

ASSESSMENT GUIDE FOR LEARNERS & LEARNER WORKBOOK

Water Quality

Level 4

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Title:		Manage Water Quality Parameters					
Applied Title:		Manage Water Quality Parameters					
Field:		Agriculture and Nature Conservation					
Sub-Field:		Primary Agriculture					
SETA (SGB):		AgriSETA					
Skills Area:		Water Quality					
Context:		Citrus Production					
US No:	116322	Level:	4	Credits:	3	Notional Hours:	30
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Directions

This material is aimed at learners wishing to complete this unit standard. The guide contains all necessary activities and instructions that will enable the assessor and learner to gather evidence of the learner's competence as required by the unit standard.

This guide is designed to be used by the learner with guidance from a facilitator and a trained assessor to develop competence in all knowledge, skills and attitudes required by this unit standard.

This guide contains step-by-step instructions for the assessment process. These steps are as follows:

Step	Description	Timeframe
1	Learner Assessment Contract	Before delivery of program
2	Learner Declaration of Authenticity	Before delivery of program
3	Learning Assumed to Be in Place	Before delivery of program
4	Learner Assessment Plan for Gathering of Evidence	Before delivery of program
5	Assessment Activity Workbook	During delivery of program, assessment after delivery of program
6	Presentation	After delivery of program
7	Practical Assessment	After delivery of program
8	Re-assessment Procedures	After completion of assessment
9	Documentation	After completion of assessment
10	Administration and Completion of Portfolio of Evidence	After completion of assessment

Step 1

Learner Assessment Contract

The assessor and / or the facilitator holds a pre-assessment briefing with you before the learning program starts in order to guide you and assist you to make sure that you understand exactly what is expected from you in order to become competent in this learning module.

As part of the pre-assessment briefing, the learner assessment contract must be signed. The assessor will assist you and explain the agreement to you in detail.

Learner Assessment Contract	
Learner's Name:	
Assessor's Name:	
Unit Standard:	116322
Your rights as a learner are: 1. You have a right to appeal against any judgment given as a result of any assessment. You must have valid reasons for doing this. 2. You have the right to an interpreter if you need one. However, if one of the learning assumptions for the unit standard is that you are competent within the language of assessment, you may not have an interpreter. 3. You can ask that an impartial observer attend any assessment. This observer may not take any part in the assessment. 4. If you do not agree with the assessment, you have the right to have your assessment internally moderated. If you still do not agree with the result of the assessment you can ask that the ETQA to perform an external moderation on the assessment. If any verification upholds the assessment findings, you will be held liable for all the costs of the verification. If any verification rules that you have been aggrieved as a result of the assessment, your assessor will be held liable for all cost of verification. 5. If during the assessment you are found not yet competent, your assessor will encourage you to master the areas where you have not reached competency. This will be recorded on a development plan. You are required to arrange with the assessor for a new assessment schedule. The assessor can only permit three such re-assessments. If a learner has not reached mastery after three additional attempts, the assessor reserves the right to remove you from the program.	
<u>Qualification</u> This standard leads to the award of credits for unit standard 116322. Once the assessment is complete application will be made to register and certify you for that standard with the AgriSETA. You may contact the assessor or facilitator at any time for information to assist you with further studies.	
<u>Confidentiality</u> Each assessment application, the outcomes, results and reviews will be treated as a confidential matter by you, the learner, the facilitator(s), assessor(s), and moderator(s). No references will be made to anyone or any organisation outside the SETA about the status of an application during the assessment process.	

Consent

I, the learner, hereby state that I have read the above and understood the contents thereof. I was given the opportunity to clarify any issues relating to the assessment process and my assessment plan. I have requested this assessment of my own free will and without duress.

Learner's Signature		Date:	
Assessor's Signature		Date:	



Step 2

Learner Declaration of Authenticity

It is important that we make sure that each learner supplies original evidence completed by himself / herself and according to the level of knowledge and skill that he / she has acquired from the learning process.

Please sign the following declaration:

I hereby declare that the following documentary evidence is my own. I certify that the process followed was ethical and did not infringe on the copyright of any individual or organisation.			
Learner's Signature		Date:	
Assessor's Signature		Date:	



Step 3

Learning Assumed to Be in Place

Do you have all the knowledge and skills necessary to begin this learning process?

This is a level 4 module of learning, and we have to make sure that you have already learnt all the skills, knowledge and attitudes that you will need to use in this module. It will help you to understand and learn more easily in this module, and it is important that we know whether you are ready to move on.

Please look at the list of unit standards below of modules that you should have completed before undertaking this one. Tell us whether you have completed each of the unit standards or modules, and if you did, tell us when you learnt this.

If you need help in understanding this list, please ask the facilitator or assessor.

<i>NQF Level</i>	<i>Unit Standard Number</i>	<i>Learning Module Name</i>	<i>No, I Have Not Completed It</i>	<i>Yes, I Have Completed It</i>	<i>If Yes, When Did You Complete It?</i>
NQF3	Literacy and Numeracy				
3	116212	Maintain water quality parameters			
2 (F)	116064	Recognise and identify the basic functions of the ecological environment			
3	116275	Apply routine maintenance and servicing plans and procedures			
Learner's Signature			Date:		
Assessor's Signature			Date:		

Step 4

Learner Assessment Plan for Gathering of Evidence

As the assessor has explained to you, the aim of an assessment is not to catch you out, but rather to help you develop all the skills, knowledge and attitudes that you need to move forward. It is important that you know what is expected from you and that you play an active role every step of the way.

Let's plan for the assessment together. Below are the steps that you have to work through in order to show that you are competent in this module. Check them carefully and discuss each step with the assessor. Agree with the assessor on the dates on which each step has to be completed or documents handed in. Write the dates in the right-hand column as a reminder.

Learner Assessment Plan		
Module / Unit Standard Name:		Manage Water Quality Parameters
Module / Unit Standard Registration Number:		116322
<i>Step Number</i>	<i>Step Description and Learner's Tasks</i>	<i>Completion / Submission Date</i>
5	Assessment Activity Workbook - In this step, you complete certain tasks in class or as homework. - It is important that you complete every task and understand why it is necessary, because it will help you to gain the knowledge, skills and attitudes that you need to be found competent in this learning module. - If there are things that you are unsure about, please ask the facilitator or the assessor to explain it to you again. - You hand in the completed workbook to the facilitator or assessor who will help you to check your progress. - The assessor or facilitator mark it and discuss areas that need more work with you.	
6	Multimedia Presentation - There are many important things that you need to remember about water quality management in order to be found competent in this learning module, and so that you can do your job well and move on to level five. - You have to take into account all the facts and factors that you have learnt, and design a presentation using the guidelines, resources and posters given in this workbook, in order to be found competent. - There is a detailed list of things that you need to know in this guide and examples of the types of information that you will have to relay in your presentation. - Please prepare yourself well and remember to ask the facilitator or assessor to explain anything that you don't understand.	

7	Practical Assessment - You have to develop very specific character traits and attitudes and have to be able to do very specific tasks to be competent in this learning module, be good in this job, and to be able to move on to level five. - Going out into the field, and showing and explaining certain skills and attitudes, is the most appropriate way for you to show that you are competent in the skills and attitudes that are needed. - You will have an opportunity to practice these tasks and develop these attitudes during your practical learning module. - There is a list of all the things that you would have to be able to show and explain in this guide. - Please prepare yourself well and remember to ask the facilitator or assessor to explain anything that you don't understand.		
8	Re-Assessment Procedure - What if the assessor tells you that you have not met the right standard or that you still need more evidence to prove your competence? - The assessor explains to you exactly what you need to do or learn to become competent. - You and the assessor and / or facilitator, develop an action plan together, and you may be granted a second or even a third opportunity to prove your competence. - Remember you have the right to appeal against the assessor's decision, if you feel it is unfair. There is a copy of the form in the back of this guide if you need it.		
9	Paperwork - If you have met the standard that is explained for each step of the process you will be found competent in this unit standard. - The assessor will discuss everything with you in detail and will ask you to fill in and sign forms throughout the process. - You will also be given an opportunity to write down any comments you might have on the assessment process. - Once the assessor has given you the final declaration of competence, you will be asked to give some feedback in order to help everyone to improve the learning and assessment process. - Please think carefully. It might really help other learners in the future.		
10	Administration and Completion of Portfolio of Evidence All the documents, or copies of them, must be kept on file as part of your portfolio of evidence.		
Into the Future - The assessor will discuss what happens next and when you will get a certificate of competence. - It is also important to remember that you learnt this module for a specific reason. Discuss with the assessor, facilitator, mentor, and / or coach how you can move forward in your career with this level of competence. - Also remember that the learning process never stops. Plan together with the assessor, facilitator, coach, and / or mentor what you need to learn next.			
Learner's Signature		Date:	
Assessor's Signature		Date:	

Step 5

Assessment Activity Workbook

- The activities that follow are designed to help you gain the skills, knowledge and attitudes that you need in order to become competent in this learning module.
- It is important that you complete all the activities and worksheets, as directed in the learner guide and at the time indicated by the facilitator.
- It is important that you ask questions and participate as much as possible in order to play an active role in reaching competence.
- When you have completed all the activities and worksheets, hand this workbook in to the assessor who will mark it and guide you in areas where additional learning might be required.
- You should not move on to the next step in the assessment process until this step is completed, marked, and you have received feedback from the assessor.

Activity 1 – Group Discussion
Complete the worksheet below in your own words.
What is the main impact of physical water quality?
Why are clogged emitters detrimental to citrus production?
Which factors will stimulate the growth of microbes in the irrigation system?
The pH of the water is 7.85. List your assessments and actions to be taken to optimise this chemical water quality factor.

Why is an EC of more than 150mSm^{-1} an important parameter in citrus production?

Why is an SAR value of >1 is a negative factor in citrus production?

What is the effect of a high concentration of magnesium on the potassium status of citrus trees?

What are the two groups of dosing apparatus used to apply acids and disinfectants?

Name three types of filters used to remove suspended solids from irrigation water?

Activity 2 – Class Discussion

Hold a class discussion on the following topics and write down key notes of the conclusions that you reach.

How and why does one treat irrigation water?

Are all pesticides more efficient if water at a pH of less than 6 is used for mixing the spray material? Motivate your answer.

Lists four types of precipitates that can accumulate in emitters and irrigation pipes.

Activity 3 – Research and Discover

Research the questions below and write down what you discover.

According to the standard set by Netafim, the concentration of 60% nitric acid in the system should be 0.6%. Calculate the concentration if the acid available has a concentration of 50%.

Why is nitric acid the preferred acid in lowering the pH of irrigation water?

What is the meaning of a maintenance and corrective treatment?

Describe the terms chlorine and chloride.

Name the three common water quality treatment processes.

Can all chemical water quality factors be improved? Motivate your answer.

What is the best method to determine the volume acid required to acidify the water to a certain pH?

Name the best method to evaluate the chlorination process.

Describe in short what "relevance of measurements" means.

What chemical water quality factors can accurately be measured on the farm or in the orchard?

Activity 4 – Worksheet

Complete the worksheet below.

Two water sources are available for irrigation. Source A is of good quality with an EC of 30mSm^{-1} and source B has an EC of 130mSm^{-1} . How can the volume of irrigation water with an acceptable quality be increased?

Estimate the EC of the mix when two waters with an EC of 100 and 50mSm^{-1} are mixed in a ratio of 1 to 2.

Activity 5 – Report Interpretation

Study the analysis report below (courtesy of BemLab, Stellenbosch), and answer the questions that follow.

Origin	Lab No	pH	EC (mS/m)	OP* (kPa)	Na	K	Ca	Mg	Fe	Mn	Cl	CO ₃	HCO ₃	SO ₄	B	Adj.SAR	Langelier Index	Class	Total Bacteria / 1ml	Coliforms / 100ml	E. coli / 100ml	COD mg / l
BH.M	1	8.8	249	89.64	353.3V	3.4	23.4	77.9	3.13	0.11	670.6V	92.3	205.7	24	0.25	8.12H	0.51	C4-S2	1040	0	0	25

OP* - Osmotic Potential H = High V = Very High

The Classification of the water has the following meaning:

C4: Very high salinity water – not suitable for irrigation under normal conditions

S2: Medium sodium water – will present an appreciable sodium hazard in fine textured soils unless gypsum is present in the soil.

S3: High sodium water – will require special management, viz. high leaching and organic matter additions as well as good drainage. Chemical amendments may be required to replace exchangeable Na, but may not be feasible.

S4: Very high sodium water – generally unsuitable for irrigation except at C1 and perhaps C2, where gypsum can be applied.

Comments:

With sodium concentrations greater than 200mg/l, severe problems with sodium toxicity is expected. The water is not suitable for irrigation.

With chloride concentrations greater than 260mg/l severe problems with Cl toxicity is expected. The water is not suitable for irrigation.

Langelier Index:

A positive value for the Langelier index indicates a tendency for calcium carbonate to precipitate, whereas a negative value indicates that the water will dissolve calcium carbonate. The later water is regarded as aggressive corrosive. If there is a tendency for calcium to precipitate it will result in a higher SAR value than the value shown in the table above and the sodium hazard with use of this water will therefore be greater.

Activity 5 – Report Interpretation (continued)

Fill in the table below based on the report. For each factor, indicate whether it poses a low hazard or a high hazard. Motivate your answer each time.

Factor	Unit	Low Hazard	High Hazard	Motivation
pH				
Bicarbonates	me per litre			
	mg per litre			
Calcium	me per litre			
	mg per litre			
Manganese	mg per litre			
Iron	mg per litre			
EC	mS per m			
Total bacteria	Numbers per ml			

Make recommendations based on the values in the report regarding the following:

	Measurement	Assessment	Actions
pH			
EC			
SAR			
Calcium			

Magnesium			
Chloride			
Boron			

Judging by the classification of the water is the water suitable for irrigating citrus or not? Motivate your answer.

Activity 6 – Interview an Expert

Interview an expert on the farm where you are completing your practical duties and obtain answers to the following questions.

What measurements are taken for the water quality management system?

Why are these measurements taken for the water quality management system?

Are all the measurements that are taken relevant to the water quality management system?

How accurate are the measurements that are taken? Explain why it is considered this accurate.

How frequently are water samples taken and analysed?

What dictates how frequently the water is analysed?

How often is data collected from water quality tests assessed?

How often is water quality reported on?

How is water quality reported on?

Activity 7 – Report Interpretation

The report below (courtesy of Central Analytical Laboratories) contains the results of three water samples taken on one farm. Make suggestions regarding the corrective actions that should be taken on the basis of the report. Motivate your answers.

REPORT ON THE ANALYSES OF WATER SAMPLES

Laboratory number	9116	9117	9118
Your reference number	Borehole	Dam	Canal
Suspended material (mg per litre)	<1	139	42
pH	8.23	6.55	7.72
Electrical conductivity (mSm ⁻¹)	251	55	39
Total dissolved solids (mg per litre)	1597	355	259
Potassium (me per litre)	0.01	0.01	0.02
Calcium (me per litre)	4.22	3.14	2.12
Magnesium (me per litre)	7.24	1.02	0.94
Sodium (me per litre)	14.18	1.37	0.82
Chloride (me per litre)	11.32	2.08	1.18
Sulphate (me per litre)	4.33	1.87	1.07
Bicarbonate (me per litre)	6.16	1.48	1.65
Carbonate (me per litre)	1.21	0.00	0.00
Boron (mg per litre)	1.21	0.03	0.09
Nitrate-N (mg per litre)	1.50	3.50	0.04
Ammonium-N (mg per litre)	2.05	0.00	0.00
Sodium adsorption ratio (SAR)	5.92	0.95	0.66
Class (USDA)	C ₄ S ₂	C ₂ S ₁	C ₂ S ₁
Total bacterial count (colonies per ml)	10	25 000	500

Source	Corrective Action	Motivation
Borehole		
Dam		
Canal		

Activity 8 – Evaluation

Evaluate the effectiveness of the corrective actions for dam and canal water in the table below, stating the expected outcome and commenting on why you consider the corrective actions to be effective or not.

<i>Factor and Finding</i>	<i>Reason for Corrective Action</i>	<i>Corrective Action</i>	<i>Expected Outcome</i>	<i>Comments on Action Taken</i>
Dam Water				
Suspended solids	The mass of 139mg per litre offers a major clogging hazard	Filtration by means of a sand and disc filter unit		
High bacterial count	Major clogging hazard caused by slimes that will aggregate the suspended material.	Chlorination. Continuously apply calcium hypo chlorite at a rate of 3 mg free chlorine per litre water		
Canal Water				
High pH	Needs acidification when foliar feeds and fungicides are applied	Apply Bladbuff until the colour remains red.		
Suspended solids = 85mg per litre	Moderate clogging hazard	Filtration		
Bacterial count = 15,000 per ml	Slimes forming a definite hazard	Chlorinate continuously with 3 mg free chlorine per litre water		

Activity 9 – Class Debate

Hold a class debate on the following subject:

Water quality management is addressed well in the region where our citrus farm is located.
 versus

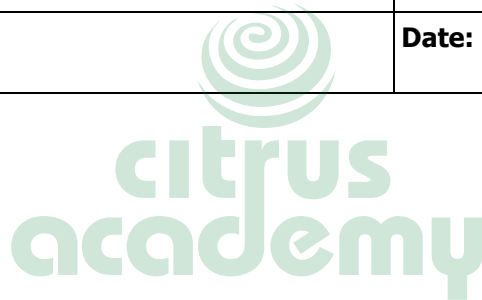
Water quality management is addressed poorly in the region where our citrus farm is located.

Ensure that you argue the debate by supplying information and statistical analysis regarding the following criteria related to water quality and water quality management. Make keynotes on both sides of the argument below.

- Physical factors
- Chemical factors (dissolved oxygen, ammonia, pH, salinity, super saturation, pollutants, heavy metals)
- Microbiological characteristics (E. coli, Vibrio sp., Salmonella sp., algal blooms, and possible diseases)
- Biological processes (photosynthesis, nitrogen cycle, decomposition, energy budgets)
- Operational technical systems (aeration, filtration, protein skimming, screening, bio-filtration, degassing, nutrient stripping and sterilisation (ozonation, UV sterilisation, chlorination))

[illegible]

Assessment Feedback Form – Activity Workbook			
		Comments / Remarks	
Feedback to learner on assessment			
Feedback from learner to assessor			
Learner's Signature		Date:	
Assessor's Signature		Date:	



Step 6

Multimedia Presentation

You are now ready for step six of the assessment process, a presentation on water quality on a farm. Check your plan carefully to make sure that you prepare in good time. Be creative, include colour and examples in your presentation.

You have to score an overall mark of at least 85% in this task in order to be found competent.

Inform the assessor if you have any special needs or requirements **before** the agreed date for the hand in of the assessment task. You might, for example, require an interpreter to translate the questions to your mother tongue. Please write your request down in your activity workbook on the front page and explain why you have made this request. Ask the assessor to sign next to your request to prove that they are aware of your special request.

Use this checklist to help you plan and prepare for the writing of the job description. These are examples of possible questions that will help you to organise and plan your task. All the information you need was taught in the classroom and can be found in the learner guide that you received.

<i>Example Questions</i>	<i>I Have Revised This and Understand It Well</i>	<i>I Am Unsure of This and Need to Ask the Facilitator or Assessor to Explain It Again</i>
Identify the water source on the farm where you are performing your practical work.		
List all the water quality factors and categorise them according to chemical, physical or biological factors.		
Identify whether these factors will impact on crop production, the irrigation system, or sustainable soil productivity.		
Obtain values for the following factors for the water that you are investigating: • pH • EC • SAR • Ca • Mg • Cl • B • N • Total suspended solids • Dissolved oxygen		
Assess the water quality and decide on required corrective actions.		
What type of filtration system will have to be installed if this water is to be used for irrigation purposes? Be very specific regarding type of filter and pore sizes.		
What should the result and advantages of your actions on the water?		

<i>Example Questions</i>	<i>I Have Revised This and Understand It Well</i>	<i>I Am Unsure of This and Need to Ask the Facilitator or Assessor to Explain It Again</i>
What is the clogging hazard of the water and what can you do about it?		
Would you aerate the water? If yes, how and why?		
Would you consider acidification of the water? If yes, how and why?		
Would you disinfect the water? If yes, how and why?		
Would you chlorinate the water? If yes, how and why?		
How often will you perform these tests on the water in future?		
What will you test routinely on the water in future?		
What will you do with the data that you obtain from each of these water tests?		
If you were in charge of water quality management, what would you report and to whom would you report it?		

The assessor or facilitator has explained this step to me and I have revised these questions.			
Learner's Signature		Date:	
Assessor's Signature		Date:	

The assessor will give you feedback on the test and guide you if there are areas in which you still need further development.

Step 7

Attitudes and Attributes Assessment

You are now ready for step seven of the assessment process, the Attitude and Attribute assessment. Check your plan carefully to make sure that you prepare in good time.

Inform the assessor if you have any special needs or requirements before the agreed date for the assessment test. You might, for example, require an interpreter to translate the questions to your mother tongue, or you might need to take this test orally. Please write your request down in your activity workbook on the front page and explain why you have made this request. Ask the assessor to sign next to your request to prove that they are aware of your special request.

Use the checklist below to help you prepare for the part of the practical assessment when you are observed on the attitudes and attributes that you need to have to be found competent for this learning module.

<i>Observations</i>	<i>I Am Sure of This and Understand It Well</i>	<i>I Am Unsure of This and Need to Ask the Facilitator or Assessor to Explain What It Means</i>
Can you identify problems and deficiencies correctly?		
Are you able to work well in a team?		
Do you work in an organised and systematic way while performing all tasks and tests?		
Are you able to collect the correct and appropriate information and / or samples as per the instructions and procedures that you were taught?		
Are you able to communicate your knowledge orally and in writing, in such a way that you show what knowledge you have gained?		
Can you base your tasks and answers on scientific knowledge that you have learnt?		
Are you able to show and perform the tasks required correctly?		
Are you able to link the knowledge, skills and attitudes that you have learnt in this module of learning to specific duties in your job or in the community where you live?		

- The assessor will complete a checklist that gives details of the points that are checked and assessed by the assessor.
- The assessor will write commentary and feedback on that checklist. They will discuss all commentary and feedback with you.
- You will be asked to give your own feedback and to sign this document.
- It will be placed together with this completed guide in a file as part of your portfolio of evidence.

Step 8

Re-Assessment Procedure

The assessor will discuss in detail with you what to do in case you require a re-assessment, and when the re-assessment will take place.



Step 9

Paperwork

Please assist the assessor by filling in these forms and signing then as instructed.

Learner Information Form			
Unit Standard	116322		
Program Date(s)			
Assessment Date(s)			
Surname			
First Name			
Learner ID / SETA Registration Number			
Job / Role Title			
Home Language			
Gender	Male	Female	
Race	African	Coloured	Indian/Asian White
Employment	Permanent	Non-permanent	
Disabled	Yes	No	
Date of Birth			
ID Number			
Contact Telephone Numbers			
Email Address			
Postal Address			

Assessor Report and Summative Evidence Collection Summary for Unit Standard 116322 – Level 4

<i>Description</i>	<i>Evidence Gathered</i>		<i>Benchmark</i>	<i>Competent / Not yet Competent</i>	<i>Feedback and Comments</i>
	Foundational and Embedded Knowledge	Practical Skills, Underpinning Knowledge and Reflexive Competence			
Specific Outcome 1: Correctly assess, analyse and evaluate data and decide on corrective actions within operational technical systems independently to well-defined but possibly unfamiliar problems <i>Range:</i> Physical factors include but are not limited to such as temperature, suspended solids, plankton, clay turbidity, etc. Chemical factors include but are not limited to dissolved gasses such as oxygen, ammonia, pH. Dissolved solids include but are not limited to salinity, super saturation, pollutants, and heavy metals. Microbiological characteristics include but are not limited to E. coli, Vibrio sp., salmonella sp., algal blooms, and possible diseases. Biological processes include but are not limited to photosynthesis, nitrogen cycle, decomposition, and energy budgets. Operational technical systems include but are not limited to aeration, filtration, protein skimming, screening, bio-filtration, degassing, nutrient stripping, sterilisation such as ozonation, UV sterilisation and chlorination, etc.	Attend all lectures Complete workbook as per instruction	Summative presentation. Observation checklist of attitudes and attributes.	85% competence in all areas		

Assessor Report and Summative Evidence Collection Summary for Unit Standard 116322 – Level 4

<i>Description</i>	<i>Evidence Gathered</i>		<i>Benchmark</i>	<i>Competent / Not yet Competent</i>	<i>Feedback and Comments</i>
	Foundational and Embedded Knowledge	Practical Skills, Underpinning Knowledge and Reflexive Competence			
<i>Specific Outcome 2: Demonstrate a thorough understanding of the reasons, impacts and implications of specific corrective actions related to water quality</i>	Attend all lectures Complete workbook as per instruction	Summative presentation. Observation checklist of attitudes and attributes.			
<i>Specific Outcome 3: Implement corrective actions related to the quality of water and water quality systems</i>	Attend all lectures Complete workbook as per instruction	Summative presentation. Observation checklist of attitudes and attributes.	85% competence in all areas		
<i>Specific Outcome 4: Evaluate the effects of corrective actions or adjustments on the water quality requirements</i>	Attend all lectures Complete workbook as per instruction	Summative presentation. Observation checklist of attitudes and attributes.	85% competence in all areas		
<i>Embedded Knowledge:</i> The learner is able to demonstrate a basic knowledge of: - Names and functions of all the various components of water supply and quality systems - Attributes of water related to water quality - The requirements of organisms related to their water need - The purposes of maintaining relevant water quality for living organisms - Measurement and recording technique - Water purification techniques and systems - Relevant legislation related to the feeding	Attend all lectures Complete workbook as per instruction	N/a	Overall minimum test score of 85%		

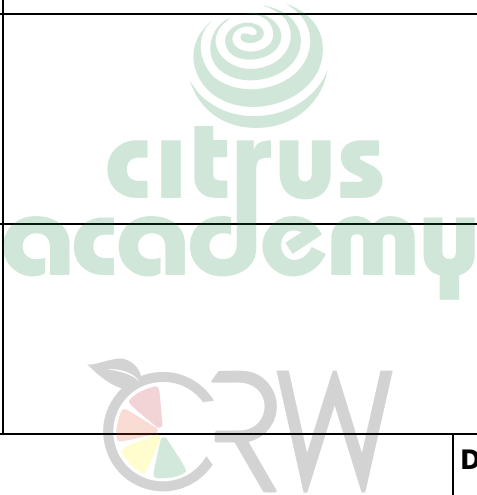
Assessor Report and Summative Evidence Collection Summary for Unit Standard 116322 – Level 4					
Description	Evidence Gathered		Benchmark	Competent / Not yet Competent	Feedback and Comments
	Foundational and Embedded Knowledge	Practical Skills, Underpinning Knowledge and Reflexive Competence			
and care of living organisms 8. Relevant legislations related to water use and environmental issues 9. Interpersonal skills related to communication 10. Sensory and documented cues related to water quality 11. Sensory cues related to the water requirements and use of water by living organisms					
Unit Standard CCFOs: 1. Problem solving relates to all specific outcomes. 2. Teamwork relates to all specific outcomes. 3. Self-organisation and management relates to all specific outcomes. 4. Information evaluation relates to all specific outcomes. 5. Communication relates to all specific outcomes. 6. Using science and technology relates to all specific outcomes. 7. Inter-relatedness of systems relates to all specific outcomes. 8. Self-development relates to all specific outcomes.	N/a	Rating Scale	Minimum rating of 3:5 in each criteria or overall average of 3:5		

Learner Assessment Re-Actionnaire			
Questions		Response	
How did the assessor encourage you to be involved in the assessment process?			
Did the assessor take your special needs into account? If so, how?			
Did the assessor agree on the assessment procedures with you?			
Was feedback relevant to your needs?			
Were you always aware of the outcome of the assessment?			
Did the assessor help you to explore ways of becoming competent whenever you were judged NYC?			
Did the assessor allow you to ask questions?			
Did you always agree with assessment decisions?			
Was all appropriate documentation completed and signed and did you receive copies?			
Did the assessor assist or prevent you in any way when gathering evidence so as to obscure its authenticity?			
All the evidence submitted in my name is my authentic work, which was not acquired by any unethical means.			
Learner's Signature		Date:	
Assessor's Signature		Date:	
Moderator's Signature		Date:	

Assessor's Assessment Review and Improvement Document	
Issues	Comments
Did the assessment go according to plan?	
Did anything unexpected happen?	
Were you pleased with the assessment decision; i.e. was it what you expected?	
How could the process have been carried out more efficiently?	
How could the process of assessing the knowledge be improved?	
How could the Performance Observation checklist be improved?	
Was the evidence you gathered sufficient to make a judgment of competence?	
Was the way you obtained feedback from the learner effective?	
Were you pleased with the way you communicated your decision to the learner? If not, how could this have been improved?	
How would you improve the assessment process?	

Assessment Appeal Form

Any candidate has the right of appeal against any not-yet-competent decision by the assessor. If you wish to appeal, please complete the form below.

Appeal Form			
I hereby appeal against the outcome of my assessment.			
Date:			
Learner's Name:			
Assessors Name:			
Organisation:			
Assessment Details: Criteria, role, standards Used, etc.			
Issue to be Reviewed:			
Learner's Signature		Date:	
Assessor's Signature		Date:	

Step 10

Administration and Completion of Portfolio of Evidence

All the documents or copies thereof, as prescribed previously, must be kept on file as part of the learner portfolio of evidence.

