency,</li> <li>• Keep up with the growing economic competition</li> <li>• Self-improvement</li> <li>• Financial growth and benefit</li> </ul>
Adult learning methods	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Visual Aids</li> <li>• Audio</li> <li>• Print Media</li> <li>• Tactile</li> <li>• Interactive</li> </ul>
The role of adult learning	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Behavioral change</li> <li>• Enhance to acquire new skills and knowledge</li> <li>• Access disadvantaged groups</li> <li>• Promote Participatory decision making</li> </ul>



Concept of gender	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Definition of Gender</li> <li>• Historical development of Gender</li> <li>• Importance of Gender</li> <li>• Gender awareness and sensitization</li> </ul>
Role of gender in agriculture	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Women’s contribution in Agricultural Production</li> <li>• Women’s participations in rural labor market</li> <li>• Women’s participation in Agricultural Extension</li> <li>• Gender difference in rural labor markets</li> <li>• Impact of gender role in Agricultural Extension services</li> </ul>
Gender mainstreaming	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Understanding of gender equality</li> <li>• Mainstreaming strategy</li> <li>• Steps of gender mainstreaming</li> </ul>
Concept of indigenous knowledge	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Definition of Indigenous knowledge</li> <li>• Historical development of indigenous knowledge</li> <li>• Importance of indigenous knowledge for development processes</li> </ul>
Characters of indigenous knowledge	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Experiences</li> <li>• its compatibility with indigenous environment and culture</li> <li>• insufficient knowledge of rural people</li> <li>• combination of culture, belief and religion</li> </ul>
Exchange of indigenous knowledge	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Recognition and identification</li> <li>• Validation of indigenous knowledge</li> <li>• Recording and document indigenous knowledge</li> <li>• Storage in retrievable repositories</li> <li>• Dissemination of indigenous knowledge</li> <li>• Utilization of indigenous knowledge</li> </ul>
Importance of indigenous knowledge	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Problem solving strategies</li> <li>• Important component of global knowledge</li> <li>• Resource in the development processes</li> <li>• Understanding of local conditions</li> <li>• Increase responsiveness of client</li> <li>• Enhance cross cultural understanding</li> </ul>

Controversial issues of the debate on indigenous knowledge	<p>May include but not limited to:</p> <ul style="list-style-type: none"> <li>• Discrimination,</li> <li>• Exploitation,</li> <li>• Dispossession</li> <li>• Miss-Used And</li> <li>• Miss- Appropriation</li> <li>• Violation Of The Right Of Indigenous People</li> </ul>
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<b>Evidence Guide</b>	
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Critical Aspects of Competence	<p>Demonstrate knowledge attitude and skill to:</p> <ul style="list-style-type: none"> <li>• Use of Digital technology in Agricultural extension</li> <li>• Applies the role of digital technologies in agricultural extension</li> <li>• Implements Adult learning methods</li> <li>• Implements Gender mainstreaming</li> <li>• Facilitates the Exchange of indigenous knowledge</li> <li>• Understands the controversial issues of the debate on indigenous knowledge</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrates knowledge of -</p> <ul style="list-style-type: none"> <li>• Understands concept of adult learning</li> <li>• Recognize the Principles of Adult learning</li> <li>• Appreciates the importance of Adult learning</li> <li>• Understands the concept of gender</li> <li>• Understands the concept of indigenous knowledge</li> <li>• Understand the Characters of indigenous knowledge</li> <li>• Appreciates the importance of indigenous knowledge</li> <li>• Understands the controversial issues of the debate on indigenous knowledge</li> </ul>
Required Skills	<p>Demonstrates skills:</p> <ul style="list-style-type: none"> <li>• Demonstrates the use of Digital technology in Agricultural extension</li> <li>• Applies the role of digital technologies in agricultural extension</li> <li>• Implements the Adult learning methods</li> <li>• Understands and implements the role of adult learning</li> <li>• Understands and implement the role of gender in agriculture</li> <li>• Implements Gender mainstreaming</li> <li>• Facilitates the Exchange of indigenous knowledge</li> </ul>
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and Occupational health and safety (OHS) practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Written Test, Interview, Quiz, Practical assignment</li> </ul>

	<ul style="list-style-type: none"> <li>• Observation and Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

<b>Occupational Standard: Natural Resource Conservation and Development level II</b>	
<b>Unit Title</b>	<b>Prevent and Eliminate MUDA</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC2 09 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills, and attitude required by a worker to prevent and eliminate MUDA/wastes in his/her workplace by applying scientific problem-solving techniques and tools to enhance quality, productivity, and other kaizen elements continually. It covers responsibility for the day-to-day operation of the work and ensures Kaizen Elements are continuously improved and institutionalized.

<b>Element</b>	<b>Performance Criteria</b>
1. Prepare for work.	1.1. Work instructions are used to determine job requirements, including method, material, and equipment. 1.2. Job specifications are read and interpreted following the working manual. 1.3. <b>OHS requirements</b> , including dust and fume collection, breathing apparatus, and eye and ear personal protection needs are observed throughout the work. 1.4. Appropriate material is selected for work. 1.5. <b>Safety equipment and tools</b> are identified and checked for safe and effective operation.
2. Identify MUDA and problem	2.1 The plan of MUDA and problem identification is prepared and implemented. 2.2 The causes and effects of MUDA are discussed. 2.3 All possible problems related to the process /Kaizen elements are listed using <b>statistical tools and techniques</b> . 2.4 All possible problems related to kaizen elements are identified and listed on the Visual Management Board/Kaizen Board. 2.5 <b>Tools and techniques</b> are used to draw and analyze the current situation of the workplace. 2.6 Wastes/MUDA are identified and measured based on <b>relevant procedures</b> . 2.7 Identified and measured wastes are reported to relevant personnel.
3. Analyze the causes of a problem.	3.1 All possible causes of a problem are listed. 3.2 Cause relationships are analyzed using <b>4MIE</b> . 3.3 Causes of the problems are identified. 3.4 The root cause which is most directly related to the problem is selected. 3.5 All possible ways are listed using <b>creative idea generation</b> to

	<p>eliminate the most critical root cause.</p> <p>3.6 The suggested solutions are carefully tested and evaluated for potential complications.</p> <p>3.7 Detailed summaries of the action plan are prepared to implement the suggested solution.</p>
4. Eliminate MUDA and Assess the effectiveness of the solution.	<p>4.1. The plan of MUDA elimination is prepared and implemented by <b>medium KPT</b> members.</p> <p>4.2. A necessary attitude and the <b>ten basic principles</b> for improvement are adopted to eliminate waste/MUDA.</p> <p>4.3. Tools and techniques are used to eliminate wastes/MUDA based on the procedures and OHS.</p> <p>4.4. Wastes/MUDA are reduced and eliminated following OHS and organizational requirements.</p> <p>4.5. <b>Tangible and intangible results</b> are identified.</p> <p>4.6. Tangible results are compared with targets using <b>various types of diagrams</b>.</p> <p>4.7. Improvements gained by the elimination of waste/MUDA are reported to relevant bodies.</p>
5. Prevent the occurrence of wastes and sustain the operation.	<p>5.1. The plan of MUDA prevention is prepared and implemented.</p> <p>5.2. Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures, and procurement are discussed and prepared.</p> <p>5.3. Occurrences of wastes/MUDA are prevented by using <b>visual and auditory control methods</b>.</p> <p>5.4. A waste-free workplace is created using <b>5W and 1H</b> sheet.</p> <p>5.5. The completion of the required operation is done following standard procedures and practices.</p> <p>5.6. The updating of standard procedures and practices is facilitated.</p> <p>5.7. The capability of the work team that aligns with the requirements of the procedure is ensured and trained on the new <b>Standard Operating Procedures (SOPs)</b>.</p>

Variable	Range
OHS requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Are to be following legislation/ regulations/codes of practice and enterprise safety policies and procedures. This may include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire-fighting equipment, enterprise first aid, hazard control, and hazardous materials and substances.</li> <li>• PPE is to include that prescribed under legislation/regulations/codes of practice and workplace policies and practices.</li> <li>• Safe operating procedures are to include but are not limited to the</li> </ul>

	<p>conduct of operational risk assessment and treatments associated with workplace organization.</p> <ul style="list-style-type: none"> <li>• Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping of equipment, extinguishing fires, enterprise first aid requirements, and site evacuation.</li> </ul>
Safety equipment and tools	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Dust masks/goggles</li> <li>• Glove</li> <li>• Working cloth</li> <li>• First aid and</li> <li>• Safety shoes</li> </ul>
Statistical tools and techniques	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• 7 QC tools May include, but are not limited to: <ul style="list-style-type: none"> <li>➤ Stratification</li> <li>➤ Pareto Diagram</li> <li>➤ Cause and Effect Diagram</li> <li>➤ Check Sheet</li> <li>➤ Control Chart/Graph</li> <li>➤ Histogram and Scatter Diagram</li> </ul> </li> <li>• QC techniques May include, but are not limited to: <ul style="list-style-type: none"> <li>➤ Brainstorming</li> <li>➤ Why analysis</li> <li>➤ What-if analysis</li> <li>➤ 5W1H</li> </ul> </li> </ul>
	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Plant Layout</li> <li>• Process flow</li> <li>• Other Analysis tools</li> <li>• Do time study by work element</li> <li>• Measure Travel distance</li> <li>• Take a photo of the workplace</li> <li>• Measure Total steps</li> <li>• Make a list of items/products, who produces them and who uses them &amp; those in warehouses, storages, etc.</li> <li>• Focal points to Check and find out existing problems</li> <li>• 5S</li> <li>• Layout improvement</li> <li>• Brainstorming</li> <li>• Add-on</li> <li>• U-line</li> <li>• In-lining</li> </ul>

	<ul style="list-style-type: none"> <li>• Unification</li> <li>• Multi-process handling &amp; Multi-skilled operators</li> <li>• A.B. control (Two-point control)</li> <li>• Cell production line</li> <li>• TPM (Total Productive Maintenance)</li> </ul>
Relevant procedures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Make waste visible</li> <li>• Be conscious of the waste</li> <li>• Be accountable for the waste and measure the waste.</li> </ul>
4M1E	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Man</li> <li>• Machine</li> <li>• Method</li> </ul> <p>Material and Environment</p>
Creative idea generation	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Brainstorming</li> <li>• Exploring and examining ideas in varied ways</li> <li>• Elaborating and extrapolating</li> <li>• Conceptualizing</li> </ul>
Medium KPT	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• 5S</li> <li>• 4M (Machine, Method, Material, and Man)</li> <li>• 4p (Policy, Procedures, People, and Plant)</li> <li>• PDCA cycle</li> </ul> <p>Basics of IE tools and techniques</p>
The ten basic principles for improvement	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Throw out all of your fixed ideas about how to do things.</li> <li>• Think of how the new method will work- not how it won.</li> <li>• Don't accept excuses. Deny the status quo.</li> <li>• Don't seek perfection. A 50 percent implementation rate is fine as long as it's done on the spot.</li> <li>• Correct mistakes the moment they are found.</li> <li>• Don't spend a lot of money on improvements.</li> <li>• Problems give you a chance to use your brain.</li> <li>• Ask "why?" At least five times until you find the ultimate cause.</li> <li>• Ten people's ideas are better than one person's.</li> <li>• Improvement knows no limits.</li> </ul>
Tangible and intangible results	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• The tangible results may include quantifiable data</li> <li>• The intangible results may include qualitative data</li> </ul>
various types of	<p>May include, but not limited to:</p>

diagrams.	<ul style="list-style-type: none"> <li>• Line graph</li> <li>• Bar graph</li> <li>• Pie-chart</li> <li>• Scatter diagrams</li> <li>• Affinity diagrams</li> </ul>
Visual and auditory control methods	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Red Tagging</li> <li>• Signboards</li> <li>• Outlining</li> <li>• And ons</li> <li>• Kanban, etc.</li> </ul>
5W and 1H	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Who</li> <li>• What</li> <li>• Where</li> <li>• When</li> <li>• Why and</li> <li>• How</li> </ul>
Standard Operating Procedures (SOPs).	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• The customer demands</li> <li>• The most efficient work routine (steps)</li> <li>• The cycle times required to complete work elements</li> <li>• All process quality checks are required to minimize defects/errors</li> <li>• The exact amount of work in the process required</li> </ul>

### Evidence Guide

Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Discuss why wastes occur in the workplace</li> <li>• Discuss causes and effects of wastes/MUDA in the workplace</li> <li>• Analyze the current situation of the workplace by using appropriate tools and techniques</li> <li>• Identify, measure, eliminate and prevent the occurrence of wastes by using appropriate tools and techniques</li> <li>• Use 5W and 1H sheets to prevent</li> <li>• Detect non-conforming products/services in the work area</li> <li>• Apply effective problem-solving approaches/strategies.</li> <li>• Implement and monitor improved practices and procedures</li> <li>• Apply statistical quality control tools and techniques.</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Targets of customers and manufacturer/service provider</li> <li>• Traditional and kaizen thinking of price setting</li> </ul>

	<ul style="list-style-type: none"> <li>• Kaizen thinking concerning targets of manufacturer/service provider and customer</li> <li>• value</li> <li>• The three categories of operations</li> <li>• the 3“MU”</li> <li>• wastes occur in the workplace</li> <li>• The 7 types of MUDA</li> <li>• QC story/PDCA cycle/</li> <li>• QC story/Problem-solving steps</li> <li>• QCC techniques</li> <li>• 7 QC tools</li> <li>• The Benefits of identifying and eliminating waste</li> <li>• Causes and effects of 7 MUDA</li> <li>• Procedures to identify MUDA</li> <li>• Necessary attitude and the ten basic principles for improvement</li> <li>• Procedures to eliminate MUDA</li> <li>• Prevention of wastes</li> <li>• Methods of waste prevention</li> <li>• Definition and purpose of standardization</li> <li>• Standards required for machines, operations, defining normal and abnormal conditions, clerical procedures, and procurement</li> <li>• Methods of visual and auditory control</li> <li>• TPM concept and its pillars.</li> <li>• Relevant OHS and environment requirements</li> <li>• Method and Lines of communication</li> <li>• Methods of making/recommending improvements.</li> <li>• Reporting procedures</li> <li>• Workplace procedures associated with the candidate's regular technical duties</li> <li>• the organizational structure of the enterprise</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Draw &amp; analyze the current situation of the workplace</li> <li>• Use measurement apparatus (stopwatch, tape, etc.)</li> <li>• Calculate volume and area</li> <li>• Apply statistical analysis tools</li> <li>• Use and follow checklists to identify, measure, and eliminate wastes/MUDA</li> <li>• Identify and measure wastes/MUDA following OHS and procedures</li> <li>• Use tools and techniques to eliminate wastes/MUDA following OHS procedure.</li> <li>• Apply 5W and 1H sheet</li> </ul>



	<ul style="list-style-type: none"> <li>• Update and use standard procedures for completion of required operation</li> <li>• Apply Visual Management Board/Kaizen Board.</li> <li>• Detect non-conforming products or services in the work area</li> <li>• Work with others</li> <li>• Read and interpret documents</li> <li>• Observe situations</li> <li>• Solve problems</li> <li>• Communicate information</li> <li>• Gather evidence by using different means</li> <li>• Report activities and results using report formats</li> <li>• Implement and monitor improved practices and procedures</li> </ul>
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials, and equipment, and information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or a simulated workplace setting.

# **LEVEL III**

Occupational Standard: Natural Resources Conservation and Development Level III	
Unit Title	Prepare Watershed Management plan
Unit Code	<a href="#">AGR NRC3 01 0322</a>
Unit Descriptor	This unit covers the knowledge, skills, and attitude to apply core planning steps of the watershed management plan and comply with the requirements often associated across a broad range of watershed management approaches.

Element	Performance Criteria
1. Identify and describe basic watershed processes and their interrelated nature	<p>1.1. Critical and micro/sub-watersheds are delineated with the consent of the communities and other concerned parties involved</p> <p>1.2. <i>Natural processes</i> at work in the watershed area are identified and described fully</p> <p>1.3. <i>Human factors</i> at work in the watershed are identified and described in depth</p> <p>1.4. Size of the watershed, population, current land uses by percentages, kebeles in the watershed, etc. are enumerated and described</p> <p>1.5. Materials are selected to complete the proposed works.</p>
2. Develop a long-term watershed management plan	<p>2.1. <i>Watershed management principles</i> are identified following the watershed guideline.</p> <p>2.2. <i>Watershed management plan steps</i> are followed following the watershed guideline.</p> <p>2.3. Appropriate <i>data gathering</i> for watershed planning is carried out and analyzed according to national watershed development guidelines.</p> <p>2.4. Major constraints and possible solutions are prioritized and targeted</p> <p>2.5. A workable watershed development <i>plan is developed</i> based on <i>assessment</i> results</p> <p>2.6. A strong watershed results framework conditions, facilitation for communication, and partnerships are designed</p> <p>2.7. Conditions for <i>implementation, monitoring, and evaluation</i> are sorted out</p>
3. Design appropriate benefit-sharing mechanisms among users	<p>3.1. Expected benefits of the watershed management are identified and listed</p> <p>3.2. Dynamic and continually re-adjustable benefit-sharing mechanism that allows accommodating changes are designed.</p>

<b>Variable</b>	<b>Range</b>
Natural processes	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Knowing watershed means coming to learn the natural processes working within the watershed boundaries</li> <li>• These natural forces help the watershed landscape, its water quality, and--in turn-- community lives.</li> <li>• Climate, geology, hydrology, soils, and vegetation cover determine shaping the landscape, with waterways often cutting down steep slopes</li> </ul>
Human factors	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Upstream and downstream community</li> <li>• Communities located along streams and rivers, for example, are faced with very basic choices: they can learn how the river functions and learn to draw benefits from it while staying out of harm's way or, they can try to significantly change the river's behavior to accomplish their plans.</li> </ul>
Watershed management principles	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Participatory</li> <li>• Gender-sensitive</li> <li>• Building upon local experience, knowledge</li> <li>• Realistic integrated, productive and manageable</li> <li>• Watershed logic and potential respected</li> <li>• The need for flexibility at different levels</li> <li>• Cost-sharing and empowerment/ownership building</li> <li>• Complementary to food security and rural development mainstream</li> <li>• Economical, environmental &amp; social sustainability</li> <li>• Climate-smart</li> </ul>
Watershed management plan steps	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Getting Started at Woreda Level</li> <li>• Getting Started at Community Level</li> <li>• Socio-Economic and Biophysical Survey</li> <li>• Gender and Social Development (GSD), nutrition and Integrated Risk Management</li> <li>• Identification and Prioritization of Interventions that Bring Change</li> <li>• General assembly</li> <li>• organizing community watershed plan</li> <li>• Implementation Strategies</li> </ul>
Data gathering	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Biophysical</li> <li>• Socio-economic</li> </ul>
Plan development	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Watershed management plan</li> <li>• Benefit-sharing plan</li> </ul>

Assessment	May include, but not limited to: <ul style="list-style-type: none"> <li>(agroecology) (water, soil, slope, degradation level) Environmental condition</li> </ul>
Implementation Monitoring and evaluation	May include, but not limited to: <ul style="list-style-type: none"> <li>Stakeholders (users, community), regulators, technical support, experts</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>Describe watershed management plans according to guidelines and</li> <li>Describe watershed management plan to a range of work environments and contexts</li> <li>Design appropriate benefit-sharing mechanisms among users</li> <li>Gather and analyze data for watershed planning</li> <li>Develop watershed development plan based on assessment results</li> </ul>
Required Knowledge and Attitude	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>Watershed management planning steps</li> <li>Principles of long-term watershed management</li> <li>Soil and water conservation</li> <li>Water harvesting</li> <li>Forestry development to watershed management</li> <li>Materials cartage &amp; pollution control</li> <li>The sequence of working and timing/duration</li> <li>OHS issues relating to the site</li> <li>equipment used</li> <li>Construction/installation techniques for all measures on the plan</li> <li>Basic watershed processes and their interrelated nature</li> <li>Element of successful watershed management frameworks</li> <li>Benefits of the watershed management approach</li> </ul>
Required skills	Demonstrate skills to: <ul style="list-style-type: none"> <li>Apply watershed management plan steps according to watershed guidelines</li> <li>Undertake socio-economic and biophysical survey</li> <li>Prioritize problems</li> <li>Apply Intervention measures</li> <li>Apply watershed management principles to a range of work environments and contexts</li> <li>Design appropriate benefit-sharing mechanisms among users</li> <li>Gather and analyze data for watershed planning</li> <li>Develop watershed development plan based on assessment results</li> </ul>
Resource Implications	Access is to real or appropriately simulated situations, including work areas, materials, and equipment, and to information on workplace practices and OHS practices.

Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or a simulated workplace setting.

<b>Occupational Standard: Natural Resources Conservation and Development Level III</b>	
<b>Unit Title</b>	<b>Prepare Land use land capability Plan</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC3 02 0322</u></a>
<b>Unit Descriptor</b>	This unit the knowledge, skills, and attitude for preparing land use land capability plan.

<b>Element</b>	<b>Performance Criteria</b>
1. Collect land information	<p>1.1. <i>Tools and equipment</i> used for data collection are identified following the standard guidelines.</p> <p>1.2. <i>Land and related information</i> is surveyed/ assessed based on the purpose.</p> <p>1.3. Present and future needs are systematically assessed and evaluated based on land ability</p> <p>1.4. Data is collected, organized, and analyzed based on survey techniques.</p>
2. Identify the problems	<p>2.1. Key land use problems are identified based on analyzed data.</p> <p>2.2. Identified problems are prioritized based on the severity of problems</p> <p>2.3. Conflicts between competing uses are identified based on individual and community as well as present and future generation needs.</p>
3. Determine existing alternative solutions and the best options	<p>3.1. Challenge solution methods are identified according to socio-economic, environmental, and cultural information</p> <p>3.2. Opportunities, management options, and land resources are assessed based on the requirements.</p> <p>3.3. <i>Each land capability class</i> are determined based on the guideline.</p> <p>3.4. Sustainable options are chosen according to identified needs</p> <p>3.5. Selected options are applied following management principles</p>
4. Prepare and Implement the plan	<p>4.1. The strategic plan is developed in consultation with stakeholders and the community based on the desired changes to bring.</p> <p>4.2. A development plan to guide future development is outlined based on strategies.</p> <p>4.3. Land use land capability plan is prepared according to the technical plan preparation procedure.</p> <p>4.4. Resource are organized and mobilized as the requirements</p> <p>4.5. A land capability plan is implemented based on the available resource.</p> <p>4.6. Monitoring and evaluation are done based on the plan.</p> <p>4.7. The land capability plan is reviewed based on implementation experience.</p>

Variable	Range
Land and related information	May include, but not limited to: <ul style="list-style-type: none"> <li>• Soil type</li> <li>• Soil depth</li> <li>• Soil property</li> <li>• Slope</li> <li>• Land feature</li> </ul>
Tools and equipment	May include, but not limited to: <ul style="list-style-type: none"> <li>• Line level, string, graduated staff, clinometers, measuring tape, ranging pole, pegs,</li> <li>• Compass, GPS, table, computer, automatic level, and stereoscope.</li> </ul>
Each land capability classes	May include, but not limited to: <ul style="list-style-type: none"> <li>• Cultivated land</li> <li>• Grazing land</li> <li>• Forest/bushland</li> <li>• Wetland</li> </ul>

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>• Survey/Assess, organize, and analyze land-related information</li> <li>• Describe problem identification and prioritization procedures</li> <li>• Assess and applied selected opportunities, management options, and land resources</li> <li>• Choose sustainable options</li> <li>• Develop land use land capability plan</li> </ul>
Required Knowledge and Attitude	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• Principle of land use land capability planning</li> <li>• Policy and strategy of land use</li> <li>• Differentiate potential land capability</li> <li>• Methods of administration system</li> </ul>
Required skills	Demonstrates skills to: <ul style="list-style-type: none"> <li>• Develop and implement a land use land capability plan.</li> <li>• Identify and maintain documentation for the quality systems</li> <li>• Use simple pegs to complex instruments like GPS, automatic level, etc</li> <li>• Develop map and map reading</li> </ul>
Resource Implications	Access is to real or appropriately simulated situations, including work areas, materials, and equipment, and information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or a simulated workplace setting.



<b>Occupational Standard: Natural Resources Conservation and Development Level III</b>	
<b>Unit Title</b>	<b>Undertake Environmental and Social management framework (ESMF)</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC3 03 0322</u></a>
<b>Unit Descriptor</b>	This unit covers knowledge, skills, and attitude to undertake the detailed process of environmental and social management framework assessment and, analyze the impacts of each activity of the proposed project on the environment and social influences.

<b>Element</b>	<b>Performance Criteria</b>
1. Develop an understanding of the major activities of the project and their effect	<p>1.1. The project proposal is acquired from the organization or who want to implement it</p> <p>1.2. The activities to be carried out during the implementation of the project are identified and listed as directed</p> <p>1.3. The <i>positive and negative interaction</i>, the activities that do have with the environment are Identified</p>
2. Analyze the impact of the activities on the social and environment	<p>2.1. Initial Environmental Examination or Evaluation (IEE) document for classification of the project according to its likely environmental and social sensitivity is developed</p> <p>2.2. <i>Key environmental issues</i> which deserve attention regarding the activities and effects to the environment and community are Identified</p> <p>2.3. The scope of the impacts of the identified environmental concerns in monetary terms or any other possible manner is estimated with the organization.</p> <p>2.4. key interest groups, both governmental and non-governmental organizations that have a concern over the identified environmental concerns are identified, and good lines of communication established</p> <p>2.5. The major impacts to be further studied are identified and documented for future reference</p>
3. Develop the support measures and cost-benefit analysis	<p>3.1. Any measures, which minimize the identified adverse impacts and enhance positive impacts are Identified and determined with the organization</p> <p>3.2. Formal and informal communications with teams carrying out feasibility studies are established so that their work can consider proposals</p> <p>3.3. Mitigating measures that define physical changes, require management or institutional changes or additional investment are identified with the consultation of the community and the organization</p> <p>3.4. Mitigation measures, after carrying out a cost-benefit analysis, which is cost-effective and result in maximum</p>

	environmental, social, and economical benefits are recommended
4. Establish a system of checking the compliance	<p>4.1. Environmental Action Plan which sets out the mitigation measures needed for environmental management, both in the short and long term, and the institutional requirements for implementation are developed with the organization</p> <p>4.2. A monitoring program with a clear definition as to which agencies are responsible for data collection, collation, interpretation, and implementation of management measures is established with the organization.</p> <p>4.3. Environmental auditing is carried out following the project implementation guideline</p>
5. Finalize work and document	<p>5.1. Environmental &amp; social impact assessment activities, information, and results are recorded and documented following ESMF guidelines</p> <p>5.2. Problems or difficulties in completing work to standards or timelines are reported to the organization.</p> <p>5.3. expected environmental, social &amp; economic damages are predicted</p> <p>5.4. Work completion and work outcomes are documented and reported in a standard format.</p>

Variable	Range
positive and negative interaction	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>➤ Negative interaction <ul style="list-style-type: none"> <li>• Erosion</li> <li>• Deforestation</li> <li>• Land degradation</li> <li>• Dust</li> <li>• Flooding</li> </ul> </li> <li>➤ Positive interaction <ul style="list-style-type: none"> <li>• Job opportunity</li> <li>• Fertility enhancement</li> </ul> </li> </ul>
Key environmental issues	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Water, Soil, Forest</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Proposals, altimeter, topographic- map, GPS, etc.</li> </ul>
Sources of information	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• ESMF rule and regulation</li> <li>• Organizational rules, regulations, and guidelines</li> <li>• Internet, related books, and related materials</li> <li>• Technical manuals</li> <li>• Sharing best practice</li> <li>• Workplace guidelines</li> <li>• Recorded documents/logo/history</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>• Predict the possible impacts of the activities to be carried out on the environment</li> <li>• Interpret predictions with and without mitigating measures;</li> <li>• Conduct assessment of comparisons</li> </ul>
Required Knowledge and Attitude	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• The interdependence of social and environmental entities</li> <li>• Environmental impacts prediction methods</li> <li>• sustainable management of natural resources</li> <li>• Environmental valuation methods</li> <li>• Environmental issues, guidelines, and legislation</li> <li>• Networking and coordination of efforts of different institutions</li> <li>• Explain the interaction of different human activities to the social and environment</li> </ul>
Required Skills	Demonstrate skills to: <ul style="list-style-type: none"> <li>• Identify environmental and social influences</li> <li>• Undertake possible mitigation measures</li> <li>• Manage the environment</li> <li>• Demonstrate sustainable development issues</li> <li>• Carry out environmental and social management framework assessment</li> <li>• Undertake environmental auditing</li> </ul>
Resource Implications	Access is to real or appropriately simulated situations, including work areas, materials, and equipment, and information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or a simulated workplace setting.

Occupational Standard: Natural Resources Conservation and Development Level III	
Unit Title	Design and Implement Soil & Water Conservation Measures
Unit Code	<a href="#">AGR NRC3 04 0322</a>
Unit Descriptor	This unit covers knowledge, skills, and attitude to carry out work functions associated with the formal design, layout, and implementation of conservation measures/structures to soil erosion control measures.

Element	Performance Criteria
1. Identify and select appropriate measures to be designed	1.1. <i>Appropriate technology</i> identified and selected according to the work requirement 1.2. Relevant <i>information sources</i> are identified and accessed 1.3. Plan or strategy is reviewed for technical accuracy and environmental impacts. 1.4. Adherence to <i>OHS requirements</i> regulations and legislation is confirmed and noted on works plans. 1.5. Design criteria are applied in line with industry standards.
2. Apply design procedures	2.1. Catchments characteristics are calculated to accuracy in line with industry standards. 2.2. Methods to design specifications are determined following industry standards. 2.3. Measures are modified in response to applying design procedures and followed in line with accepted industry practices.
3. Prepare & Interpret plans and specifications	3.1. Earthworks specifications are established in consideration of desired outcome and prevailing <i>hazard</i> conditions 3.2. The suitability of design specifications is confirmed to comply with the category of work. 3.3. The overall plan is determined in consultation with the landholder and surveyor. 3.4. The plan is accurately verified in line with job requirements. 3.5. The documentation provided is aligned with the plan and followed in line with industry standards
4. Relate plan to site	4.1. Key plan points are located on-site. 4.2. Additional features are identified on the site plan as per work requirement 4.3. Site issues that affect survey and pegging are identified and recorded as the requirement of the organization.
5. Carry out Physical soil	5.1. Pegging sequence is established along the contour

and water conservation construction	<p>5.2. Site dimensions are measured in compliance with the job specification.</p> <p>5.3. Peg locations are established using prescribed methods.</p> <p>5.4. Materials, <i>tools, and equipment</i> are selected to complete proposed works in line with the construction schedule.</p> <p>5.5. All construction personnel is advised of pegging and the need for site integrity.</p> <p>5.6. Earthworks are pegged and constructed in line with following details specified in project specification and to industry standards.</p> <p>5.7. The site works maintenance inspection schedule is applied to reinstate the operating effectiveness of erosion and sediment control measures on-site.</p>
6. Perform biological soil and water conservation measures	<p>6.1 Appropriate species used for biological soil and water conservation measures are identified and selected based on their adaptability</p> <p>6.2 Appropriate species and agronomic measures are implemented following practical manual</p> <p>6.3 Biological soil and water conservation measure are managed and maintained following the guideline</p>
7. Finalize work and report	<p>7.1 Problems or difficulties in completing work to standards or timelines are reported.</p> <p>7.2 Work completion and work outcomes are documented and reported in a standard format.</p>

Variable	Range
Appropriate technologies	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>➤ Physical SWC measures <ul style="list-style-type: none"> <li>• Faynajuu</li> <li>• Stone bund</li> <li>• Bench terrace</li> <li>• Hillside terrace</li> </ul> </li> <li>➤ Biological SWC measures <ul style="list-style-type: none"> <li>• Crop rotation</li> <li>• Alley cropping</li> <li>• Strip cropping</li> <li>• Contour cultivation</li> </ul> </li> </ul>
OHS requirement	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Hazard identification, risk assessment, and control</li> <li>• Implement procedures for dealing with hazardous events</li> </ul>
Information sources	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Organizational rules, regulations and guidelines</li> <li>• Internet, related books, and related materials</li> <li>• Technical manuals</li> </ul>

	<ul style="list-style-type: none"> <li>• Workplace guidelines</li> <li>• Recorded documents/logo/history</li> </ul>
Hazard	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Disturbance or interruption of services,</li> <li>• Solar radiation, dust,</li> <li>• Soil- and water-borne micro-organisms,</li> <li>• Sharp hand tools and equipment,</li> <li>• Manual handling,</li> <li>• Falling objects, and uneven Surfaces.</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Knives, trowels, spades, forks, hammer, rakes, hoes, shovels, buckets, brooms, wheelbarrows, sandbags, reinforced iron bars, Gabion wire</li> <li>• Stationery, draft manual, drawing tools, drawing table, Pegs, measuring tapes,</li> <li>• Strings, poles, compass, maps, line level, clinometers, and GPS</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Prepare and document designs and specifications according to enterprise guidelines and industry best practices.</li> <li>• Identify and select appropriate measures to be designed</li> <li>• Apply erosion control and design principles</li> <li>• Set out conservation earthworks satisfactorily from plans and specifications according to enterprise guidelines and industry best practices.</li> <li>• Record, document, and report work outcomes</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Relevant environmental, planning, and groundwater legislation</li> <li>• Erosion control and design principles</li> <li>• Soils and soil formation</li> <li>• Levels and leveling</li> <li>• Earthmoving principles</li> <li>• Total catchments issues</li> <li>• Legal requirements - permits</li> <li>• Managing peak water flows</li> <li>• Subsurface and surface drainage principles and systems</li> <li>• Awareness of the limitations of design aids provided for industry</li> <li>• Different types of survey equipment and staffs</li> <li>• Designing and survey techniques <ul style="list-style-type: none"> <li>• Principles of native topsoil conservation and protection</li> <li>• Interpretation of plans and general and technical specifications</li> </ul> </li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Identify and select appropriate measures to be designed and apply design procedures</li> <li>• Prepare specification schedule</li> </ul>

	<ul style="list-style-type: none"> <li>• Identify soil erosion problem</li> <li>• Decide soil and water conservation measure based on slope and agroecology</li> <li>• Apply erosion control and design principles</li> <li>• Design and layout of the structure</li> <li>• Construct selected soil and water conservation structure</li> <li>• Apply subsurface and surface drainage principles and systems</li> <li>• Interpret plans and specifications</li> </ul>
Resource Implications	Access is to real or appropriately simulated situations, including work areas, materials, and equipment, and information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or a simulated workplace setting.
<b>Occupational Standard: Natural Resources Conservation and Development Level III</b>	
<b>Unit Title</b>	<b>Implement Soil Health and Plant Nutrition Practices</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC3 05 0322</u></a>
<b>Unit Descriptor</b>	This unit the knowledge, skills, and attitude to assess soil and develop soil health and plant nutrition programs in the agricultural industry.

<b>Element</b>	<b>Performance Criteria</b>
1. Determine relevant site and soil characteristics	<p>1.1. Goals and target site for assessment and development of the program are defined following a review of the enterprise production plan and in consultation with the landholder.</p> <p>1.2. Relevant climate data, environmental context information, and site data are accessed and reviewed.</p> <p>1.3. Appropriate <i>soil, plant, and water tests</i> are determined according to plant species, climatic conditions, prevailing <i>growth media</i>, industry best practices, and enterprise guidelines.</p> <p>1.4. Soil, plant, and water testing program that defines sampling, field testing, off-site analysis activities, task responsibilities, involvement of contractors, scheduling, and desired information outcomes are developed.</p> <p>1.5. Testing tasks are implemented and monitored, liaison procedures with outside testing agencies are supervised, and remedial action is undertaken where necessary.</p> <p>1.6. Data and readings are compiled and presented in a form that can be easily understood.</p> <p>1.7. Seasonal variations and requirements are determined from published data on species, historical records, own experience,</p>

	<p>industry best practices, and enterprise guidelines.</p> <p>1.8. Characteristics, conditions, and nutritional status of soils and <b>plant species</b> under production are determined by analyzing collected data and comparing them to accepted standards.</p>
2. Define the requirements for plant production.	<p>2.1. Different nutritional requirements of the plant during the growing cycle and a <b>range of conditions</b> are identified according to published data on species, historical records, own experience, and enterprise guidelines.</p> <p>2.2. The program is developed to achieve appropriate soil conditions and nutrient availability for plant production according to the enterprise production plan.</p> <p>2.3. <b>Soil amendments</b>, management practices, and fertilizer requirements needed for production are determined.</p> <p>2.4. <b>Resources, tools, equipment, and machinery</b> for the program are identified and cost and availability are confirmed with appropriate personnel.</p> <p>2.5. A cost-effective approach to soil management, soil amendment, and provision of plant nutrients is determined.</p> <p>2.6. <b>OHS hazards</b> associated with the program are identified, risks are assessed and <b>controls</b> are developed and documented.</p> <p>2.7. <b>Environmental implications</b> of the program are identified and documented in the plant nutrition program.</p>
3. Document the soil health and plant nutrition program and specifications	<p>3.1. Detailed plans, objectives, specifications, and associated costs are established based on program requirements and are presented to the supervisor and landowner.</p> <p>3.2. Detailed on-site procedures and schedules for the program are developed and documented.</p>
4. Monitor production and evaluate the program.	<p>4.1. Program implementation and results are monitored by testing soil, plants, and/or produce according to industry practice to ensure requirements of enterprise production plan are achieved.</p> <p>4.2. The program is reviewed and refined to ensure it is responsive to changing conditions.</p> <p>4.3. Non-compliance with documented objectives and specifications is identified and <b>remedial actions</b> are implemented to alleviate or overcome identified shortcomings in the program.</p> <p>4.4. Agreed changes are incorporated into a detailed plan.</p>
5. Identify and Implement Conservation Agriculture (CA) principles and	<p>5.1. Materials for conservation agriculture practices are identified and used following the industry standard</p> <p>5.2. Relevant information sources on conservation agriculture are Identified and accessed</p>



practices	<p>5.3. <i>Principles of CA</i> are Identified and applied based on the guideline</p> <p>5.4. Components of CA are Identified and applied as a standard procedure.</p> <p>5.5. Best CA and indigenous practice are identified and introduced in line with the principles and appropriate guidelines</p>
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Variable	Range
Soil, plant, and water tests	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Analysis of chemical characteristics such as: <ul style="list-style-type: none"> <li>➤ Acidity or alkalinity (ph)</li> <li>➤ Cation exchange capacity</li> <li>➤ Nutrient and carbonate content</li> <li>➤ Salinity</li> </ul> </li> <li>• On-site testing and off-site analysis of growth media to determine physical characteristics such as: <ul style="list-style-type: none"> <li>➤ Colour</li> <li>➤ Depth of root zone</li> <li>➤ Depth of water table</li> <li>➤ Plant available water</li> <li>➤ Soil organic matter</li> <li>➤ Structure</li> <li>➤ Texture</li> </ul> </li> <li>• Testing nutrient status of plants through: <ul style="list-style-type: none"> <li>➤ Establishing likely effects on soil chemical and physical Characteristics</li> <li>➤ Plant tissue testing</li> <li>➤ Testing water for suitability for plant growth</li> </ul> </li> </ul>
Growth media	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• New areas to be planted</li> <li>• Soil sites of existing planted areas</li> <li>• Other growing media</li> </ul>
Plant species	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Bulbs</li> <li>• Containerized, a field planted, and stock specimens</li> <li>• Flowers and foliage</li> <li>• Fruit and vegetables</li> <li>• Herbs</li> <li>• Indigenous and exotic species and varieties</li> <li>• Mushrooms</li> <li>• Nuts</li> <li>• Oil crops</li> <li>• Pasture, broadacre cropping plants, and turf species</li> <li>• Tree, shrub, and ornamental plant species</li> </ul>

	<ul style="list-style-type: none"> <li>• Tubers</li> <li>• Vines and canes</li> <li>• Wild harvest</li> <li>• Tolerant crops species</li> </ul>
Range of conditions	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Crop load</li> <li>• Crop quality requirements</li> <li>• Cropping and fertilizer history</li> <li>• Grazing intensity</li> <li>• Growth media characteristics</li> <li>• Irrigation methods and scheduling</li> <li>• Seasonal influences</li> <li>• Soil management practices</li> <li>• Spraying program</li> <li>• Weather</li> </ul>
Soil amendments	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Animal manures</li> <li>• Composts</li> <li>• Cover crops</li> <li>• Gypsum</li> <li>• Lime</li> <li>• Materials to modify soil ph</li> <li>• Mulches</li> <li>• Soil amendments to improve the chemical, physical, and/or</li> <li>• Biological properties of soil to meet requirements of the plant</li> <li>• Production</li> </ul>
Resources, tools, equipment and machinery	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Aerial photographs, charts, and tables of soil</li> <li>• Characteristics and plant-soil parameters <ul style="list-style-type: none"> <li>➤ Application equipment and machinery such as: <ul style="list-style-type: none"> <li>• Air blowers</li> <li>• Backpack spray equipment</li> <li>• Irrigation systems set up for fertigation</li> <li>• Pumps and pump fittings</li> <li>• Rippers and spray equipment</li> <li>• Seeders</li> <li>• Tractors and trailed or three-point linkage spreaders</li> <li>• Backhoe</li> </ul> </li> </ul> </li> <li>• Charts and illustrations of symptoms of plant nutrient deficiencies and toxicities</li> <li>• Hand-held salinity or electrical conductivity meter</li> <li>• Hand or powered auger</li> <li>• Nutrient application methods, including placement</li> </ul> <p>Methods such as:</p> <ul style="list-style-type: none"> <li>• Banding</li> <li>• Broadcasting</li> <li>• Ripping</li> </ul>

	<ul style="list-style-type: none"> <li>• Spraying and fertigation on or below the soil surface</li> <li>• Ph test kit or electronic ph testing device</li> <li>• Plastic overlays</li> <li>• Sample bags</li> <li>• Tape measure</li> </ul>
OHS hazards	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Air, dust</li> <li>• Chemicals and hazardous substances</li> <li>• Disturbance or interruption of services</li> <li>• Incorrect manual handling</li> <li>• Uncovered machinery and machinery parts</li> <li>• Moving vehicles</li> <li>• Noise</li> <li>• Sharp hand tools and equipment</li> <li>• Slippery and uneven surfaces</li> <li>• Soil and water-borne micro-organisms</li> <li>• Solar radiation</li> </ul>
Controls	<p>Enterprise OHS policies and procedures for:</p> <ul style="list-style-type: none"> <li>• Appropriate use of PPE, including sun protection</li> <li>• Appropriate use of safety equipment, including signage and protective barriers</li> <li>• Assessing and reporting risks</li> <li>• Basic first aid available on site</li> <li>• Cleaning, maintaining, and storing tools, equipment, and machinery</li> <li>• Correct manual handling</li> <li>• Identifying hazards</li> <li>• Maintaining personal hygiene</li> <li>• Reporting problems to supervisors</li> <li>• Safe handling, use, and storage of chemicals and hazardous substances</li> <li>• Safe operation of tools, equipment, and machinery</li> </ul>
Environmental implications	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Beneficial impacts, including minimization of nutrient</li> <li>• Run-off and toxic side effects in soil and surrounding environment achieved by: <ul style="list-style-type: none"> <li>➤ Improved application techniques and rates</li> <li>➤ Improved assessment and targeting of nutrient requirements</li> <li>➤ Reduction of toxic side effects of applied nutrients in crop plants</li> <li>➤ Negative impacts, including over-spraying or run-off into external environment resulting in nutrient overload or excess water affecting things such as: <ul style="list-style-type: none"> <li>✓ Loading atmosphere with greenhouse gas</li> <li>✓ Mining native soil fertility</li> <li>✓ Native plants</li> <li>✓ Natural waterways</li> </ul> </li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>✓ Salinization</li> <li>✓ Water erosion</li> <li>✓ Water logging</li> <li>✓ Water tables and ecosystems</li> <li>✓ Methods which may aid in reversal of environmental</li> </ul> <ul style="list-style-type: none"> <li>• Degradation include: <ul style="list-style-type: none"> <li>➤ Allowing natural recovery and regeneration of native ecosystems</li> <li>➤ Responsible fertilization and watering practices</li> </ul> </li> </ul>
Remedial actions	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Adjustments to soil amendments</li> <li>• Changes to fertilizer application and soil management practices</li> <li>• Irrigation scheduling</li> <li>• Nutrient application rates and methods</li> <li>• Use of foliar sprays</li> </ul>
<b>Principles</b>	<ul style="list-style-type: none"> <li>• Disturb the soil as little as Possible, keep the soil covered as much as possible, and Mix and rotate crops.</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Select suitable management practices, soil amendments and fertilizers</li> <li>• Determine analytical and appropriate application techniques</li> <li>• Prepare resources and equipment for application of nutritional materials</li> <li>• Application of CA principles and practices</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Characteristics of soil and other growth media types, uses, and additives to enhance available nutrition for specific crops</li> <li>• Range of conditions that affect crop nutrition</li> <li>• Main simple and compound fertilizer products</li> <li>• Nutrient deficiency and toxicity on individual plant species and varieties, including visual symptoms</li> <li>• Soil, plant, and water tests</li> <li>• OHS hazards associated with implementing a plant nutrition program</li> <li>• Controls necessary to remove or minimize associated risks</li> <li>• Organic matter, pest and disease, and nutrient interactions in soil and nutrient cycling</li> <li>• Relationship between soil characteristics and availability of nutrients, including macro and micro Element, to plants</li> <li>• Soil amendments are commonly to treat soil problems experienced by enterprise</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Document plans, specifications, and work procedures</li> <li>• Calculate cost and spatial and logistical requirements of</li> </ul>

	<p>Components of plant nutrition</p> <ul style="list-style-type: none"> <li>• Communicate and negotiate orally and in writing with different people</li> <li>• Comply with legislative requirements and codes of practice</li> <li>• Consult, collate and analyze findings on plant nutritional requirements, nutrients available from soils and other growth media, and environmental implications</li> <li>• Record all relevant information according to enterprise and industry standards</li> <li>• Find out possible soil amendment options/interventions</li> <li>• Undertake reports for staff, managers, contractors, and customers.</li> <li>• Apply CA principles and practices</li> </ul>
Resource Implications	Access is to real or appropriately simulated situations, including work areas, materials, and equipment, and information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or a simulated workplace setting.

<b>Occupational Standard: Natural Resources Conservation and Development Level III</b>	
<b>Unit Title</b>	<b>Implement integrated soil fertility management practice (ISFM)</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC3 06 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills, and attitude to implement integrated soil fertility management practices, the principles of basic soil fertility, indigenous soil fertility practices, and ISFM components.

<b>Element</b>	<b>Performance Criteria</b>
1. Identify basic soil fertility indicators	<p>1.1. The <i>tools and equipment</i> are identified according to industry requirements</p> <p>1.2. Work is undertaken in an <i>environmentally appropriate</i> according to project guidelines</p> <p>1.3. Suitable <i>Personal Protective Equipment (PPE)</i> is selected and checked before use.</p> <p>1.4. Sampling and testing of soil at reference sites to develop baseline data to identify soil health and fertility are conducted according to organizational standards</p> <p>1.5. Conducting of assessment and recording of the <i>physical, chemical, and biological properties of soil</i> following organizational procedures</p> <p>1.6. The decision is provided during the analysis of results to identify trends in soil health and fertility and areas for improvement</p>
2. Identify appropriate ISFM practices	<p>2.1. <i>Principles of ISFM</i> are identified and explained</p> <p>2.2. <i>Components of ISFM practices</i> are identified and explained</p> <p>2.3. <i>Best ISFM and indigenous practice</i> are identified in line with the principles and appropriate guidelines</p> <p>2.4. Technology, <i>materials</i>, and resources for indigenous and integrated soil fertility practices are identified and used following the industry standard</p> <p>2.5. <i>Relevant information</i> sources on integrated soil fertility practices are Identified and accessed</p>
3. Develop basic approaches to implement & promote ISFM	<p>3.1. Best soil fertility practices of the community are assessed and compared</p> <p>3.2. Appropriate persons and farmers are consulted about available options</p> <p>3.3. Farmers and communities of specific areas are consulted and</p>

	involved in setting priorities for integrated soil fertility work and practices
4. Undertake integrated soil fertility practices as directed	<p>4.1. Integrated soil fertility practices are undertaken in compliance with the agreed approach and <b><i>ISFM implementation process</i></b></p> <p>4.2. Work is undertaken according to organization guidelines, instruction, industry best practice and community expectations, and work health and safety policies and procedures</p> <p>4.3. Cultural customs and protocols are respected throughout the performance of work</p>
5. Review and report work activities	<p>5.1. Review processes of ISFM practices are provided</p> <p>5.2. Recording and documentation of ISFM activities are carried out in standard format and farm project procedures</p> <p>5.3. Any variations from standards or procedures are reported</p>

Variable	Range
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Manual labeling equipment, measuring tape,</li> <li>• Cutting tools - scissors, secateurs, knives, pruning knives, hand saw, sharpening stones, file, piano wire,</li> <li>• Knives, secateurs, spades, forks, ladders, hoes, packing equipment, boxes, bins and buckets, hoses, and hose fittings.</li> <li>• Media trays, dibblers, and rubbish bins. Wheelbarrows, trowel, trolleys, hand sprayers,</li> <li>• Nylon rope, pegs, pots, hand lenses, germinating media, watering can, plastic bags, cleaning equipment,</li> <li>• Clearing hand tools(machete, axes, etc),</li> <li>• First aid kits, hand gloves, and helmet, safety equipment,</li> <li>• Digging tools -, digging hoe, digging forks, digging forks, spade,</li> </ul>
Instructions	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Enterprise policies and procedures, manufacturer instructions, material safety data sheets (MSDS), specifications, and Standard Operating Procedures (SOP) or verbal or written directions from the manager, supervisor, or senior operator;</li> <li>• Work notes, routine maintenance schedules;</li> <li>• Manufacturers service specifications and operators manuals;</li> <li>• Waste disposal, recycling, and re-use guidelines; and</li> <li>• OHS procedures.</li> </ul>
Environmentally appropriate	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Emissions free,</li> <li>• Less likely to cause erosion,</li> <li>• Less fire incidence,</li> <li>• Avoiding leakages, spills,</li> </ul>

	<ul style="list-style-type: none"> <li>• Fewer odors organic dust,</li> <li>• Minimum water pollution from run-off or leaching,</li> <li>• Avoidance of hazardous substances,</li> <li>• Reduced soil-borne micro-organisms,</li> <li>• Appropriate use of chemical fertilizers</li> </ul>
PPE	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Overalls and gloves, safety goggles and face masks, steel-capped boots/shoes, sunhats, and sunscreen lotion.</li> </ul>
Physical, chemical & biological properties of soil	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Physical properties - soil texture, structure,</li> <li>• Chemical properties - Soil ph, mineral balances, and organic matter levels, salinity and sodicity,</li> <li>• Biological properties - biotic and abiotic factors.</li> </ul>
Principles of ISFM	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• ISFM as a strategic goal,</li> <li>• Management within ISFM,</li> <li>• Agro minerals in ISFM,</li> <li>• Organic resource management,</li> <li>• Soil biota and a soil health</li> </ul>
Components of ISFM practices	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Agricultural practices,</li> <li>• Organic resources,</li> <li>• Inorganic fertilizers and Improved germplasm</li> </ul>
Best ISFM and indigenous practice	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Conservation agriculture,</li> <li>• Cultivating leguminous cover crop,</li> <li>• Pasture systems,</li> <li>• Mulching,</li> <li>• Composting,</li> <li>• Crop rotations,</li> <li>• Grazing management systems,</li> <li>• Rhizobium inoculation,</li> <li>• Green manure,</li> <li>• Cultivating nitrogen-fixing shrubs and trees,</li> </ul>
Materials	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Animal mortalities, biosolids such as sewage sludge, crop residuals, dairy waste,</li> <li>• Food organics such as food waste, kitchen waste, food processing waste,</li> <li>• Forestry residuals, manures, organic sludge, paper mill wastes, paper-based materials,</li> <li>• Plant materials such as garden organics, green organics, green waste, yard waste, sewage facility grit and screenings, wood and timber (not treated),</li> <li>• Other organic waste or by-product of processing.</li> </ul>
Relevant information	<p>May include, but not limited to soil fertility status, soil type, agro-ecology, management practices, current agronomic practices,</p>



	availability of fertilizers
ISFM implementation process	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Soil fertility diagnosis,</li> <li>• Soil fertility management advice,</li> <li>• Dissemination of ISFM technologies,</li> <li>• Designing ISFM adoption projects,</li> <li>• Implement ISFM at farmer's field and landscape level</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills competence to:</p> <ul style="list-style-type: none"> <li>• Describe the principles and components of ISFM practices</li> <li>• Inspect, assess, Identify, confirm, locate, handle and maintain raw materials, products, and physical contaminants on site and acceptability against established criteria</li> <li>• Undertake Integrated soil fertility practices as directed</li> <li>• Record, document, and report any variations from standards or procedures to the supervisor.</li> </ul>
Required Knowledge and Attitudes	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Principles of ISFM practices</li> <li>• Components of ISFM practices</li> <li>• Safe work practices relevant to the tasks being undertaken</li> <li>• Raw materials, products, and physical contaminants on site and acceptability against established criteria</li> <li>• Site arrangement and segregation of materials and products to avoid contamination</li> <li>• The site and machinery security requirements</li> <li>• Handling and reporting non-conformances</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Apply principles of ISFM practices</li> <li>• Apply safe work practices relevant to the tasks being undertaken</li> <li>• Inspect, assess, Identify, confirm, locate, handle and maintain raw materials, products, and physical contaminants on site and acceptability against established criteria</li> <li>• Maintain site arrangement and segregation of materials and products to avoid contamination</li> <li>• Provide soil remedial interventions based on the finding</li> <li>• Maintain site and tools &amp; equipment requirements</li> <li>• Handle and report non-conformances</li> </ul>
Resource Implications	<p>Access is to real or appropriately simulated situations, including work areas, materials, and equipment, and information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	<p>Competence may be assessed in the workplace or a simulated workplace setting.</p>

<b>Occupational Standard: Natural Resources Conservation and Development Level III</b>	
<b>Unit Title</b>	<b>Undertake Water Harvesting Technologies</b>
<b>Unit Code</b>	<b><a href="#">AGR NRC3 07 0322</a></b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills, and attitude to design and construct micro catchments, macro catchments, and floodwater harvesting structures.

<b>Element</b>	<b>Performance Criteria</b>
1. Design and construct micro-catchment's water harvesting structures	<p>1.1. Relevant <i>sources of information</i> are identified and used for the purpose</p> <p>1.2. Appropriate <i>OHS requirements</i> are identified and followed throughout work processes</p> <p>1.3. Different <i>micro-catchment water harvesting</i> structures are identified following the watershed guideline.</p> <p>1.4. The adaptability of different micro-catchment water harvesting structures is assessed based on topography and crop type.</p> <p>1.5. Community awareness and participation are enhanced using standard techniques.</p> <p>1.6. Design criteria and specifications are set for the chosen micro-catchment water harvesting structure considering soil type, slope, and crop type.</p> <p>1.7. Designed structures are constructed based on technical procedures.</p>
2. Design and construct macro catchments techniques	<p>2.1. Different <i>macro catchments</i> types are identified based on information</p> <p>2.2. Identified macro catchments are designed based on necessary information</p> <p>2.3. Materials, <i>tools, and equipment</i> are selected to complete macro catchment work in line with the construction schedule.</p> <p>2.4. Designed structures are constructed based on technical procedures in consideration of desired outcome and prevailing <i>hazard</i> conditions</p> <p>2.5. Water is harvested and supplied according to the demand</p>
3. Design and construct floodwater harvesting techniques	<p>3.1. <i>Different floodwater harvesting</i> types are identified based on information</p> <p>3.2. Identified floodwater harvesting is designed based on necessary information</p>

	3.3. Designed structures are constructed based on technical procedures
	3.4. Water is harvested and supplied according to the demand

Variable	Range
Sources of Information	May include, but not limited to: <ul style="list-style-type: none"> <li>Organizational rules, regulations, and guidelines</li> <li>Internet, related books, and related materials</li> <li>Technical manuals</li> <li>Workplace guidelines</li> <li>Recorded documents/logo/history</li> </ul>
OHS requirements	May include, but not limited to: <ul style="list-style-type: none"> <li>OHS hazard identification, risk assessment and control</li> <li>Implement procedures for dealing with hazardous events</li> </ul>
Micro-catchment water harvesting	May include, but not limited to: Negarim, small semi-circular bund, water collection trench, eyebrow basin, contour ridges, etc.
Tools and equipment	May include, but not limited to: <ul style="list-style-type: none"> <li>Line level/A-frame, String, Graduated staff, Clinometers, Altimeter, Measuring tape, Digging instruments, Soil auger, water can, Nozzles, Main and lateral lines, Emitters, Filter, Take-off valves, Flow control valves, Double-ring infiltrometer, Soil sampler(Auger), Stop-watch, Ranging pole,</li> <li>Strings, Pegs, Current meter, Equipment for detecting salinity level (PH meter, etc.), Water tank /pump, Hooker, Soil texture chart, Compass, GPS, Aerial photographs, Top maps, Automatic level, and Gabion Wire box</li> </ul>
Macro-catchments	May include, but not limited to: Large semi-circular bund, trapezoidal bund, Hillside terrace etc.
Hazard	May include, but not limited to: <ul style="list-style-type: none"> <li>Disturbance or interruption of services,</li> <li>Solar radiation, dust,</li> <li>Soil- and water-borne micro-organisms,</li> <li>Sharp hand tools and equipment,</li> <li>Manual handling,</li> <li>Falling objects, and uneven Surfaces.</li> </ul>
Different floodwater harvesting	May include, but not limited to: Floodwater harvesting within the stream bed, Floodwater diversion

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>Collect and analyze metrological data</li> <li>Identify different micro-catchments, macro-catchments, and floodwater harvesting techniques</li> <li>Organize materials</li> </ul>

Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Water harvesting technology principles</li> <li>• Principles of hydrology</li> <li>• Site selection techniques</li> <li>• Crop type and crop water requirement</li> <li>• Design and construction methods</li> <li>• Implementation approach</li> <li>• Maintenance</li> <li>• Watershed management principles</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Select site, design, constructs, and maintain in-situ moisture harvesting technologies.</li> <li>• Undertake water harvesting activities on-site by using appropriate tools and equipment with the active participation of the local community.</li> </ul>
Resource Implications	Access is to real or appropriately simulated situations, including work areas, materials, and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or a simulated workplace setting.

Occupational Standard: Natural Resources Conservation and Development Level III	
<b>Unit Title</b>	<b>Implement and monitor Agroforestry Practices</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC3 08 0322</u></a>
<b>Unit Descriptor</b>	This unit covers knowledge, skills and attitude to assess and analyze the local situation for selection, implementation and monitoring of appropriate agro-forestry practices suitable to specified agroecology.

<b>Element</b>	<b>Performance Criteria</b>
1. Identify the agroforestry technologies, packages, or practices	<p>1.1. The <i>various aspects</i> of each technological requirement are assessed and identified</p> <p>1.2. The agro-forestry package is analyzed /identified to determine its suitability for adoption/adaptation in the specified area.</p> <p>1.3. Cost-benefit analysis of the package is worked out</p> <p>1.4. Relevant solutions are identified and priorities set in accordance with the resources available</p>
2. Implement appropriate agroforestry technologies	<p>2.1. Applicable <i>OHS, legislative</i> and <i>organizational requirements</i> are observed</p> <p>2.2. Appropriate guidelines for implementing technological packages are followed</p> <p>2.3. Different Agroforestry practices are identified and promoted.</p> <p>2.4. Agroforestry technologies are identified based on their ecological and socio-economic importance</p> <p>2.5. Agroforestry technologies are practiced for soil productivity and protection.</p>
3. Identify and Implement potential income generation alternatives relevant to the community	<p>3.1 The target community is informed about the income generation options according to workplace manuals</p> <p>3.2 The target community is organized and supplied with the inputs according to their interests related to income-generating development options.</p> <p>3.3 Short-term training on the selected income-generating forest development tasks are provided based on organizational work manuals.</p> <p>3.4 The target community is encouraged to enact the activities according to the plan of action designed.</p> <p>3.5 Continuous technical support is provided based on organizational working standards.</p> <p>3.6 Market linkages are facilitated to promote the economic growth of beneficiary households according to organizational working guidelines</p>

4. Monitor and review agroforestry practice	<p>4.1. <b>Communication</b> with the community is established and maintained following <b>agroforestry practice</b> requirements</p> <p>4.2. <b>Agro-forestry operations</b> are monitored in a safe manner and following legislative requirements and <b>environmental management systems</b>, organizational policies, and procedures</p> <p>4.3. Organization of duties, practices, equipment, and materials are monitored following OHS requirements and organizational procedures</p> <p>4.4. Operational plans and site practices are reviewed for potential improvement, modifications, and time savings</p> <p>4.5. Community and organization of <b>environmental goals</b> are monitored and recorded</p> <p>4.6. <b>Training</b> and <b>operational controls</b> are monitored to be following workplace procedures</p> <p>4.7. Improvement recommendations are recorded and reviewed for resourcing requirements</p> <p>4.8. Plans to introduce change are made in consultation with the community and <b>appropriate personnel</b></p>
5. Record and report information work outcomes	<p>5.1. Agro-Forestry operation procedures are <b>recorded and reported</b> to the appropriate personnel following workplace procedures</p> <p>5.2. Problems or difficulties in completing work to standards or timelines are reported to the supervisor.</p> <p>5.3. Work completion and work outcomes are documented and reported in a standard format to the supervisor.</p>

Variable	Range
Various aspects	May include, but not limited to: <ul style="list-style-type: none"> <li>• Bio-physical,</li> <li>• Socioeconomic,</li> <li>• Environmental and Cultural</li> </ul>
OHS requirements	May include, but not limited to: <ul style="list-style-type: none"> <li>• The use of PPE and clothing</li> <li>• Safety equipment</li> <li>• First aid equipment</li> <li>• Fire fighting equipment</li> <li>• Hazard and risk control</li> <li>• Elimination of hazardous materials and substances</li> <li>• Manual handling including shifting, lifting, and carrying</li> <li>• Machine isolation and guarding</li> </ul>
Legislative requirements	May include, but not limited to: <ul style="list-style-type: none"> <li>• Enterprise agreements</li> <li>• Industrial relations</li> <li>• Confidentiality and privacy</li> </ul>

	<ul style="list-style-type: none"> <li>• OHS</li> <li>• Environment protection</li> <li>• Equal opportunity</li> <li>• Anti-discrimination</li> <li>• Relevant industry codes of practice</li> <li>• Duty of care</li> <li>• Heritage and traditional land owner issues</li> </ul>
Organizational requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Legal, organizational and site guidelines, policies and procedures relating to own role and responsibility,</li> <li>• Quality assurance, procedural manuals, quality and continuous improvement processes and standards,</li> <li>• OHS, emergency and evacuation,</li> <li>• Ethical standards,</li> <li>• Recording and reporting,</li> <li>• Access and equity principles and practices,</li> <li>• Equipment use, maintenance and storage,</li> <li>• Environmental management (waste disposal, recycling and re-use guidelines)</li> </ul>
Communication	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Verbal and non-verbal language,</li> <li>• Constructive feedback, active listening, questioning to clarify and confirm understanding,</li> <li>• Use of positive, confident and cooperative language,</li> <li>• Use of language and concepts appropriate to individual social and cultural differences,</li> <li>• Control of tone of voice and body language</li> </ul>
Agro-forestry	<p>Is a collective name for land use systems and technologies where woody perennials (trees, shrubs, palms, bamboos etc.) Are deliberately used on the same land management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence.</p>
Agro-Forestry practice	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Agro-silvicultural: (Improved fallow, Tanguya, Alley cropping/hedgerow intercropping, Multilayer tree garden, Multipurpose trees on crop lands)</li> <li>• Agro-silvopastoral: (Trees on rangeland or pastures, Protein banks, Plantation crops with pasture and animals )</li> <li>• Silvopastoral: (Home gardens involving animals, Multipurpose woody hedgerows and wood lots, Apiculture with trees, Aqua forestry)</li> </ul>
Agro-forestry operations	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Lopping,</li> <li>• Pollarding</li> <li>• Coppice</li> </ul>
Environmental management systems	<p>May include, but not limited to:</p>

	<ul style="list-style-type: none"> <li>• Environmental policy which ensures compliance,</li> <li>• Improvement and prevention and the continuous cycle of plan,</li> <li>• Implement, review and improve environmental practices and systems</li> </ul>
Environmental goals	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Environmental considerations and actions for operational and activity interface,</li> <li>• Material, energy and other resource use,</li> <li>• Emission control, waste generation and control,</li> <li>• Product and service use,</li> <li>• Land and infrastructure interaction and accident prevention</li> </ul>
Training	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• In-house or external training programs or one-on-one supervision</li> </ul>
Operational controls	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Measurement of improvement outcomes,</li> <li>• Coaching and mentoring of personnel in regard to new methodologies and</li> <li>• Control of environmental conditions</li> </ul>
Appropriate personnel	<p>May include safety officers, supervisors, suppliers, clients, colleagues and managers</p>
Records and reports	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Agro-forestry practices,</li> <li>• Quality outcomes or technology requirements</li> <li>• OHS and hazard issues,</li> <li>• Quality outcomes or technology requirements</li> <li>• Difficulties or problems</li> <li>• Wastage/damage of tools, equipment, and machinery</li> <li>• Workout comes</li> <li>• It May be manual, using a computer-based system, or another appropriate organizational communication system</li> </ul>
Pollarding	<p>This is a management system that deals with the cutting trees at a height of 2m from the ground. The height helps in protecting the young emerging shoots from the damage of animals. Since the pollarded tree stays for a longer period of time, the opportunity of volume increment will be high. Normally the standing trees in such practice are used for timber production</p>
Coppice	<ul style="list-style-type: none"> <li>• Cut down the whole stem/shoot of the tree from the ground level to get artificial regeneration and one or two coppices (small sapling) are left for regeneration in the future.</li> </ul>
Lopping	<p>Is the application of partial or full removal of branches for fuel wood, fodder production, or mulching. Before the application of this management practice, one should properly know the response of the species to the practice</p>



<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Identify, explain and demonstrate agro-forestry technologies packages or practices</li> <li>• Perform cost-benefit analysis</li> <li>• Apply OHS, legislative and organizational requirements</li> <li>• Communicate effectively</li> <li>• Identify problems, environmental issues, and equipment faults and demonstrate appropriate response procedures</li> <li>• Provide training on the income-generating forest development tasks</li> <li>• Describe and monitor agro-forestry operations and practices</li> <li>• Apply procedures for the recording, reporting, and maintenance of workplace records and information</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• The role of agro forestry for soil productivity and Conservation.</li> <li>• Component interaction.</li> <li>• Socio-economic and agro-forestry technologies</li> <li>• Species identification.</li> <li>• Rural development and leadership</li> <li>• Requirements and codes of practice relevant to monitor agro-forestry such as lopping, pollarding and coppice operations.</li> <li>• Site standards, requirements, policies and procedures</li> <li>• Principles of cultural diversity and access and equity</li> <li>• Environmental protection requirements, including the safe disposal of waste material</li> <li>• Communication channels and protocols</li> <li>• Problem identification and resolution</li> <li>• Types of equipment and procedures for their environmentally friendly use, operation and maintenance</li> <li>• Forestry operations, techniques and technology operational systems</li> <li>• Environmental management systems</li> <li>• Procedures for the recording, reporting and maintenance of workplace records and information</li> <li>• Appropriate mathematical procedures for estimating and measuring</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Identify the agro-forestry technologies packages or practices</li> <li>• Comply with legislation, regulations, standards, codes of practice and established safe practices and procedures for:</li> <li>• Identify the community affected by forest development activities</li> </ul>

	<ul style="list-style-type: none"> <li>• Identify and implement potential income generation alternatives relevant to the community</li> <li>• Use and maintain PPE and clothing</li> <li>• Identify problems, environmental issues and equipment faults and demonstrate appropriate response procedures</li> <li>• Use appropriate communication and interpersonal techniques with colleagues and others</li> <li>• Implement guidelines for technological packages or manuals</li> <li>• Accurately record and report information workplace information, and maintain documentation</li> </ul>
Resource Implications	Access is to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the workplace or in a simulated workplace setting.

Occupational standard: Natural Resources Conservation and Development Level III	
Unit Title	Conduct Forest Inventory
Unit Code	<a href="#">AGR NRC3 09 0322</a>
Unit Descriptor	This unit covers knowledge, skills and attitude to operate measuring tools and equipment, surveying and delineation of forest area, estimate volume and yield of stand and establishment of forest database management system for forest utilization.

Element	Performance Criteria
1. Operate measuring tools and equipment	<p>1.1. Available tools and equipment are procured based on demand.</p> <p>1.2. Relevant <i>sources of information</i> for the purpose are identified and used for the purpose</p> <p>1.3. Appropriate <i>OHS requirements</i> for the work to be carried out are identified and followed throughout work processes</p> <p>1.4. Materials, <i>tools and equipment</i> relevant to work activities are identified and prepared according to organizational guideline</p> <p>1.5. Technicians are trained and acquainted with newly introduced for efficient utilization of tools and equipment.</p> <p>1.6. Tools and equipment are stored according to forest utilization procedures.</p>
2. Survey and delineate forest area	<p>2.1. Preliminary survey is conducted based on information needed and organizational requirements.</p> <p>2.2. Forest area is mapped based on collected baseline data to the mapping scale.</p> <p>2.3. Mapped area is classified into blocks and compartments based on age and species type.</p> <p>2.4. Formal survey is conducted based on needed information as per organizational requirements.</p>
3. Use appropriate sampling techniques	<p>3.1. Random, systematic and cluster <i>sampling</i> techniques are applied based on the population size and type. /</p> <p>3.2. <i>Sample size</i> is determined based on population size.</p>
4. Estimate volume and yield of stand	<p>4.1. Diameter and height of stand are measured to calculate volume of stand</p> <p>4.2. Mean annual and current annual increment of stand are calculated to understand current and annual status of stand</p> <p>4.3. Cost-benefit analysis is determined based on estimated yield</p>
5. Record data in data base management	<p>5.1. Data is collected based on available resources.</p> <p>5.2. Collected data is encoded, analyzed and interpreted using the</p>

system	established data base management system 5.3.Information is available to users through various means of communication
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Variable	Range
Sources of Information	May include, but not limited to: <ul style="list-style-type: none"> <li>• Organizational rules, regulation and guidelines</li> <li>• Internet, related books and related materials</li> <li>• Technical manuals</li> <li>• Workplace guidelines</li> <li>• Recorded documents/logo/history</li> </ul>
OHS requirements	May include, but not limited to: <ul style="list-style-type: none"> <li>• Use kit bags and helmets</li> <li>• Be far away from home range of wild animals</li> <li>• Take care of landslide at hilly areas</li> </ul>
Tools and equipment	May include, but not limited to: <ul style="list-style-type: none"> <li>• Measuring tape</li> <li>• Ranging pole</li> <li>• Peg</li> <li>• Calliper</li> <li>• Diameter tape</li> <li>• Hypsometer</li> <li>• Clinometers</li> <li>• Compass</li> <li>• Bark gage</li> <li>• Topo map</li> <li>• Arial photo</li> <li>• Mirror stereoscope</li> <li>• GPS</li> <li>• ARCGIS and Remote Sensing Software</li> <li>• Computer and stationary</li> </ul>
Sampling	Refers to a technique used to take representative unit of population. It includes random, cluster, systematic and stratified sampling.
Sample size	May be a proportion used to conduct sample e.g.10 %,20 % of a given population
Mean annual increment	Refers to average volume growth recorded for a stand
Current annual increment	Refers to volume growth recorded during growing season.

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>• Operate and maintain measuring tools and equipment</li> <li>• Map forest area</li> <li>• Estimate yield and volume of stand</li> <li>• Record data produce spread sheet</li> </ul>
Required Knowledge and Attitude	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• Forestry</li> </ul>

	<ul style="list-style-type: none"> <li>• Forest Management</li> <li>• Surveying</li> <li>• Computer</li> <li>• Data management system</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Operate measuring tools and equipment</li> <li>• Survey and delineate forest area</li> <li>• Use appropriate sampling techniques</li> <li>• Estimate volume and yield of stand</li> <li>• Operate forest data base management system</li> <li>• Measure tree diameter</li> <li>• Measure tree height</li> </ul>
Resource Implications	Access is to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Natural Resources Conservation and Development Level III	
Unit Title	Carryout Sustainable Non-wood Forest Product Utilization
Unit Code	<a href="#">AGR NRC3 10 0322</a>
Unit Descriptor	This unit covers knowledge, skills and attitude to undertake and monitor assessment of the existing potential; carry out conservation, tapping, extraction, collection, and marketing of Non-wood forest products in sustainable manner.

Element	Performance Criteria
1. Prepare for monitoring	<p>1.1. <i>Environmental parameters</i> are monitored against the needs of the plants and enterprise guidelines.</p> <p>1.2. Environmental parameters are altered, as, to meet the needs of nursery plants and <i>market requirements</i>.</p> <p>1.3. Applicable <i>OHS, legislative</i> and <i>organizational requirements</i> relevant to monitoring are identified and followed</p>
2. Perform Gum, Incense and Resin identifications, extraction, processing and marketing	<p>2.1 Potential gum, incense, and resin producing areas and species are identified based on their agro-ecological zone.</p> <p>2.2 Strategic plan is developed for use of available resource based on financial and human resource.</p> <p>2.3 Matured gum, incense and resin bearing trees are marked for tapping</p> <p>2.4 Gum, incense, and resin are tapped and extracted using appropriate technologies.</p> <p>2.5 Tapped gum, incense and resin are collected using appropriate materials</p> <p>2.6 Gum, incense and resin products are graded based on <i>quality standard characteristics</i></p> <p>2.7 Graded gum, incense and resin are supplied to market based on demand and organizational requirements</p>
3. Produce Mushrooms	<p>3.1. Criteria are set for identification of edible mushrooms from poisonous ones</p> <p>3.2. Edible mushrooms are identified from poisonous mushrooms based on various identification criterion</p> <p>3.3. Materials like agar and growing media are prepared for cultivation and utilization of edible mushrooms.</p> <p>3.4. Edible mushroom is cultivated and managed based on organizational requirement</p> <p>3.5. Edible mushrooms are collected, packed, and made ready for</p>

	market. 3.6. Packed edible mushrooms are supplied to local market in accordance with hygienic requirement and market demand
4. Manage and Utilize Bamboo	4.1. Potential bamboo producing areas are identified based on their agro-ecological zone. 4.2. Existing species of bamboo in each agro-ecological zone are identified and propagated based on various means of propagation 4.3. Matured bamboos are harvested and processed for various purposes based on available technology and handled with appropriate post-harvest handling techniques. 4.4. Market access for harvested bamboo is assessed and supplied to local, regional, and national level based on its quality
5. Conserve, manage, utilize and market medicinal plants	5.1. Potential medicinal plants are identified based on their medicinal value 5.2. Identified medicinal plants are documented in herbarium based on herbarium techniques 5.3. Endangered medicinal plants are identified based on their abundance and density. 5.4. Conservation and utilization strategy is developed in participation with the community. 5.5. Medicinal plants are managed and utilized in accordance with their use and management types 5.6. Conserved medicinal plants are made ready for market based on parts used as a medicine 5.7. Identified parts are supplied to pharmaceutical industries based on demand and type of industry.

Variable	Range
Environmental parameters	May include, but not limited to: <ul style="list-style-type: none"> <li>• Light, temperature, humidity, and wind.</li> </ul>
Market requirements	May include size of plant, color, time of sale, and number of blooms.
OHS requirements	May include, but not limited to: <ul style="list-style-type: none"> <li>• Use kit bags, helmets, gloves , eye goggle</li> <li>• Post precaution notice in appropriate place</li> <li>• Properly identify poisonous mushrooms</li> </ul>
Legislative requirements	May include, but not limited to: <ul style="list-style-type: none"> <li>• Award and enterprise agreements</li> <li>• Industrial relations</li> <li>• Confidentiality and privacy</li> <li>• OHS regulation</li> </ul>

	<ul style="list-style-type: none"> <li>• The environment protection</li> <li>• Equal opportunity</li> <li>• Anti-discrimination</li> <li>• Relevant industry codes of practice</li> <li>• Duty of care</li> <li>• Heritage and traditional land owner issues</li> </ul>
Organizational requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Legal, organizational and site guidelines, policies and procedures relating to own role and responsibility,</li> <li>• Quality assurance, procedural manuals, quality and continuous improvement processes and standards,</li> <li>• OHS, emergency and evacuation,</li> <li>• Ethical standards,</li> <li>• Recording and reporting,</li> <li>• Access and equity principles and practices,</li> <li>• Equipment use, maintenance and storage, environmental management (waste disposal, recycling and re-use guidelines)</li> </ul>
Quality standard characteristics	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Size, color and fragrance of gum, incense and resin</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• species(tree seed, matured trees)</li> <li>• Standard documents</li> <li>• Tapping tools and equipment</li> <li>• Spade</li> <li>• Shovel</li> <li>• Digging tools</li> <li>• Harvesting tools and equipment</li> <li>• Transportation facilities</li> <li>• Canvas carpet</li> <li>• Agar</li> <li>• Sugar</li> </ul>
Sources of Information	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Organizational rules, regulation and guidelines</li> <li>• Internet, related books and related materials</li> <li>• Technical manuals</li> <li>• Sharing best practice</li> <li>• Virtual library</li> <li>• Workplace guidelines</li> <li>• Recorded documents/logo/history</li> <li>• Herbarium</li> <li>• Pressing materials</li> </ul>
Communication	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Verbal and non-verbal language,</li> <li>• Constructive feedback, active listening,</li> <li>• Questioning to clarify and confirm understanding,</li> <li>• Use of positive, confident and cooperative language,</li> <li>• Use of language and concepts appropriate to individual social</li> </ul>



	and cultural differences, control of tone of voice and body language
<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Apply OHS, legislative and organizational requirements relevant to monitoring</li> <li>• Describe processes of extracting, collecting and sorting gum, incense and resin</li> <li>• Identify and describe food, medicinal and toxic mushrooms</li> <li>• Identify and describe bamboo utilization purposes and techniques.</li> <li>• Tap, extract and grade gum, incense, and resin using appropriate technologies.</li> <li>• Prepare agar and growing media for cultivation and utilization of edible mushrooms</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Forest development and conservation</li> <li>• Natural resources management</li> <li>• Flora protection principles</li> <li>• Extracting, collecting and sorting gum, incense and resin</li> <li>• Environmental requirements and mushroom culture</li> <li>• Post harvest handling of forest products</li> <li>• Harvesting and handling of collected mushrooms</li> <li>• Classification and identification of food, medicinal and toxic mushrooms</li> <li>• Forest products utilization techniques</li> <li>• Environmental requirements and bamboo plants</li> <li>• Bamboo plants classification</li> <li>• Harvesting and handling of harvested bamboo plants</li> <li>• Maintenance requirements of tools and equipment used for harvesting.</li> <li>• OHS requirements of employees and legislative requirements, procedures and codes of practice</li> <li>• Record keeping relevant to the work function.</li> <li>• Enterprise requirements for handling and disposal of harvesting lands.</li> <li>• Environmental and economic benefits of bamboo.</li> <li>• Common problems that may occur while performing harvesting activities</li> <li>• Harvesting methods for a range of plants.</li> <li>• Post harvest handling of medicinal products</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Tap, extract, collect, sorting, Grade and market gum, incense and resin in sustainable manner</li> <li>• Identify, cultivate, collect and market cultivated mushroom</li> <li>• Identify, harvest, handle and market potential bamboo species in sustainable manner</li> </ul>

	<ul style="list-style-type: none"> <li>• Implement enterprise requirements for handling and disposal of harvesting lands.</li> <li>• Identify, conserve, manage, utilize and market medicinal plants in sustainable manner</li> </ul>
Resource Implications	Access is to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

**Occupational Standard: Natural Resources Conservation and Development Level III**

<b>Unit Title</b>	<b>Apply Digital Technology in Agriculture</b>
<b>Unit Code</b>	<b><a href="#">AGR NRC3 11 0322</a></b>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to Understand the Concept of digital technology, apply Digital technologies among rural population and recording and documentation system.

<b>Element</b>	<b>Performance Criteria</b>
1. Understand the Concept of digital technology	1.1. <b>Digital technologies</b> are understood to apply digital technology. 1.2. <b>Importance of digital technologies</b> are understood in agricultural sector 1.3. <b>Role of digital technologies</b> in agriculture is identified to enhance agricultural development. 1.4. <b>Principles of Agricultural technology</b> are identified to apply in the agricultural sector 1.5. Mobile/Smart phones and template functions are understood to collect data and use in the reporting system
2. Apply Digital technologies among rural population and farmers	2.1. Require <b>tools and equipment</b> are identified and coordinated to apply digital technologies 2.2. Digital technology <b>infrastructures</b> are identified to implement in agricultural development 2.3. Digital technology skills are developed among the rural population 2.4. Digital <b>Agri-preneurial</b> skill is developed for agricultural transformation. 2.5. <b>Digital technology communication tools are</b> used to collect data and reporting system 2.6. Digital technologies, tools and <b>techniques</b> are used to deliver digital education 2.7. Implementation of digital technologies is promoted to enhance productivity

3. Recording and documentation	<p>3.1. <b>Data collecting formats</b> are developed based on the needs</p> <p>3.2. <b>Data collection methodologies</b> are identified and selected based on the intended objectives</p> <p>3.3. Collected data are organized, analyzed and interpreted based on the intended objectives</p> <p>3.4. Organized, analyzed and interpreted data are documented and reported</p> <p>3.5. Feedbacks are collected from the relevant stakeholders</p>
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Variable	Range
Digital technologies	May include, but not limited to: <ul style="list-style-type: none"> <li>• Internet</li> <li>• Computer</li> <li>• Smart phone</li> <li>• Tablet</li> <li>• GPS</li> <li>• Web browser</li> </ul>
Importance of digital technologies	May include, but not limited to: <ul style="list-style-type: none"> <li>• Sharing and searching information</li> <li>• Collect data</li> <li>• Enable storage of massive information</li> <li>• Time saving</li> <li>• Cost minimizing</li> <li>• Data accuracy and reliability</li> <li>• Data centralizing and administration</li> <li>• Improve collaboration</li> <li>• Enhance creativity</li> <li>• Enhances work accuracy</li> </ul>
Role of digital technologies	May include, but not limited to: <ul style="list-style-type: none"> <li>• Create connectivity between operations</li> <li>• Facilitate communication in agricultural sectors</li> <li>• Globalize communication</li> <li>• Strengthen market linkage</li> </ul>
Principles of Agricultural technology	May include, but not limited to: <ul style="list-style-type: none"> <li>• Design with user</li> <li>• Understand the existing ecosystem</li> <li>• Design for scale</li> <li>• Build for sustainability</li> <li>• Data driving</li> <li>• Reuse and improve</li> <li>• Address privacy and security</li> <li>• Collaborative</li> </ul>
tools and equipment	May include, but not limited to: <ul style="list-style-type: none"> <li>• Chargers</li> </ul>

	<ul style="list-style-type: none"> <li>• Computer</li> <li>• Smart phone</li> <li>• Tablet</li> <li>• I pad</li> <li>• GIS</li> <li>• Website</li> <li>• Online resources</li> <li>• Digital programs</li> </ul>
Infrastructures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Telecommunications utilities</li> <li>• Electricity power</li> <li>• Server</li> <li>• Information and communication Technologies</li> <li>• Mobiles Phones</li> <li>• Computers systems</li> </ul>
Agri-preneurial	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Online marketing</li> <li>• Online Learning</li> </ul>
Digital technology communication tools	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Smart phone</li> <li>• Cell phone</li> <li>• Email</li> <li>• Telegram</li> <li>• SMS</li> <li>• What's APP</li> </ul>
technique	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Video chat</li> <li>• Virtual meeting</li> <li>• E-learning</li> <li>• Email</li> <li>• Video conference</li> </ul>
Data collecting formats	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Google sheet</li> <li>• Templates</li> <li>• Ex-cell</li> <li>• Google drive storage</li> </ul>
Data collection methodologies	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Interview</li> <li>• Questionnaire</li> <li>• Surveying</li> <li>• Focus group discussion (FGD)</li> <li>• Case study</li> </ul>

### Evidence guide

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Critical aspects of competence	<p>Demonstrate knowledge and skills on:</p> <ul style="list-style-type: none"> <li>• Understand the basic digital technologies.</li> <li>• Use mobile/Smart phones and template to collect data and reporting the data</li> <li>• Understand the basic digital technology communication tools.</li> <li>• Identify the require tools and equipment to apply digital technologies</li> <li>• Apply digital technology</li> <li>• Understand the basic virtual meeting.</li> </ul>
Required knowledge and attitude	<p>Demonstrate knowledge on:</p> <ul style="list-style-type: none"> <li>• Understand the basic digital technology communication tools.</li> <li>• Understand the basic digital technologies.</li> <li>• New or upgraded technology performance</li> <li>• Environmental considerations</li> <li>• Appropriate performance evaluation.</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Use Digital technology communication to collect data and report system</li> <li>• Use digital technologies applications</li> <li>• Use software applications (word processing, spread sheets, data base management</li> <li>• Apply skills for accessing and using spreadsheets and databases</li> <li>• Literacy skills for data analysis and interpretation</li> <li>• Determine and confirm digital technology communication tools.</li> </ul>
Resources implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/written test</li> <li>• Observation/demonstration with oral questioning</li> </ul>
Context of assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

# LEVEL IV

<b>Occupational Standard: Natural Resources Conservation and Development Level IV</b>	
<b>Unit Title</b>	<b>Carryout Climate Change Adaptation and Mitigation Techniques</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC4 01 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to identify major weather and climatic factors influencing ecosystem and carryout the possible adaptation and mitigation measures to minimize disaster and risk on the surrounding environment.

<b>Element</b>	<b>Performance Criteria</b>
1. Interpret available weather and climate information	<p>1.1. <i>Weather and climate information</i> and warnings are regularly monitored to determine likely conditions.</p> <p>1.2. Potential variations in weather and climate conditions are anticipated and assessed according to warnings, weather patterns and historical experience.</p> <p>1.3. Possible weather condition and <i>climate impacts on environment</i> are identified</p> <p>1.4. <i>Stakeholders and key personnel</i> are informed of the anticipated impacts of weather and climate on environment.</p>
2. Carry out adaptation and mitigation measures	<p>2.1. <i>Appropriate adaptation and mitigation measures</i> are identified in accordance with organizational procedures and recommendations.</p> <p>2.2. Stakeholders and key personnel are informed and involved in the development of adaptation and mitigation measures.</p> <p>2.3. Suitable adaptation and mitigation measures are reviewed to ensure availability of <i>appropriate resources</i>, safety of personnel and environment.</p> <p>2.4. Adaptation and mitigation measures to minimize loss and damage of environment are implemented in accordance with organizational procedures and government policies and strategies.</p> <p>2.5. Adaptation and mitigation measures to ensure the safety of personnel are implemented in accordance with organizational procedures &amp; government policies and strategies.</p>
3. Monitor weather and climate effects during adverse conditions	<p>3.1. Weather and climate information and warnings are regularly monitored to determine ongoing suitability of current preventative and remedial actions.</p> <p>3.2. Preventative and remedial actions are adjusted and revised according to weather and climatic changes.</p>
4. Return to normal operations and documentations	<p>4.1. Weather and climate information and warnings are regularly monitored to determine the normal conditions have returned.</p> <p>4.2. Environment is inspected for damage in accordance with</p>

	<p>enterprise and organizational procedures and recommendations</p> <p>4.3. <b>All operations</b> are returned back into service in accordance with organizational procedures and recommendations and government policies and strategies.</p> <p>4.4. Effectiveness of preventative actions is reviewed and recommendations are developed to improve the process.</p> <p>4.5. Documentation is updated and reported in accordance with enterprise/site procedures.</p>
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Variables	Range
Weather and climate information	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Rainfall</li> <li>• Temperature</li> <li>• Humidity</li> <li>• Air pressure</li> <li>• Wind</li> <li>• Frost &amp; fog</li> <li>• Solar radiation</li> <li>• Water bodies</li> <li>• Aspect</li> </ul>
Climate impacts on environment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Air pollution</li> <li>• Flooding</li> <li>• Drought</li> <li>• Land degradation</li> </ul>
Stakeholders and key personnel	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Farmers</li> <li>• Community</li> <li>• Investors</li> <li>• Gov organizations</li> <li>• NGOs</li> <li>• Expertise</li> <li>• Research institutes</li> </ul>
Appropriate adaptation and mitigation measures	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Early warning</li> <li>• Soil and water conservation measures</li> <li>• Water harvesting</li> <li>• Irrigation</li> <li>• Using improved seed &amp; seedling</li> <li>• Utilization of improved technologies/alternative energy sources</li> <li>• Afforestation/plantation</li> <li>• Area closure</li> <li>• Rehabilitation</li> <li>• Saving</li> </ul>



	<ul style="list-style-type: none"> <li>• Utilization of renewable energy</li> <li>• Crop rotation</li> <li>• Different agro-forestry practices</li> <li>• Animal &amp; plant species selection</li> <li>• Productive safety net</li> </ul>
Appropriate resources	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Financial</li> <li>• Human</li> <li>• Physical</li> <li>• Tools and</li> <li>• Equipment</li> </ul>
All operations	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Agricultural activities</li> <li>• Forestry activities</li> <li>• Livestock &amp; fishery activities</li> <li>• Natural Resources management activities</li> <li>• Wildlife conservation activities</li> <li>• Biodiversity activities</li> <li>• Ecosystem conservation activities</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Assessment	<p>Must demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Implement OHS workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and Range</li> <li>• Identify and demonstrate different mitigation &amp; adaptation measures</li> <li>• Interpret weather and climate information</li> <li>• Describe appropriate preventative and remedial action for climate change</li> <li>• Identify basic procedures of early warning</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Adaptation and mitigation techniques</li> <li>• Interpretations of weather and climate information's</li> <li>• Monitoring weather and climate in adverse conditions</li> <li>• Applications of OHS</li> </ul>
Required skill	<p>Demonstrate skill to:</p> <ul style="list-style-type: none"> <li>• Conduct work in line with relevant legislation, regulations, polices, strategies and workplace procedures</li> <li>• Apply relevant sections of OHS legislation; organizational/site safety procedures</li> <li>• Interpret weather and climate information</li> <li>• Identify and carryout appropriate adaptation &amp; mitigation measures</li> <li>• Monitor weather and climate during adverse conditions</li> </ul>

Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Natural Resources Conservation and Development Level IV	
Unit Title	Conduct Forest Road Construction and Maintenance
Unit Code	<a href="#">AGR NRC4 02 0322</a>
Unit Descriptor	This unit covers knowledge, skills and attitude required to conduct planning, designing, construction and maintenance and monitoring and reviewing of forest road construction.

Element	Performance Criteria
1. Plan forest road construction and maintenance	<p>1.1. Applicable OHS, legislative and organizational <i>requirements</i> relevant to managing road construction and maintenance are identified and complied with</p> <p>1.2. <i>Logging</i> and <i>topography</i> details are obtained and assessed while applying <i>environmental management considerations</i></p> <p>1.3. <i>Road location</i>, design and construction requirements are identified and inspected</p> <p>1.4. Timeframe for use of the road and likely weather conditions is checked</p> <p>1.5. Log <i>extraction</i> methods and storage requirements for roads, tracks, equipment placement, falling and recovery rates and delivery schedules are calculated and documented</p> <p>1.6. <i>Communication</i> with others is established and maintained in accordance with OHS requirements</p>
2. Implement forest road construction	<p>2.1. Road and track design and construction plan are clearly communicated to site personnel to enable preparation</p> <p>2.2. Personnel, <i>materials</i> and <i>equipment</i> required for the construction are coordinated and scheduled in accordance with organization guidelines</p> <p>2.3. Operational procedures for roads are planned with site personnel in accordance with the design plan</p>
3. Maintain forest roads	<p>3.1. Roads and tracks are assessed for <i>maintenance</i> requirements and outcomes recorded in standard format in accordance with organizational guidelines</p> <p>3.2. <i>Personnel</i>, materials and equipment required for maintenance are coordinated and scheduled in accordance with organization guidelines</p> <p>3.3. Site environmental conditions are adhered to in accordance with relevant regulations</p> <p>3.4. Maintenance schedule for the site is organized in conjunction with operational personnel and source of equipment taking seasonal weather conditions in to consideration</p>
4. Monitor and review forest road construction and maintenance	<p>4.1. Monitoring schedule is developed and adhered to in accordance with the organization policy</p> <p>4.2. Checks are made to ensure the OHS procedures are observed and followed</p> <p>4.3. Checks are made to ensure the site environmental conditions are adhered to in accordance with regulations and organization policy</p>

5. Record and report work outcomes	<p>5.1. Road construction and maintenance process are recorded and reported to the <i>appropriate personnel</i></p> <p>5.2. Problems or difficulties in completing work to required standards or timelines are reported to supervisor.</p> <p>5.3. Materials, equipment and machinery wastage/damage are recorded and reported to supervisor</p> <p>5.4. Hazards information is communicated to work colleagues and the supervisor</p> <p>5.5. Work completion and work outcomes are documented and reported in standard format to the supervisor.</p>
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Variable	Range
OHS requirements	<p>Are to be in accordance with Federal and Regional state legislation and regulations, and organizational safety policies and procedures. Requirements include:</p> <ul style="list-style-type: none"> <li>• The use of PPE and clothing</li> <li>• Safety equipment</li> <li>• First aid equipment</li> <li>• Fire fighting equipment</li> <li>• Hazard and risk control</li> <li>• Elimination of hazardous materials and substances</li> <li>• Safe forest practices including required actions relating to forest fire</li> <li>• Manual handling including shifting, lifting and carrying</li> </ul>
Logging and topography	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Felling tree</li> <li>• Cutting into logs</li> <li>• Transport</li> <li>• Slope</li> </ul>
Environmental management considerations	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Ground growth, canopy, general forest lean, wind speed and direction, fallen trees, density of trees,</li> <li>• Ground slope, soil and water protection,</li> <li>• Ground hazards and obstacles</li> </ul>
Road location	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Near to main road</li> <li>• Accessible for log transportation</li> </ul>
Extraction	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Animal skidding</li> <li>• Man power</li> <li>• Tractor</li> <li>• Rail</li> </ul>
Communication	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Verbal and non-verbal language,</li> <li>• Constructive feedback, active listening, questioning to clarify and confirm understanding,</li> <li>• Use of positive, confident and cooperative language,</li> </ul>

	<ul style="list-style-type: none"> <li>• Use of language and concepts appropriate to individual social and cultural differences,</li> <li>• Control of tone of voice and body language</li> </ul>
Materials	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Road base, gravel, crushed rock, sand and bluestone, together with cords and pipes for water crossings</li> </ul>
Equipment	<p>May include, but not limited to: earthmoving equipment</p>
Maintenance	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Is to include the process of assessing road defects and undertaking the necessary rectification work</li> </ul>
Appropriate personnel	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Supervisors, suppliers, clients, colleagues, and managers</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Tools include road base, gravel, crushed rock, sand and bluestone, together with cords and pipes for water crossings.</li> <li>• Equipment include earthmoving equipment</li> </ul>
Records and reports	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Road construction and maintenance operations, difficulties or issues faced, environmental issues, recommendations for future work, results, costs, hazards, incidents or equipment malfunctions</li> <li>• May be manual, using a computer-based system or another appropriate organizational communication system</li> </ul>

### Evidence Guide

Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Monitor forest road construction and maintenance in accordance with the work order and within prescribed organizational tolerances</li> <li>• Coordinate community for the development of the roads in accordance with organizational requirements</li> <li>• Describe requirements and processes in forest road construction and maintenance</li> <li>• Record and report information about road construction and maintenance process in standard format</li> </ul>
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Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Applicable government legislative, regulatory requirements and codes of practice relevant to manage road construction and maintenance</li> <li>• Organizational and site standards, requirements, policies and procedures for managing road construction and maintenance</li> <li>• Environmental protection requirements, including the safe disposal of waste material</li> <li>• Communication channels and protocols</li> <li>• Problem identification and resolution</li> <li>• Types of tools and equipment and procedures for their safe use, operation and maintenance</li> <li>• Log extraction methods</li> <li>• Road construction and maintenance procedures</li> <li>• Road design and development</li> <li>• Procedures for recording, reporting and maintenance of workplace records and information</li> <li>• Appropriate mathematical procedures for estimation and measurement</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Plan forest road construction and maintenance</li> <li>• Implement forest road construction</li> <li>• Maintain forest roads</li> <li>• Monitor and review forest road construction and maintenance</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

<b>Occupational standard: Natural Resources Conservation and Development Level IV</b>	
<b>Unit Title</b>	<b>Implement Natural Resources Policies and Legislations</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC4 03 0322</u></a>
<b>Unit Descriptor</b>	This unit covers knowledge, skills and attitude required to implement natural resources management policies, rules and regulations; harmonize local and national policies, International conventions, treaties and adaptation of these to the local conditions.

<b>Element</b>	<b>Performance Criteria</b>
1. Monitor and supervise the application of related Policies and legislations	<p>1.1. Forestry, wildlife, land, water and soils and related policies and legislations and industrial <b>rules and regulations</b> are identified and applied correctly.</p> <p>1.2. Community awareness is created regarding the updated rules and regulations</p> <p>1.3. Community involvement in monitoring and supervision is promoted in accordance with relevant laws</p>
2. Supervise the Identification and objective realization of natural resources property rights	<p>2.1. Ownership rights, either state, communal or private are properly identified and documented</p> <p>2.2. Objectives related to the conservation and sustainable use of resources are realized and specified</p> <p>2.3 Community awareness is checked for compliance</p>
3. Identify and analyze the role of formal and informal institutions	<p>3.1. The roles of formal and informal institutions related to Natural Resources Management are identified and analyzed</p> <p>3.2. Successful involvement of communities and rural population groups in activities related to natural resources management is secured and documented</p>
4. Facilitate and support local bye-laws formulation and implementation	<p>4.1. <b>Local by-laws</b> are formulated and implemented by communities in accordance with <b>socio-cultural setting</b> of society</p> <p>4.2. Revisiting/Revision of by-laws is assisted and documented in accordance with the current situation of the community</p> <p>4.3. Bye-laws are harmonized with existing rules and regulations</p>
5. Establish Informal institutions for conflict resolution	<p>5.1. <b>Source of conflicts</b> are identified through discussion with communities</p> <p>5.2. Conflict resolution committee members are elected from the community based on acceptance by community</p> <p>5.3. Conflicts are resolved based on various conflict resolution mechanisms</p> <p>5.4. Conflicts which are not resolved are reported to respective authority</p>

<b>Variable</b>	<b>Range</b>
Rules and regulations	Are: <ul style="list-style-type: none"> <li>• Sets forth the operational powers or provisions and the use restrictions adopted by the association. Or</li> <li>• Specific articles describing and/or prohibiting behaviour, actions or conduct</li> </ul>
Local bye-laws	May include, but not limited to: <ul style="list-style-type: none"> <li>• Customs</li> <li>• Norms</li> </ul>
Socio-cultural setting	May include, but not limited to: <ul style="list-style-type: none"> <li>• The roles of different ethnic groups, gender and the culture; with all these elements combined it forms a personality.</li> <li>• Socio culture is the way people act and develop based around their surroundings</li> </ul>
Source of conflicts	May include, but not limited to: <ul style="list-style-type: none"> <li>• Scarcity of resources</li> <li>• Differences of individual interest</li> <li>• Poor policy</li> <li>• Lack of payment for environmental service</li> <li>• Population movement</li> <li>• Unfair resource distribution</li> <li>• Lack of access</li> <li>• Unregulated utilization of resources</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>• Aware community about policy and legislation</li> <li>• Describe forestry, wildlife, land, water and soils and related policies and legislations and industrial rules</li> <li>• Explain objectives related to the conservation and sustainable use of resources</li> <li>• Identify and implemented local by-laws</li> <li>• Identify conflict resolving techniques</li> <li>• Establish informal conflict resolution institutions</li> </ul>
Required Knowledge and Attitude	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• By-Laws</li> <li>• National rules and regulations on forestry, wildlife, water and soils conservation, small scale irrigation</li> <li>• Communication with community and Extension services</li> </ul>
Required skills	Demonstrate skills to: <ul style="list-style-type: none"> <li>• Monitor and supervise the application of related policies and legislations</li> <li>• Supervise the identification and objective realization of natural resources property rights</li> <li>• Supervise the identification of the role of formal and informal institutions</li> </ul>



	<ul style="list-style-type: none"> <li>• Facilitate and conduct local by-laws formulation and implementation</li> <li>• apply international conventions, treaties and protocols establish conflict resolution institutions</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Natural Resources Conservation and Development Level IV	
Unit Title	Apply Forest Management Practice
Unit Code	<a href="#">AGR NRC4 04 0322</a>
Unit Descriptor	This unit covers knowledge, skills and attitude required to estimate volume and yield estimation of forest stands through surveying; control (non-commercially thinning) of the species growing on site and determine stocking rate so as to ensure maximum vigor and optimum product outcome.

Element	Performance Criteria
1. Carryout and monitor thinning operations	<p>1.1. Thinning operation <i>tools and equipment</i>, parameters and method of operation are identified and checked with appropriate personnel</p> <p>1.2. Sample area is identified and trees are measured in accordance with organizational procedures</p> <p>1.3. Trees are marked for treatment in accordance with plan and organizational procedures</p> <p>1.4. Thinning operations are implemented in accordance with plans, budget, OHS and legislative requirements</p> <p>1.5. Operation is reviewed against inventory program and organizational requirements</p> <p>1.6. Information and data are analyzed to determine effectiveness of thinning operations and improvements to future operations</p> <p>1.7. Recommendations for future operations are prepared based on findings of assessment of information collected</p> <p>1.8. Operation processes are recorded and reported to the appropriate personnel</p>
2. Develop coppice stems and Undertake thinning	<p>2.1. <i>Environmental conditions</i> are assessed and used to plan the coppice development of each tree stump</p> <p>2.2. <i>Tool</i> operators are directed to cut tree stumps at ground level to form stools</p> <p>2.3. Stools are cleared of debris and allowed to rest and sprout coppice</p> <p>2.4. Coupe is protected from wildlife and grazing animals during coppice development</p> <p>2.5. Standard seedlings are removed or left in accordance with the coppice management plan used</p> <p>2.6. Stools are regularly assessed to measure and gauge the amount of coppice growth</p> <p>2.7. Thinning is regularly undertaken to control re-growth and promote the growth of the retained coppice stems</p>

3. Use appropriate sampling techniques and estimate volume and yield of stand	<p>3.1. Appropriate <i>sampling techniques</i> are applied and sample size is determined based on the population size and type.</p> <p>3.2. Diameter and height of stand are measured to calculate volume of stand</p> <p>3.3. Mean annual and current annual increment of stand is calculated to understand current and annual status of stand</p> <p>3.4. Cost-benefit analysis is determined based on estimated yield</p>
4. Establish forest data base management system	<p>4.1. <i>Data</i> is collected based on available resources.</p> <p>4.2. Collected data is encoded, analyzed and interpreted using the established data base management system</p> <p>4.3. Information is made available to users through various means of communication</p>
5. Prepare and implement forest management plan	<p>5.1. Forest management plan is prepared in accordance with organization scope.</p> <p>5.2. Prepared management plan is implemented according to scheduled plan.</p> <p>5.3. Plan is reviewed frequently for improvement according to the organizations requirement.</p>
6. Manage Natural Forest	<p>6.1. Review of existing natural forest status and collection of data regarding diversity and Identification of species composition at all canopy layers, are undertaken according to natural forest management guideline.</p> <p>6.2. Natural regeneration inventory with special reference to commercially desirable species and associated flora is carried out according to organizational work manual.</p> <p>6.3. Enrichment planting activities are planned, prepared and implemented according to the organizational work plan</p> <p>6.4. Climber cutting and canopy opening activities are carried out according to technical guideline and the work schedule.</p>

<b>Variable</b>	<b>Range</b>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Binoculars</li> <li>• Computer software</li> <li>• Mountain bicycle</li> <li>• Field books</li> <li>• Maps</li> <li>• Field bags</li> <li>• GPS</li> <li>• Tent</li> <li>• Sleeping bag</li> <li>• Sponge mattress</li> </ul>

	<ul style="list-style-type: none"> <li>• Digital Camera</li> </ul>
Environmental conditions	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Biotic &amp; a biotic factor</li> <li>• Seasons (optimum temperature, rainfall, moisture, humidity),</li> <li>• Vegetation nearby,</li> <li>• Pest and disease,</li> <li>• Livestock &amp; human interference,</li> <li>• Flood, drought</li> </ul>
Tool	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Two man cross cut saw, chainsaw, axe, rope</li> </ul>
Sampling techniques	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Random, stratified, systematic and cluster</li> </ul>
Data	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Stand</li> <li>• Species</li> <li>• Tree condition</li> <li>• Age</li> <li>• Height</li> <li>• DBH</li> <li>• Volume</li> <li>• Basal Area</li> <li>• Soil type</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Must demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Describe components &amp; procedures of forest management plan</li> <li>• Describe and demonstrate techniques of assessing the natural regeneration condition</li> <li>• Identify and collect forest management data</li> <li>• Measure and calculate diameter, height and volume of stand</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Enterprise recording methods</li> <li>• Purposes for which the recorded data might be used</li> <li>• Software programs used for recording or storing data.</li> <li>• Counting moving animals in paddocks, pens or in race</li> <li>• Entering data accurately into specified written or electronic/computerized formats</li> <li>• Calibrating tools and equipment.</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Review existing forest status</li> <li>• Asses the natural regeneration condition</li> <li>• Plan and implement enrichment planting activities</li> <li>• Carry out climber cutting and canopy opening activities</li> <li>• Measure and calculate diameter, height and volume of stand</li> </ul>
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>

Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational Standard: Natural Resources Conservation and Development Level IV	
Unit Title	Perform Forest Harvesting and Post harvesting Techniques
Unit Code	<a href="#">AGR NRC4 05 0322</a>
Unit Descriptor	This unit covers knowledge, skills and attitude required to undertake pre-harvesting survey, maintenance of tools and equipment, harvesting and post harvesting procedures of forest trees to be followed.

Element	Performance Criteria
1. Conduct pre-harvesting survey	<p>1.1. Relevant <i>information sources</i> of the practices are accessed and utilized for necessary pre-operation preparation.</p> <p>1.2. The area to be harvested is delineated and estimated through preliminary survey considering <i>OHS requirements</i>.</p> <p>1.3. Matured trees and shrubs for harvesting are identified based on their purpose.</p> <p>1.4. The required resources are allocated based on activities and organizational guideline.</p>
2. Maintain tools and equipment	<p>2.1. Site workshops are established to maintain <i>tools and equipment</i> based on available resource.</p> <p>2.2. Harvesting tools and equipment are maintained based on their importance</p> <p>2.3. Technicians are trained based on required techniques and skills required for harvesting</p>
3. Conduct appropriate harvesting procedures	<p>3.1. Economic feasibility and environmental issues are considered during harvesting as per organizational manual</p> <p>3.2. Stump site is cleared using relevant tools and equipment</p> <p>3.3. Felling direction is determined based on topography, leaning direction, wind direction and others</p> <p>3.4. Trees are felled in prescribed direction without causing damage to trees retained</p> <p>3.5. The felled trees are debarked and cross-cut in to desired size according to organizational requirements.</p> <p>3.6. <i>Logs</i> are transported to temporary storage site</p>
4. Use proper seasoning techniques	<p>4.1. Appropriate seasoning techniques are identified based on nature of wood and available resource</p> <p>4.2. Air drying, sun drying and kiln drying are applied based on species types and according to organizational requirements</p>
5. Select temporary processing and storage site	<p>5.1. Temporary <i>processing</i> and storage sites are selected and designed based on their accessibility.</p> <p>5.2. Processed logs are <i>stacked</i> in accordance with their size and</p>

	safety requirements.
6.Sort processed forest product at permanent storage site	<p>6.1. Permanent storage sites are selected, designed and constructed based on their accessibility to road and market</p> <p>6.2. Processed forest products are classified based on their quality, size, type and use according to organizational manual.</p> <p>6.3. Processed products are <b>bind</b> and stacked according to their size and type.</p> <p>6.4. <b>Sorted</b> forest products are made available for market based on demand and organizational marketing plan</p>
7. Record and report work	<p>7.1. Forest harvesting and post harvesting procedures are <b>recorded and reported</b> to the appropriate personnel in accordance with workplace procedures</p> <p>7.2. Problems or difficulties in completing work to required standards or timelines are reported to supervisor.</p> <p>7.3. Work completion and work outcomes are documented and reported in standard format to the supervisor.</p>

Variable	Range
Information sources	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Organizational rules, regulation and guidelines</li> <li>• Internet, related books and related materials</li> <li>• Technical manuals</li> <li>• Workplace guidelines</li> <li>• Recorded documents/logo/history</li> </ul>
OHS requirements	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Using protective equipment kits and helmets</li> <li>• First aid</li> <li>• Safety procedure during operating and maintaining machines</li> <li>• Tree felling procedures</li> <li>• Avoid environmental impact during logging and transport</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Chain saw</li> <li>• Machete</li> <li>• Bow saw</li> <li>• Axe</li> <li>• Meter tape</li> <li>• Cross cut saw</li> <li>• Helmet</li> <li>• Boots</li> <li>• Hand gloves</li> <li>• Cloths and mats</li> <li>• Cars, lorries, rollers, cranes</li> <li>• Store and storing equipment</li> <li>• Treatment chemicals</li> <li>• Kiln</li> </ul>

Processing	<p>May include</p> <ul style="list-style-type: none"> <li>• Debarking</li> <li>• De-branching</li> <li>• Piling logs</li> </ul>
Recording and reporting	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Harvesting and post harvesting practices,</li> <li>• OHS and hazard issues,</li> <li>• Quality outcomes or technology requirements</li> <li>• Difficulties or problems</li> <li>• Wastage/damage of tools, equipment and machinery</li> <li>• Workout comes</li> <li>• May be manual, using a computer-based system or another appropriate organizational communication system</li> </ul>

<b>Evidence Guide</b>	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Describe matured trees and shrubs identification techniques</li> <li>• Maintain tools and equipment</li> <li>• Select temporary processing and storage site</li> <li>• Sort, grade, stack and rack logs &amp; forest products</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Introduction to forest development</li> <li>• Principles of natural resources development</li> <li>• Forestry and forest products utilization procedures and techniques</li> <li>• Natural resources management(NRM)</li> <li>• Handling forest products</li> <li>• Environment protection</li> <li>• Wood engineering</li> <li>• Techniques of sorting, binding, stacking wood products</li> <li>• Basic safety rules in harvesting and post harvesting operations</li> <li>• Harvesting scheduling</li> <li>• Repairing</li> <li>• Equipment operation</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Conduct pre-harvesting survey</li> <li>• Maintain tools and equipment</li> <li>• Apply appropriate harvesting procedures</li> <li>• Use proper seasoning techniques</li> <li>• Select temporary processing and storage site</li> <li>• Sort processed forest product</li> <li>• Prepare schedule and organize material input for preventive maintenance.</li> <li>• Apply preventive maintenance</li> <li>• Repair simple harvesting tools and equipment</li> <li>• Record and report information work outcomes</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations,



	including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

<b>Occupational Standard: Natural Resources Conservation and Development Level IV</b>	
<b>Unit Title</b>	<b>Conduct Implementation of Property Rights, Land Laws and Regulations</b>

<b>Unit Code</b>	<a href="#"><u>AGR NRC4 06 0322</u></a>
<b>Unit Descriptor</b>	This unit covers the knowledge, skills and attitude required to conduct implementation of property rights, land laws and regulations that facilitate land transaction, formulation and implementation of local by-laws and conflict resolution measures.

<b>Element</b>	<b>Performance Criteria</b>
1. Develop awareness about property right, land laws and regulations	1.1. Relevant <i>information sources</i> on <i>property right</i> , land laws and regulations are accessed and utilized 1.2. Community awareness is created on property right, land laws and regulations with consideration of culturally diverse community 1.3. The existing land laws, legislation and property rights are applied based on the regulations and existing situation 1.4 Types of ownership and use rights are identified
2. Apply land transaction	2.1. Types of transaction activities are identified and applied 2.2. Changes in land rights, property formations, land parcels and land holding are identified and documented 2.3. Appropriate updating is followed up and recording system is applied
3. Undertake formulation and implementation of local bylaws	3.1. Communities are assisted to formulate and implement local <i>by-laws</i> in accordance with <i>socio-cultural approaches</i> of society 3.2. Bylaws are revised and documented with consultation of elders and community representatives in accordance with the current situation of the community 3.3. Bylaws are harmonized with existing <i>rules and regulations</i>
4. Implement conflict resolution mechanisms	4.1. <i>Source of conflicts</i> are identified through discussion with community 4.2. Conflict resolution committees are elected from the society based on their acceptance by the local community 4.3. Conflicts are resolved based on various <i>resolution mechanisms</i>
5. Record, document and report information	5.1. Activities are supported to be in line with the policies and strategies and bylaws of the community 5.2. Conflicts beyond the capacity are reported to the respective authority 5.3. All awareness creation activities and results are recorded and documented on daily basis in standard organizational formats

	5.4. Work outcomes are documented and reported according to organizational guideline
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Variable	Range
Types and sources of information	May include, but not limited to: <ul style="list-style-type: none"> <li>• Government proclamations and regulations</li> <li>• Organizational guidelines</li> <li>• Recorded documents/logo/history</li> </ul>
Property right	It is right of individuals and companies to own and use property.
By-laws	Most commonly refers to: <ul style="list-style-type: none"> <li>• Customs</li> <li>• Norms</li> </ul>
Socio-cultural approaches	May include, but not limited to: <ul style="list-style-type: none"> <li>• Roles of different ethnic groups, gender and the culture; with all these element combined it forms a personality</li> <li>• Socio culture is the way people act and develop based around their surroundings</li> </ul>
Rules and regulations	May include, but not limited to: <ul style="list-style-type: none"> <li>• Land act.</li> <li>• Land laws</li> <li>• Land use policy</li> <li>• Property right</li> </ul>
Source of conflicts	May include, but not limited to: <ul style="list-style-type: none"> <li>• Scarcity of resources</li> <li>• Differences of individual interest</li> <li>• Poor policy</li> <li>• Lack of payment for environmental service</li> <li>• Population movement</li> <li>• Unfair resource distribution</li> <li>• Lack of access</li> <li>• Unregulated utilization of resources</li> </ul>
Resolution mechanisms	May include, but not limited to: <ul style="list-style-type: none"> <li>• Negotiation</li> <li>• Discussion</li> <li>• Punishment</li> <li>• Law enforcement</li> </ul>

Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>• Describe land laws and regulations</li> <li>• Identify and apply benefit sharing techniques for community</li> <li>• Describe and apply conflict resolution techniques</li> <li>• Record, document and report work outcomes in standard format</li> </ul>
Required Knowledge and Attitude	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>• Federal and regional proclamation, regulations and policies</li> <li>• Socio-cultural knowledge</li> <li>• Application of existing property right, rules and regulations</li> </ul>

	<p>By-laws</p> <ul style="list-style-type: none"> <li>• Describe land laws and regulations</li> <li>• Land transaction principles</li> </ul>
Required Skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Identify and apply benefit sharing techniques for community</li> <li>• Formulate local by-laws</li> <li>• Implement land transactions</li> <li>• Apply conflict resolution techniques</li> </ul>
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting.</p>

Occupational Standard: Natural Resources Conservation and Development Level IV	
Unit Title	Prepare sustainable utilization plan for rehabilitated areas
Unit Code	<a href="#">AGR NRC4 07 0322</a>
Unit Descriptor	This unit covers knowledge, skills and attitude required to demarcate, delineate and Implement sustainable utilization plan for rehabilitated and restored degraded areas within watershed.

Element	Performance Criteria
1. Prepare utilization plan for rehabilitated areas	<p>1.1 <b>Baseline information</b> is gathered using rehabilitated and restored areas on a given watershed in consultation with the local community</p> <p>1.2 <b>OHS hazards</b> are identified, risks assessed and reported to appropriate personnel in standard format</p> <p>1.3 The environmental implications of sustainable utilization works are identified and the likely outcomes assessed and reported according to organizational guideline</p> <p>1.4 Rehabilitated area utilization <b>tools, equipment</b> and machinery are selected and prepared for use according to procedures and utilization plans to be established</p> <p>1.5 Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturers specifications and enterprise work procedures</p> <p>1.6 Suitable safety and <b>PPE (PPE)</b> are selected, used and maintained</p>
2. Demarcate and delineate rehabilitated area	<p>2.1 Organizational OHS procedures, practices, policies, and precautions are observed and followed</p> <p>2.2 Soil and existing vegetation are assessed according to sampling procedures</p> <p>2.3 Area demarcation and delineation activity is conducted and the site is classified based on its utilization purpose and a map is developed</p>
3. Implement sustainable utilization activities	<p>3.1 Rehabilitated area soil and vegetation cover is analyzed for <b>job opportunity</b> according to sample test procedures.</p> <p>3.2 Existing resources are identified to utilize the restored area according to soil and vegetation cover result</p> <p>3.3 Potential works are selected to utilize rehabilitated area in sustainable manner.</p> <p>3.4 Best natural resource integrated job types and sustainable development activities are planned.</p> <p>3.5 Community participation is enhanced to create and implement the <b>job opportunity</b> activity on a sustainable basis according to</p>

	<p>the work plan.</p> <p>3.6 Sustainable utilization and development activity progress is followed up and evaluated for any amendment according to the organizational procedures.</p>
4.Document and report information	<p>4.1 Problems or difficulties or hazards information in completing work to required standards or timelines are reported to appropriate personnel.</p> <p>4.2 All sustainable utilization and natural resource conservation activities are recorded and documented on daily basis in standard organizational formats</p> <p>4.3 Work outcomes are documented and reported according to organizational guideline</p>

Variable	Range
Baseline information	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Organizational rules, regulation and guidelines</li> <li>• Internet, related books and related materials</li> <li>• Technical manuals</li> <li>• Sharing best practice</li> <li>• Community experience</li> <li>• Virtual library</li> <li>• Workplace guidelines</li> <li>• Recorded documents/logo/history</li> </ul>
OHS hazards	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Forest fire incidence, flooding, pest and disease incidences.</li> <li>• Control may include to precautions to prevent and control the incidences</li> </ul>
Tools and equipment	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• GPS, tape meter, Bee hives, machete, Site cultivation tools, and wheelbarrow.</li> </ul>
PPE	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Gloves, shoes, clothes and helmets.</li> </ul>
Job opportunity	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Cut and carry, Apiculture, Fattening, Dairy farm</li> </ul>
Potential works	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Works that are good for job creation and friendly with natural resource conservation</li> </ul>
Rehabilitated	<p>May include, but not limited to:</p> <ul style="list-style-type: none"> <li>• Improved/ Restored / enclosed site condition</li> </ul>

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrate knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• Gather baseline information</li> <li>• Analyze soil and vegetation</li> <li>• Demarcate rehabilitated area for delineation activity</li> </ul>

	<ul style="list-style-type: none"> <li>• Describe sustainable utilization environmentally friendly and rehabilitated area conservation techniques</li> <li>• Describe potential works for specific restored area</li> </ul>
Required Knowledge and Attitude	<p>Demonstrate knowledge of:</p> <ul style="list-style-type: none"> <li>• Resource survey and inventory</li> <li>• Discuss with the community and find out opportunities</li> <li>• Socio-economic and ecological principles</li> <li>• Soil and vegetation cover identification</li> </ul>
Required skills	<p>Demonstrate skills to:</p> <ul style="list-style-type: none"> <li>• Identify and organize tools, and equipment</li> <li>• Prepare map for rehabilitated area</li> <li>• Demarcate and delineate rehabilitated area to be utilized</li> <li>• Identify Job opportunity environmentally friendly activities</li> <li>• Implement sustainable utilization of rehabilitated area and resource conservation plan</li> <li>• Evaluate environmental, social and economical cost benefit</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

<b>Occupational Standard: Natural Resources Conservation and Development Level IV</b>	
<b>Unit Title</b>	<b>Implement Sustainable Utilization of Forest-based Energy Sources</b>
<b>Unit Code</b>	<a href="#"><u>AGR NRC4 08 0322</u></a>
<b>Unit Descriptor</b>	This unit covers knowledge, skills and attitude required to identify and introduce fuel wood trees and shrubs; improve existing traditional charcoal making systems and implement utilization of improved stoves and biogas plant.

<b>Element</b>	<b>Performance Criteria</b>
1. Identify and introduce fuel wood & charcoal trees and shrub species	1.1. <b>Relevant information</b> is accessed and utilized 1.2. Fuel wood trees and shrubs species are selected and introduced in accordance with relevant regulation. 1.3. Trees and shrubs species that used for charcoal production are selected and introduced in accordance with relevant regulation and organizational policy 1.4. Trees and shrubs replacement planting is carried out in accordance with relevant regulation and organizational guideline
2. Improve the existing traditional charcoal making technologies	2.1. Constraints and limitations of existing traditional charcoal making technologies are identified based on their efficiency 2.2. <b>OHS</b> procedures are observed and applied
3. Introduce improved energy saving stoves and biogas plant	3.1. <b>Energy saving stoves</b> are identified and introduced based on interest of local community and their efficiency. 3.2. <b>Biogas</b> plant is promoted in accordance with available inputs.

<b>Variable</b>	<b>Range</b>
Relevant information	May include, but not limited to: <ul style="list-style-type: none"> <li>• Organizational rules, regulation and guidelines</li> <li>• Internet, related books and related materials</li> <li>• Technical manuals</li> <li>• Virtual library</li> <li>• Workplace guidelines</li> <li>• Recorded documents/logo/history</li> </ul>
OHS	May include, but not limited to: <ul style="list-style-type: none"> <li>• Protect from fire flames</li> <li>• Care while using tools and equipment like axes and cross-cut saw</li> <li>• Use appropriate manuals before operation of introduced charcoal making machines</li> </ul>
Energy saving stoves	May include, but not limited to: <ul style="list-style-type: none"> <li>• Lakech</li> <li>• Mirte midija</li> </ul>
Biogas	Alternative energy sources generated from cow dung, leaves grasses, branches, through an aerobic respiration of methane.



Evidence Guide	
Critical Aspects of Competence	Demonstrate knowledge and skills to: <ul style="list-style-type: none"> <li>Describe the types, development and conservation of forest based energy sources</li> <li>Identify fuel wood and charcoal producing trees, shrubs</li> <li>Identify and demonstrate economical use of energy saving stoves</li> </ul>
Required Knowledge and Attitude	Demonstrate knowledge of: <ul style="list-style-type: none"> <li>Forest development principles and techniques</li> <li>National Resource Management(NRM)</li> <li>Types of forest based energy sources</li> <li>Development of forest based energy</li> <li>Conservation of forest based energy</li> </ul>
Required skills	Demonstrate skills to: <ul style="list-style-type: none"> <li>Identify fuel wood trees and shrub species</li> <li>Identify trees and shrub species used for charcoal production</li> <li>Demonstrate improved energy saving stoves and biogas plant</li> </ul>
Resource Implications	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>Interview/Written Test</li> <li>Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

Occupational standard : Natural Resources Conservation and Development Level IV	
Unit Title	Develop value chain analysis
Unit Code	<a href="#">AGR NRC4 09 0322</a>
Unit Descriptor	This unit covers the knowledge, skills, and attitude needed to Understand value chain ,Identify concepts of value chain ideas Develop the value chain and Upgraded value addition

Elements	Performance Criteria
1. Understand concepts of value chain	1.1 <i>Concept of value chain</i> are understood 1.2 Value chain scopes are understood and identified 1.3 <i>Principle of value chain</i> are understood and identified 1.4 Value chain <i>characteristic</i> are understood and identified 1.5 Value chain <i>Importance</i> are discussed and understood 1.6 <i>Concept of value addition</i> are understood and determined

2. Identify Value chain analysis	<p>2.1 <b>Dimension</b> and <b>structures</b> of Value chain are identified and interpreted</p> <p>2.2 <b>Value chain actors</b> are identified according to the objective and interest or need of chain actors</p> <p>2.3 <b>Value chain maps</b> are illustrated for different <b>agricultural products</b></p> <p>2.4 Value chain techniques for <b>value addition</b> are identified and analyzed</p> <p>2.5 <b>Contract farming</b> system is established to promote value chain.</p>
3. Develop value chain	<p>3.1 Value chain <b>parameters</b> are analyzed to compare the gaps between the existing and the benchmark.</p> <p>3.2 <b>Constraints and gaps</b> are collected, analyzed and ranked according to the priority used to develop value chain</p> <p>3.3 <b>Steps of value chain</b> development are identified</p> <p>3.4 Value Chain <b>selection techniques</b> are identified to develop value chain</p> <p>3.5 Potential <b>interventions</b> for value chain development are identified</p>
4. Upgrade value addition	<p>4.1 <b>Environmental considerations</b> are understood to upgrade value addition development</p> <p>4.2 Value chain actors are identified for <b>Value addition</b></p> <p>4.3 Value chain is <b>upgraded</b> for agricultural products to measure performance of value chain development</p> <p>4.4 Customer feedbacks are collected, organized and documented to improve Customer satisfaction</p>

Variable	Range
Concept value chain	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Market oriented products</li> <li>• General Principle</li> <li>• Value chain actor</li> <li>• Mapping</li> <li>• Value addition</li> </ul>
Principles of value chain	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Value chain mapping</li> <li>• Identifying the distribution of benefits of actors</li> <li>• Examining the role of upgrading</li> <li>• Governance in the value chain</li> </ul>
Characteristic	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Inbound logistic</li> <li>• Operation</li> <li>• Out bound logistic</li> <li>• Marketing</li> <li>• Sales</li> <li>• Services</li> </ul>

Importance	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Simple and better way to identify gaps and technologies.</li> <li>• Increases efficiency and systemic competitiveness of local enterprise</li> <li>• Primary targets involvement between local sector and sub sector</li> <li>• Reduces production costs and improves profitability</li> <li>• Improves customer satisfaction by providing quality product and service</li> </ul>
Dimension	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Sourcing of Inputs and supplies</li> <li>• Production capacity and technology</li> <li>• End-markets and trade</li> <li>• Governance of value chains</li> </ul>
Structures	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Input sector:</li> <li>• Farm/production sector:</li> <li>• Product sector</li> </ul>
Value chain actors	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Farmers,</li> <li>• Traders,</li> <li>• Processors,</li> <li>• Transporters</li> <li>• Wholesalers</li> <li>• Retailers and final consumers</li> </ul>
Agricultural sectors	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Crop farming</li> <li>• Forestry</li> <li>• Livestock</li> <li>• Fisher and aquaculture</li> <li>• Agricultural cooperative</li> <li>• Agricultural extension service</li> </ul>
Parameters	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Yield</li> <li>• Quality</li> <li>• Cost</li> <li>• Time</li> </ul>
Technology constraints	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Marketability</li> <li>• Profitability</li> <li>• Capability and Usefulness</li> <li>• Functionality</li> <li>• Import Substitution</li> <li>• Feasibility</li> </ul>

	<ul style="list-style-type: none"> <li>• Adaptability</li> <li>• Potential Impact to the MSE</li> <li>• Woman Empowerment</li> <li>• Employment</li> </ul>
Steps of value chain	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Value chain selection</li> <li>• Data collection</li> <li>• Value chain mapping</li> <li>• Value analysis</li> <li>• Gap identification</li> <li>• Prioritizing constraints</li> <li>• Technology identification &amp; categorization</li> </ul>
Selection technique	<p>May include, but not limited to</p> <ul style="list-style-type: none"> <li>• Integration economic</li> <li>• Environmental</li> <li>• Social</li> <li>• Institutional</li> </ul>
Environmental considerations	<p>May include , but not limited to:</p> <ul style="list-style-type: none"> <li>• Sustainability of the land use system for production and processing</li> <li>• Sources of energy</li> <li>• Efficiency of energy use</li> <li>• Greenhouse gas emissions</li> <li>• Water use efficiency and possibilities of contamination</li> <li>• Quantity and character of chemicals being used</li> <li>• Waste production and management</li> </ul>
Value addition	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• measured against its contribution to the customer</li> <li>• Technical benefits/features</li> <li>• Location benefits/features</li> <li>• Aesthetic benefits/features</li> <li>• Information benefits/features</li> </ul>
Contract farming	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Agreement between buyer and seller</li> <li>• Farmer and processing making firm for production</li> <li>• Supple of agricultural product</li> </ul>
Upgraded	<p>May include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Farm crop</li> <li>• Milk and Milk Products</li> <li>• Meat and Meat Products</li> <li>• Poultry Products</li> <li>• Fish and Fish Products</li> </ul>

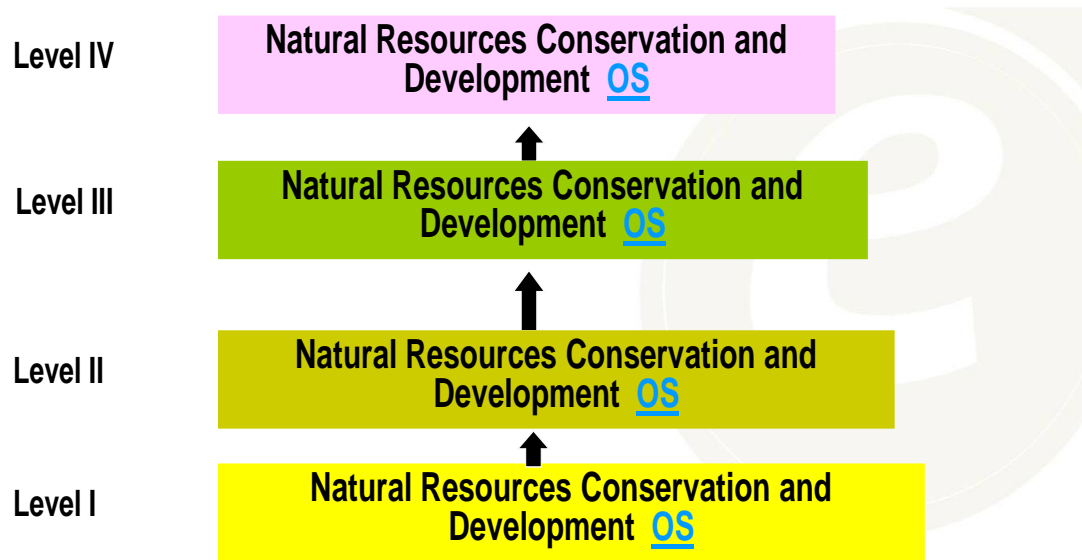
	<ul style="list-style-type: none"> <li>• Honey and Honey Products</li> </ul>
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Evidence Guide	
Critical Aspects of Competence	<p>A Candidate must demonstrate the ability to:</p> <ul style="list-style-type: none"> <li>• Understand concept of value chain</li> <li>• Identify Value chain actors</li> <li>• Apply techniques for value addition</li> <li>• Understand selection technique to develop value chain</li> <li>• Identify potential interventions to value chain analysis</li> <li>• Evaluate value chain addition</li> <li>• Contract farming system is established to promote value chain</li> <li>• Describe value chain upgraded and identify environmental issues for value chain development</li> </ul>
Required Knowledge and Attitude	<p>A candidate must demonstrate the knowledge and attitude to :</p> <ul style="list-style-type: none"> <li>• Understand concepts of value chain</li> <li>• Understand and Recognize characteristic of value chain</li> <li>• Understand dimension and structures of value chain</li> <li>• Identify principles of value chain for agricultural production</li> <li>• Identify value chain actors and Illustrate value chain mapping in agricultural product</li> <li>• Identify value chain analysis improve vale chain development</li> <li>• Understand the Bench mark analyze to develop value chain analysis</li> <li>• Observe environmental issue to upgrade Value chain</li> <li>• Determine value chain upgrade and focus on Value chain addition</li> </ul>
Required Skills	<p>A candidate must demonstrate the Skills to :</p> <ul style="list-style-type: none"> <li>• Identify concepts of value chain</li> <li>• Recognize and describe characteristic of value chain</li> <li>• Describe dimension and structures of value chain</li> <li>• Apply principles of value chain for agricultural production</li> <li>• Classify value chain actors and Illustrate value chain mapping in agricultural sector</li> <li>• Analyze the Bench mark to develop value chain analysis</li> <li>• Apply value addition and determine value chain upgrade development value chain analysis</li> <li>• Contract farming system is established to promote value chain</li> <li>• Describe value chain upgraded and identify environmental issues for value chain development</li> </ul>
Resources Implication	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>

Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> <li>• Interview/Written Test</li> <li>• Observation/Demonstration with Oral Questioning</li> </ul>
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting.

# Sector: **Agriculture**

## Sub-Sector: Natural Resources Conservation and Development



## Acknowledgement

We wish to extend thanks and appreciation to the ministry of agriculture that took vital role and donated their expertise and resource for the revision of this occupational standard.

We would like also to express our appreciation to the Experts from different organizations with in the line ministry of labor and skill that made the revision of this occupational standard possible.

This occupational standard was revised in March, 2022 at Adama, Ethiopia.

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