Technical and Vocational Education and Training Authority

National Competency Standard for Assistant Plumber

Standard Code: CONS08V1/21

Developed in partnership with: Ministry of Environment

GREEN CLIMATE FUND

Qualification Name: National Certificate III in Plumbing
Qualification Code: CONS08Q1L3V1/21

PREFACE

Technical and Vocational Education and Training (TVET) Authority was established with the vision to develop a TVET system in the Maldives that is demand driven, accessible, beneficiary financed and quality assured, to meet the needs of society for stability and economic growth, the needs of Enterprise for a skilled and reliable workforce, the need of young people for decent jobs and the needs of workers for continuous mastery of new technology.

TVET system in the Maldives flourished with the Employment Skills Training Project (ESTP) funded by ADB with the objective of increasing the number of Maldivians, actively participating in the labor force, employed and self-employed. The Project supported expansion of demand driven employment-oriented skills training in priority occupations and to improve the capacity to develop and deliver Competency Based Skill Training (CBST). The project supported delivery of CBST programs to satisfy employer demand-driven needs. Currently CBST is offered for six key sectors in the Maldives: Tourism, Fisheries and Agriculture, Transport, Construction, Social and the Information and Technology sectors. These sectors are included as priority sectors that play a vital role in the continued economic growth of the country.

The National Competency Standards (NCS) provides the base for initiating the training in those topics. The NCS are endorsed by the Employment Sector Councils of the respective sectors and validated by the Maldives Qualification Authority. These NCS were developed in consultation with Employment Sector Councils representing employers. They were designed using a consensus format endorsed by the Maldives Qualifications Authority (MQA) to maintain uniformity of approach and the consistency of content amongst occupations. This single format also simplifies benchmarking the NCS against relevant regional and international standards. NCS specify the standards of performance of a competent worker and the various contexts in which the work may take place. NCS also describes the knowledge, skills and attitudes required in a particular occupation. They provide explicit advice to assessors and employers regarding the knowledge, skills and attitudes to be demonstrated by the candidates seeking formal recognition for the competency acquired following training or through work experience. By sharing this information, all participants in the training process have the same understanding of the training required and the standard to be reached for certification. Certification also becomes portable and can be recognized by other employers and in other countries with similar standards.

In an effort to accelerate the provision of water supply and sewerage services, the Government of Maldives has placed great emphasis towards increasing financial resources from the national budget and much needed institutional reforms in the water and sanitation sector. With the additional resource received from international development and donor agencies significant improvement have been made in the sector. The Government received a grant from Green Climate Fund (GCF) for the project which is being jointly implemented by the Government of Maldives and United Nations Development Programme (UNDP) to Support vulnerable communities in Maldives to manage climate change-induced water shortages.

An important aim of the project is to strengthen the management and institutional capacity of the Water and Sanitation Sector which ensures the sustainability of the water services implanted and contributes to the national policy goals and strategies related to sector capacity development. This is being achieved by encouraging and supporting local educational institutions to develop courses, conduct technical training and educational programs.

TVET Authority and the Ministry of Environment have signed a Memorandum of Understanding (MoU) to setup the National Competency standards for plumbing, water and sewerage system operations and utility laboratory services. The development of these Standards has been assigned to the Maldives Institution of Technology (MIT) with TVET authority reviewing and approving the material.

NCS are the foundation for the implementation of the TVET system in Maldives. They ensure that all skills, regardless of where or how they were developed can be assessed and recognized. They also form the foundation for certifying skills in the Maldives National Qualification Framework (MNQF).

It is with great pleasure we present these National Competency Standards (NCS) for plumbing, water and sewerage system operation and utility laboratory services, developed by the Ministry of Environment in coordination with the Ministry of Higher Education under the support of Green Climate Fund project "Supporting vulnerable communities in Maldives to manage climate change-induced water shortages".

Mohamed Hashim

Minister of State for Higher Education

TVET Authority

Ahmed Nisham

Quality Assurance Consultant

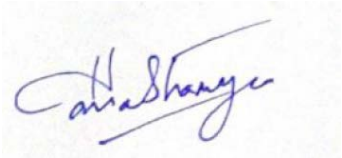
TVET Authority

TECHNICAL PANEL MEMBERS			
#	**Name**	**Designation**	**Organization**
01	Mohamed Siraj	Director	Ministry of National Planning, Housing and Infrastructure
02	Mohamed Fazeeh	Assistant Director	Ministry of Environment
03	Mohamed Ibrahim Jaleel	Assistant Director	Ministry of Environment
04	Adam Mubeen	Assistant Director	Utility Regulatory Authority
05	Suhail Jaufar	Water Network Maintenance Senior Officer	MWSC
06	Ahmed Fathhee	Assistant Director	Housing Development Corporation
07	Hussain Shiyam	Civil Engineer	Association of Civil Engineers
08	Abdulla Hussain Rasheed	Executive Member	Association of Civil Engineers
09	Mohamed Saif Saeed		Association of Civil Engineers
10	Mohamed Moosa Fulhu	Senior Technician	MACL

VERSION	DEVELOPER	DATE	STANDARD CODE
V1	Maldives Institute of Technology	15th February 2021	CONS08V1/21

EMPLOYMENT SECTOR COUNCILS			
#	**Name**	**Designation**	**Organization**
01	Hassan Shameem	Managing Director	INOCA Pvt Ltd
02	Mohamed Naseer	President	Contractors Association
03	Ismail Ameen	Professional Member	Architect Association of Maldives
04	Mohamed Musthafa	Director General	Ministry of Environment and Energy
05	Mohamed Rasheed	Assistant Director, Project Management and Development	Housing Development Corporation
06	Adnan Haleem	Secretary General	Maldives National Association of Construction Industry
07	Ahmed Musthaq	General Manager Engineering and Maintenance	Maldives Airports Company Limited
08	Ahmed Migdhad	Director	Ministry of Economic Development
09	Hussain Shiyam	Civil Engineer	Association of Civil Engineers
10	Mariyam Abdul Rahman	Director	Ministry of Youth, Sports and Community Empowerment
11	Ibrahim Shareef Hassan	Manager of Academic and Student Structure Board	Maldives Institute of Technology (MIT)
12	Mohamed Haikal Ibrahim	Head of Department Engineering	Maldives National University
13	Mohamed Shahud	Assistant Engineer	Ministry of National Planning
14	Muaz Ibrahim	Assistant Manager Projects	MWSC
15	Mohamed Waheed	Assistant Lecturer Grade 2	Maldives Polytechnic

National Occupational Standard has been endorsed by:

 Hassan Shameem Chairperson Construction Employment Sector Council	 Mohamed Naseer Vice-Chairperson Construction Employment Sector Council
Technical and Vocational Education and Training Authority Ministry of Higher Education Handhuvaree Hingun, M. World Dream Male', Maldives	
Date of Endorsement: 15th February 2021	Date of Revision: NA

Standard Development Process

To begin with, Assistant Plumber occupations were profiled through study of the occupation across Maldivian workplaces. During the study, utility enterprises and their relevant occupations were reviewed and the job descriptions were further studied. In addition to that, current trends of occupations internationally were also reviewed. These processes led to the development of the Draft Competency Standard.

Referred draft competency standard will be submitted through the TVETA to a team of Technical Panel (TP) selected from the Maldivian workplaces to review the Assistant Plumber Standard. Members of the TP may want to change this Assistant Plumber Standard through incorporation of additional units or removal of already incorporated unit of competencies. Purpose of this process is to develop a standard that reflects work practices of Assistant Plumbers of today across the Maldives. Technical Panel meetings will continue in reviewing the Assistant Plumber Standard until the Final Draft is drawn which is agreed and accepted by all the participating members.

Final Draft of Assistant Plumber Standard approved by the TP will then be submitted to the Construction Employment Sector Council for endorsement and validation. A brief report on how the National Competency Standard of Assistant Plumber reflecting the process of compilation will be presented to the Construction Employment Sector Council together with the standard. Council members will further review and if Construction ESC recommends any change, Consultant is required to bring those changes and once agreeable, Assistant Plumber Standard will be endorsed by the Council.

With the endorsement from the Construction Employment Sector Council, final document of the National Competency Standard for Assistant Plumber will be submitted to the Maldives Qualification Authority (MQA) for final approval. With approval from MQA, the National Competency Standard for Assistant Plumber will be published on TVETA website, to be used by training providers in delivering Assistant Plumber programs across the Maldives.

Description of "Assistant Plumber"

Assistant Plumbers play an important role within the Public Utility Sector of the Maldives as they undertake important utility assignments which involve fitting and repairing pipes used for water supply and sanitation across the Maldivian islands. Referred occupations is vital to ensure water is supplied. Furthermore, sanitation is securely managed ensuring healthy environment for the locals of the Maldives.

National Certificate III in Plumbing are mapped and organized in such a way to ensure those competent in the referred qualification will have the knowledge and skills to contribute positively to the local construction industry.

Job opportunities upon completion of National Certificate III in Plumbing

Upon successful completion of the National Certificate III in Plumbing students can work in the following jobs.

- Assistant Plumber

KEY FOR CODING

Coding Competency Standards and Related Materials

DESCRIPTION	REPRESENTED BY
Industry Sector as per ESC (Three letters)	Construction Sector (CON) Fisheries and Agriculture (FNA) Information, Communication and Technology (ICT) Transport Sector (TRN) Tourism Sector (TOU) Social Sector (SOC) Foundation (FOU)
Competency Standard	S
Occupation with in an industry sector	Two digits 01-99
Unit	U
Common Competency	CR
Core Competency	CM
Optional / Elective Competency	OP
Assessment Resources Materials	A
Learning Resources Materials	L
Curricular	C
Qualification	Q1, Q2 etc.
MNQF level of qualification	L1, L2, L3, L4 etc.
Version Number	V1, V2 etc.
Year of Last Review of standard, qualification	By "/" followed by two digits responding to the year of last review, example /21 for the year 2021

1. Endorsement Application for Qualification 01		
2. NATIONAL CERTIFICATE III IN PLUMBING		
3. Qualification code: CONS08Q1L3V1/21	**Total Number of Credits: 65**	
4. **Purpose of the qualification** The Certificate III in Plumbing provides comprehensive training for all plumbing covers the practical and theoretical aspects of the industry. You will gain skills in areas such as welding, water supply, drainage, sanitary, gas fitting, roofing and mechanical services.		
5. Regulations for the qualification	National Certificate III in Plumbing will be awarded to those who are competent in units 1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16+17	
6. Schedule of Units		

Unit No	Unit Title	Code
Common Competencies		
01	Apply Occupational Health and Safety requirements	CONCM04V1/21
02	Apply work ethics and optimize professionalism	CONCM01V2/20
03	Practice effective workplace communication	CONCM05V1/21
04	Provide effective customer care	CONCM02V2/20
05	Perform computer operations	CONCM03V2/20
06	Provide first aid	CONCM06V1/21
07	Respond to fire	CONCM07V1/21
Core Competencies		
08	Apply Science and Engineering Measurements	CONS08CR01V1/21
09	Perform safe workshop practice	CONS08CR04V1/21
10	Carry out simple concreting and rendering	CONS08CR02V1/21
11	Prepare Estimate and Read layout	CONS08CR03V1/21
12	Install domestic water pipe systems	CONS08CR05V1/21
13	Install and fit off sanitary fixtures	CONS08CR06V1/21
14	Locate, clear blockages and fix leaks	CONS08CR07V1/21
15	Install below ground domestic waste water	CONS08CR08V1/21
16	Fabricate and install roof drainage components	CONS08CR09V1/21
17	Perform plumbing to support rain water harvesting systems	CONS08CR10V1/21

7.Accreditation requirements	The training provider should place trainees in relevant industry or sector to provide the trainees the hands-on experience exposure related to this qualification
8. Recommended sequencing of units	As appearing under the section 06

Units Details

#	Unit Title	Code	Level	No of credits
01	Apply Occupational Health and Safety requirements	CONCM04V1/21	III	04
02	Apply work ethics and optimize professionalism	CONCM01V2/20	III	03
03	Practice effective workplace communication	CONCM05V1/21	III	03
04	Provide effective customer care	CONCM02V2/20	III	05
05	Perform computer operations	CONCM03V2/20	III	03
06	Provide first aid	CONCM06V1/21	III	05
07	Respond to fire	CONCM07V1/21	III	03
08	Apply Science and Engineering Measurements	CONS08CR01V1/21	III	04
09	Perform safe workshop practice	CONS08CR04V1/21	III	06
10	Carry out simple concreting and rendering	CONS08CR02V1/21	III	03
11	Prepare Estimate and Read layout	CONS08CR03V1/21	III	03
12	Install domestic water pipe systems	CONS08CR05V1/21	III	04
13	Install and fit off sanitary fixtures	CONS08CR06V1/21	III	04
14	Locate, clear blockages and fix leaks	CONS08CR07V1/21	III	03
15	Install below ground domestic waste water	CONS08CR08V1/21	III	05
16	Fabricate and install roof drainage components	CONS08CR09V1/21	III	03
17	Perform plumbing to support rain water harvesting systems	CONS08CR10V1/21	III	04

Packaging of National Qualifications:
National Certificate III in Plumbing will be awarded to those who are competent in units 1+2+3+4+5+6+7+8+9+10+11+12+13+14+15+16+17

Qualification Code: CONS08Q1L3V1/21

National Competency Standard for Assistant Plumber

UNIT TITLE	Apply Occupational Health and Safety requirements				
DESCRIPTOR	This unit of competency describes the skills and knowledge in applying various aspects of occupational health and safety to work and ensure safety and health of personnel undertaking workplace tasks.				
CODE	CONCM04V1/21	**LEVEL**	III	**CREDIT**	04

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Clean work preparation areas	1.1. Clean preparation areas using appropriate cleaning agents and equipment according to workplace procedures 1.2. Remove spillages using appropriate agents, personal protective equipment (PPE) and workplace procedures 1.3. Collect and segregate wastes in accordance with workplace procedures, relevant codes and regulations
2. Clean and store equipment	2.1. Collect used equipment, inspect for faults and, where necessary, remove from service 2.2. Use appropriate agents, apparatus and techniques to clean equipment 2.3. Store clean equipment in the designated locations and manner
3. Monitor stocks of materials and equipment	3.1 Perform stock checks and maintain records of usage as directed 3.2 Store labelled stocks for safe and efficient retrieval 3.3 Inform appropriate personnel of impending stock shortages to maintain continuity of supply
4. Maintain a safe work environment	4.1 Participate in OHS activities within scope of responsibilities 4.2 Use established safe work practices and PPE to ensure personal safety and that of other personnel 4.3 Report potential hazards and/or maintenance issues in own work area to designated personnel 4.4 Minimise the generation of waste and environmental impacts

	4.5 Dispose of waste in accordance with workplace procedures, relevant codes and regulations
5. Follow incident and emergency response procedures	5.1 Identify incident and emergency situations 5.2 Report and record incident and emergency situations according to workplace procedures 5.3 Follow incident and emergency procedures as appropriate to the nature of emergency using emergency equipment according to workplace procedures
6. Determine Occupational Health and Safety (OH&S) issues relating to immediate work environment	6.1. Occupational Health and Safety issues in the immediate workplace are assessed and action to rectify the problem is taken or reported to supervisor 6.2. Understand the aspects of First aid 6.3. Understand the aspects of Fire Respond 6.4. Workplace and OH&S procedures are followed to ensure safe working environment 6.5. Occupational Health and Safety documents are provided to all work stations, this should include a list of personal safety items based on the line of work.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Risk assessment

- ✓ identifying and analyzing the risk, and considering potential consequences in terms of exposure and hazard and likelihood of each
- ✓ assessing the effectiveness of existing controls
- ✓ determining level of risk, comparing with pre-established criteria for tolerance (or as low as reasonably achievable) and ranking of risks requiring control

Incidents and emergencies

- ✓ workplace injury and accidents
- ✓ biological and chemical spills
- ✓ leakage of radioactivity
- ✓ fire, bomb and security threats

Tools, equipment and materials required may include:

- ✓ Relevant cleaning equipment and consumables required
- ✓ Safety equipment
- ✓ Workplace safety and maintenance standards

ASSESSMENT GUIDE

Forms of assessment

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the competency Standard.

Critical aspects (for assessment)

As part of the assessment planned for this unit, it is important that work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment.

Assessment conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- ✓ use of suitable facilities, equipment and resources, including work preparation areas, stocks, materials and equipment, cleaning, decontamination and/or disinfection agents and equipment and personal protective equipment (PPE) and other safety devices and materials.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ Methods of cleaning and cleaning agents. ✓ Segregating waste ✓ How to inspect faulty cleaning equipment ✓ Storing methods for cleaning agents ✓ Principles of stock management ✓ Review of safe work practices ✓ Importance of wearing PPE ✓ Methods of hazard identification and reporting procedures ✓ Principles of safe waste disposal ✓ Process of managing emergency situation	Skills to be developed: ✓ principles of risk assessment, risk Methods of cleaning and cleaning agents. ✓ Perform waste segregation ✓ inspect faulty cleaning equipment ✓ Storing methods for cleaning agents ✓ Perform of stock management ✓ Identify safe and unsafe work practices ✓ Use of PPE while attending important tasks ✓ Identification of hazard and hazard elimination skills ✓ Undertake safe waste disposal procedures ✓ Manage emergency situation.

UNIT TITLE	Apply work ethics and optimize professionalism				
DESCRIPTOR	This module covers the knowledge, skills and attitudes required in demonstrating proper work values and professionalism at work. Besides ethical values, knowledge and skills also developed on maintaining integrity at work.				
CODE	CONCM01V2/20	**LEVEL**	III	**CREDIT**	03

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Define the purpose of work	1.1 One's unique sense of purpose for working and the whys of work are identified, reflected on and clearly defined for one's development as a person and as a member of society. 1.2 Personal mission is in harmony with company's values.
2. Apply work values/ethics	2.1 Work values/ethics/concepts are identified and classified in accordance with companies' ethical standard guidelines. 2.2 Work policies are undertaken in accordance with company's policies, guidelines on work ethical standard. 2.3 Resources are used in accordance with company's policies and guidelines. 2.4 Punctuality, absence from work, sick, family and annual leave is maintained alignment to the Employment Act of the Maldives
3. Deal with ethical problems	3.1 Company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct/behavior are followed. 3.2 Work incidents/situations are reported according to company protocol/guidelines. 3.3 Resolution and/or referral of ethical problems identified are reported/documented based on standard operating procedure
4. Maintain integrity of conduct in the workplace	4.1 Personal behavior and relationships with co-workers and/or clients are demonstrated consistent with ethical standards, policy and guidelines. 4.2 Work practices are satisfactorily demonstrated

	and consistent with industry work ethical standards, organizational policy and guidelines. 4.3 Instructions to co-workers are provided based on ethical lawful and reasonable directives
5. Contribute to workplace efficiency and delivery of quality service	5.1 Prioritize work load according to level of responsibility 5.2 Advise supervisor if additional resources or support are required to improve performance 5.3 Undertake duties in a positive manner to enhance workplace cooperation and efficiency 5.4 Monitor and adjust work practices to ensure that quality of outputs is maintained 5.5 Identify and report opportunities for improvements in procedures, processes and equipment in work area

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Tools, equipment and material used in this unit may include:

For the purpose of delivering the assignment, students need to be familiarized with the following.

- ✓ Employment act of Maldives

ASSESSMENT GUIDE

Forms of assessment

Assessment for the unit needs to be holistic and must include real or simulated workplace activities.

Assessment context

Assessment of this unit must be completed on the job or in a simulated work environment which reflects a range of practices.

Critical aspects (for assessment)

It is critical that the assessment undertaken for this module be holistic and involve the following.

- ✓ Group discussion
- ✓ Role play
- ✓ Self-paced learning

- ✓ Written
- ✓ Demonstration
- ✓ Observation
- ✓ Interviews/questioning

Assessment conditions

Assessment must reflect both events and processes over a period of time.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ Work responsibilities/job functions ✓ Company code of conduct/values ✓ Concept of work values/ethics ✓ Company policies and guidelines ✓ Work ethical standard ✓ Company's identified ethical problems ✓ Work incidents/situation ✓ Standard operating procedures ✓ Report writing and documentation ✓ Fundamental rights at work including gender sensitivity ✓ Corporate social responsibilities ✓ Human and interpersonal Relations ✓ Value Formation ✓ Professional Code of Conduct and Ethics	Skills to be developed: ✓ Purpose for working and the why's of work are identified, reflected and linked to self-development ✓ Work values/ethics/concepts are identified and classified in accordance with companies' ethical standard ✓ Work policies are undertaken in accordance with company's policies. ✓ Resources are used in accordance with company's policies and guidelines. ✓ Work incidents/situations are reported according to company guidelines ✓ Personal behavior and relationships with co-workers and clients are within ethical standard ✓ Work practices are satisfactorily demonstrated and consistent. ✓ Instructions to co-workers are provided based on ethical lawful and reasonable directives

UNIT TITLE	Practice effective workplace communication				
DESCRIPTOR	This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements. Understanding the prominence of fluently speaking in both English and Dhivehi during operational level. Correspondingly, participate in group meetings and discussion and accordingly handling the documentation related tasks.				
CODE	CONCM05V1/21	**LEVEL**	III	**CREDIT**	03

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from appropriate sources 1.2 Effective questioning, active listening and speaking skills are used to gather and convey information 1.3 Appropriate medium is used to transfer information and ideas 1.4 Appropriate non- verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and storage of information are used 1.7 Personal interaction is carried out clearly and concisely
2. Speak English and Dhivehi at an operational level	2.1 Workplace interactions with colleagues appropriately made 2.2 Verbal instructions or requests are responded to at an operational level 2.3 Appropriate non-verbal communication used 2.4 Simple requests are made 2.5 Routine procedures are described 2.6 Different forms of expression in English and Dhivehi is identified and used as appropriate
3. Participate in workplace meetings and discussions	3.1 Team meetings are attended on time 3.2 Own opinions are clearly expressed and those of others are listened to without interruption 3.3 Meeting inputs are consistent with the meeting purpose and established protocols 3.4 Workplace interactions are conducted in a courteous manner 3.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to 3.6 Meetings outcomes are interpreted and

	implemented
4. Complete relevant work-related documents	4.1 Range of forms relating to conditions of employment are completed accurately and legibly 4.2 Workplace data is recorded on standard workplace forms and documents 4.3 Basic mathematical processes are used for routine calculations 4.4 Errors in recording information on forms/ documents are identified and properly acted upon 4.5 Reporting requirements to supervisor are completed according to organizational guidelines
5. Manage workplace calls and messages	5.1. Operate workplace phones 5.2. Attend and manage phone calls 5.3. Read and respond to texts and messages 5.4. Perform communication in both English and Dhivehi

RANGE STATEMENT

Appropriate sources:

- ✓ Team members
- ✓ Suppliers
- ✓ Trade personnel
- ✓ Local government
- ✓ Industry bodies

Medium:

- ✓ Memorandum
- ✓ Circular
- ✓ Notice
- ✓ Information discussion
- ✓ Follow-up or verbal instructions
- ✓ Face to face communication

Storage:

- ✓ Manual filing system
- ✓ Computer-based filing system

Forms:

- ✓ Personnel forms, telephone message forms, safety reports

Workplace interactions:

- ✓ Face to face
- ✓ Telephone
- ✓ Electronic and two-way radio
- ✓ Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams

Protocols:

- ✓ Observing meeting
- ✓ Compliance with meeting decisions
- ✓ Obeying meeting instructions.

ASSESSMENT GUIDE

Forms of assessment

Assessment for the unit needs to be continuous and holistic and must include real or simulated workplace activities.

- ✓ Direct Observation
- ✓ Oral interview and written test

Assessment context

Assessment of this unit must be completed on the job or in a simulated work environment which reflects a range of opportunities for communication

Critical aspects (for assessment)

Assessment requires evidence that the candidate:

- ✓ Prepared written communication following standard format of the organization
- ✓ Accessed information using communication equipment
- ✓ Spoken English at a basic operational level
- ✓ Made use of relevant terms as an aid to transfer information effectively
- ✓ Conveyed information effectively adopting the formal or informal communication

Assessment conditions

It is preferable that assessment reflects a process rather than an event and occurs over a period of time to cover varying circumstances.

UNDERPINNING KNOWLEDGE AND SKILL

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ General knowledge of English and Divehi grammar ✓ General knowledge of common telephone equipment ✓ General knowledge on effective communication ✓ Different modes of communication ✓ Written communication ✓ Organizational policies ✓ Communication procedures and systems	Skills to be developed: ✓ Undertake effective customer relation communications ✓ Competent in communicating basic with customers ✓ Fluency in English and Dhivehi language usage

UNIT TITLE	Provide effective customer care				
DESCRIPTOR	This unit addresses the importance of caring for customers. It is a very important unit related to providing effective customer care and will include greetings, identifying needs of, delivering quality customer care, handling of inquiries, complaints and managing angry customers.				
CODE	CONCM02V2/20	LEVEL	III	CREDIT	05

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Greet customers and colleagues	1.1. Customers and colleagues greeted according to standard procedures and social norms 1.2. Sensitivity to cultural and social differences demonstrated
2. Identify and attend to customer needs	2.1 Appropriate interpersonal skills are used to ensure that customer needs are accurately identified 2.2 Customer needs are assessed for urgency so that priority for service delivery can be identified 2.3 Personal limitation in addressing customer needs is identified and where appropriate, assistance is sought from supervisor 2.4 Customers informed correctly 2.5 Personal limitation identified and assistance from proper sources sought when required
3. Deliver service to customers	3.1 Customer needs are promptly attended to in line with organizational procedure 3.2 Appropriate rapport is maintained with customer to enable high quality service delivery 3.3 Opportunity to enhance the quality of service and products are taken wherever possible
4. Handle inquiries	4.1 Customer queries handled promptly and properly 4.2 Personal limitations identified and assistance from proper sources sought when required
5. Handle complaints	5.1 Responsibility for handling complaints taken within limit of responsibility 5.2 Personal limitations identified and assistance from proper sources sought when required 5.3 Operational procedures to handling irate or difficult customers followed correctly 5.4 Details of complaints and comments from

	customers properly recorded
6. Handle and manage angry customers	6.1 Apply principles related to anger management 6.2 Meet with angry customers and console them accordingly 6.3 Maintain a log book for recording customer service incidents.

RANGE STATEMENT

Procedures included:

- ✓ Greeting procedure
- ✓ Complaint and comment handling procedure
- ✓ Incidence reporting procedures
- ✓ General knowledge of property
- ✓ Standard operating procedures for service deliveries
- ✓ Non-verbal and verbal communication
- ✓ Dress and accessories
- ✓ Gestures and mannerisms
- ✓ Voice tonality and volume
- ✓ Culturally specific communication customs and practices
- ✓ Cultural and social differences

Includes but are not limited to:

- ✓ Modes of greeting, fare welling and conversation
- ✓ Body language/ use of body gestures
- ✓ Formality of language

Interpersonal skills:

- ✓ Interactive communication
- ✓ Good working attitude
- ✓ Sincerity
- ✓ Pleasant disposition
- ✓ Effective communication skills
- ✓ Customer needs

Customer with limitation may include:

- ✓ Those with a disability
- ✓ Those with special cultural or language needs
- ✓ Unaccompanied children

- ✓ Parents with young children
- ✓ Pregnant women
- ✓ Single women

Tools, equipment and materials required may include:

- ✓ Relevant procedure manuals
- ✓ Availability of telephone, printer, computer, internet, etc.
- ✓ Availability of data on projects and services; tariff and rates, promotional activities in place etc.

ASSESSMENT GUIDE

Form of assessment

Assessment for the unit needs to be holistic and must include real or simulated workplace activities.

Assessment context

Assessment of this unit must be completed on the job or in a simulated work environment which reflects a range of practices.

Critical aspects (for assessment)

It is essential that competence is fully observed and there is ability to transfer competence to changing circumstances and to respond to unusual situations. This unit may be assessed in conjunction with all units which form part of the normal job role.

- ✓ Assessment requires evidence that the candidate:
- ✓ Complied with industry practices and procedures
- ✓ Used interactive communication with others
- ✓ Complied with occupational, health and safety practices
- ✓ Promoted public relation among others
- ✓ Complied with service manual standards
- ✓ Demonstrated familiarity with company facilities, products and services
- ✓ Applied company rules and standards
- ✓ Applied telephone ethics
- ✓ Applied correct procedure in using telephone, printer, computer, internet
- ✓ Handled customer complaints
- ✓ Depict effective communication skills

Assessment conditions

- ✓ Theoretical assessment of this unit must be carried out in an examination room where proper examination rules are followed.
- ✓ Assessment of hygienic work practices must be constantly evaluated.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ effective customer services principles, including requirements to meet customer service needs and expectations ✓ workplace products and services ✓ customer service reporting procedures ✓ customer service problem-resolution procedures.	Skills to be developed: ✓ promote products and services in a clear and direct manner ✓ identify customer needs and expectations ✓ resolve customer concerns and complaints by taking appropriate action, including: • handling customer needs in a courteous, discreet and sensitive manner • addressing customer complaints and escalating where necessary ✓ apply workplace procedures relating to customer feedback, including: • customer service and continuous improvement processes • workplace customer service practices

UNIT TITLE	Perform computer operations				
DESCRIPTOR	This unit describes the performance outcomes, skills and knowledge required to start up a personal computer or business computer terminal; to correctly navigate the desktop environment; and to use a range of basic functions.				
CODE	CONCM03V2/20	**LEVEL**	III	**CREDIT**	03

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Start computer, system information and features	1.1. Adjust workspace, furniture and equipment to suit user ergonomic requirements 1.2. Ensure work organization meets organizational and occupational health and safety (OHS) requirements for computer operation 1.3. Start computer or log on according to user procedures 1.4. Identify basic functions and features using system information 1.5. Customize desktop configuration, if necessary, with assistance from appropriate persons 1.6. Use help functions as required
2. Organize files using basic directory and folder structures	2.1 Create folders/subfolders with suitable names 2.2 Save files with suitable names in appropriate folders 2.3 Rename and move folders/subfolders and files as required 2.4 Identify folder/subfolder and file attributes 2.5 Move folders/subfolders and files using cut and paste, and drag and drop techniques 2.6 Save folders/subfolders and files to appropriate media where necessary 2.7 Search for folders/subfolders and files using appropriate software tools 2.8 Restore deleted folder/subfolders and files as necessary
3. Print information	3.1 Print information from installed printer 3.2 View progress of print jobs and delete as required 3.3 Change default printer if installed and required
4. Apply web browsing skills	4.1 Introduction to WWW

	4.2 Acknowledge to gather relevant information from reliable sources 4.3 Use of search engines 4.4 Basic interaction of browser 4.5 Creating bookmarks in browser 4.6 Upload and download files 4.7 Navigation of hyperlink
5. Shut down computer	4.8 Close all open applications 4.9 Shut-down computer according to user procedures
6. Basic Microsoft Word and Excel skills	6.1. Ensure data is entered, checked and amended in accordance with organizational and task requirements, to maintain consistency of design and layout 6.2. Format spreadsheet using software functions; to adjust page and cell layout to meet information requirements, in accordance with organizational style and presentation requirements 6.3. Ensure formulae are used and tested to confirm output meets task requirements, in consultation with appropriate personnel as required 6.4. Use manuals, user documentation and online help to overcome problems with spreadsheet design and production 6.5. Format document using appropriate software functions to adjust page layout to meet information requirements, in accordance with organizational style and presentation requirements 6.6. Use system features to identify and manipulate screen display options and controls 6.7. Use manuals, user documentation and online help to overcome problems with document presentation and production

RANGE STATEMENT

This unit covers computer hardware to include personal computers used independently or within networks, related peripherals, such as printers, scanners, keyboard and mouse, and storage media such as disk drives and other forms of storage. Software used must include but not limited to word processing, spreadsheets, database and billing software packages and Internet browsing software.

Tools, equipment and materials required may include:

- ✓ Storage device
- ✓ Different software and hardware
- ✓ Personal computers system
- ✓ Laptop computer
- ✓ Printers
- ✓ Scanner
- ✓ Keyboard
- ✓ Mouse
- ✓ Disk drive /CDs, DVDs, compressed storage device

ASSESSMENT GUIDE

The assessment guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this occupational standard

Forms of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- ✓ direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance by the candidate
- ✓ demonstration of techniques
- ✓ oral or written questioning to assess knowledge of computer operations and functions
- ✓ review of shortcuts created
- ✓ review of folders/subfolders created.

Critical aspects (for assessment)

Evidence of the following is essential:

- ✓ navigation and manipulation of the desktop environment within the range of assigned workplace tasks
- ✓ knowledge of organizational requirements for simple documents and filing conventions
- ✓ application of simple keyboard functions to produce documents with a degree of speed and accuracy relevant to the level of responsibility required.

Assessment conditions

- ✓ Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.
- ✓ Assessment must include direct observation of tasks.
- ✓ Where assessment of competency includes third-party evidence, individuals must provide evidence
- ✓ Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge required: ✓ Basic ergonomics of keyboard and computer use ✓ Main types of computers and basic features ✓ Of different operating systems ✓ Main parts of a computer ✓ Storage devices and basic categories of memory ✓ Relevant software ✓ General security and computer Viruses	Skills required: ✓ communication skills to identify lines of communication, to request advice, to effectively question, to follow instructions and to receive feedback ✓ problem-solving skills to solve routine problems in the workplace, while under direct supervision ✓ technology skills to use equipment safely while under direction, basic keyboard and mouse skills and procedures relating to logging on and accessing a computer ✓ basic typing techniques and strategies.

UNIT TITLE	Provide first aid				
DESCRIPTOR	This unit deals with the skills and knowledge required for the provision of essential first aid in recognizing and responding to emergency using basic life support measures. The person providing first aid is not expected to deal with complex casualties or incidents, but to provide an initial response where first aid is required.				
CODE	CONCM06V1/21	**LEVEL**	III	**CREDIT**	05

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Assess the situation	1.1. Physical hazards and risks to self and others' health and safety identified 1.2. Immediate risks to self and casualty's health and safety minimized by controlling hazards in accordance with occupational health and safety requirements 1.3. The situation assessed and prompt decision taken on actions required 1.4. Assistance sought from relevant persons/authority, as required and at the appropriate time
2. Apply basic first aid techniques	2.1. Casualty's physical condition assessed by visible vital signs 2.2. First aid provided to stabilize the patient's physical and mental condition in accordance with enterprise policy on provision of first aid and recognized first aid procedures 2.3. Available first aid equipment used as appropriate
3. Monitor the situation	3.1. Back-up services appropriate to the situation identified and notified promptly 3.2. Information about the patient's condition reported accurately and clearly to emergency services personnel or health professionals
4. Prepare required documentation	4.1. Documented emergency situations according to enterprise procedures 4.2. Clear and accurate reports are provided within

	required time frames

RANGE STATEMENT

The following explanations identify how this unit may be applied in different workplaces, sectors and circumstances. First aid treatment is that defined in Common Law as emergency assistance provided to a second party in the immediate absence of medical or paramedical care.

Established first aid principles include:

- ✓ Checking and maintaining the casualty's airway, breathing and circulation
- ✓ Checking the site for danger to self, casualty and others, and minimizing the danger.

Physical and personal hazards may include:

- ✓ Workplace hazards such as fire, floods, violent persons
- ✓ Environmental hazards such as electrical faults, chemical spills, fires, slippery surfaces, floods, wild animals, fumes,
- ✓ Proximity of other people
- ✓ Hazards associated with the casualty management processes

Risks may include:

- ✓ Worksite equipment, machinery and substances
- ✓ Bodily fluids
- ✓ Risk of further injury to the casualty
- ✓ Risks associated with the proximity of other workers and bystanders

First aid management will need to account for:

- ✓ Location and nature of the work environment
- ✓ Environmental conditions and situations, such as electricity, biological risks, weather and terrain, motor vehicle accidents,
- ✓ The level of knowledge, skills, training and experience of the person administering first aid
- ✓ Familiarity with particular injuries
- ✓ Legal issues that affect the provision of first aid in different industry sectors
- ✓ The characteristics of the site where the injury occurs
- ✓ The nature of the injury and its cause
- ✓ Infection control procedures
- ✓ Availability of first aid equipment, medications and kits or other suitable alternative aids
- ✓ Proximity and availability of trained paramedical and medical/health professional assistance

- ✓ The patient's cardio-vascular condition as indicated by vital signs such as body temperature, pulse rate and breathing rates
- ✓ Unresolved dangers such as fire, chemical contamination or fume toxicity of the area where the injury occurs

Vital signs include:

- ✓ Breathing
- ✓ Circulation
- ✓ Consciousness

Injuries may include:

- ✓ Abdominal trauma
- ✓ Allergic reactions
- ✓ Bleeding
- ✓ Chemical contamination
- ✓ Choking
- ✓ Cold injuries
- ✓ Cardio-vascular failure
- ✓ Dislocations and fractures
- ✓ Drowning
- ✓ Poisoning and toxic substances
- ✓ Medical conditions including epilepsy, diabetes, asthma
- ✓ Eye injuries
- ✓ Head injuries
- ✓ Minor skin injuries
- ✓ Neck and spinal injuries
- ✓ Needle stick injuries
- ✓ Puncture wounds and cuts
- ✓ Crush injuries
- ✓ Shock
- ✓ Smoke inhalation
- ✓ Sprains and strains
- ✓ Substance abuse
- ✓ Unconsciousness
- ✓ Infections
- ✓ Inhalation of toxic fumes and airborne dusts
- ✓ Bone and joint injuries
- ✓ Eye injuries

- ✓ Burns and scalds, thermal, chemical, friction and electrical

Injuries may involve:

- ✓ Unconsciousness
- ✓ Confusion
- ✓ Tremors
- ✓ Rigidity
- ✓ Numbness
- ✓ Inability to move body parts
- ✓ Pain
- ✓ Delirium
- ✓ External bleeding
- ✓ Internal bleeding
- ✓ Heat exhaustion
- ✓ Hypothermia
- ✓ Pre-existing illness

Appropriate persons/authority from whom assistance may be sought may include:

- ✓ Emergency services personnel
- ✓ Health professionals
- ✓ Colleagues
- ✓ Customers
- ✓ Passers by

Assistance may include, as appropriate to emergency situations:

- ✓ Maintaining site safety and minimizing the risk of further injury or injury to others
- ✓ Making the casualty comfortable and ensuring maximum safety
- ✓ Assessment of injury situations
- ✓ Providing first aid including managing bleeding through the application of tourniquets, pressure and dressings
- ✓ Giving CPR and mouth-to-mouth resuscitation
- ✓ Giving reassurance and comfort
- ✓ Raising the alarm with emergency services or health professionals
- ✓ Removing debris

Tools, equipment and material used in this unit may include:

- ✓ First aid kit
- ✓ Pressure and other bandages

- ✓ Thermometers
- ✓ Eyewash
- ✓ Pocket face masks
- ✓ Rubber gloves
- ✓ Dressings
- ✓ Flags and flares
- ✓ Fire extinguishers
- ✓ Communication equipment such as mobile phones

ASSESSMENT GUIDE

Forms of assessment

Assessment methods must be chosen to ensure that application of accepted first aid techniques can be practically demonstrated. Methods must include assessment of knowledge as well as assessment of practical skills.

The following examples are appropriate for this unit:

- ✓ Practical demonstration of the use of commonly-used equipment and first aid supplies
- ✓ Explanation about management of a variety of common simulated injury situations
- ✓ Questions to test knowledge of injury situations, types of injury and management of injury situations
- ✓ Review of portfolios of evidence and third-party reports of performance of first aid by the candidate

Assessment context

This unit may be assessed in a simulated environment

Critical aspects (for assessment)

Assessment must ensure:

- ✓ Use of real first aid equipment
- ✓ Ability to assess situations requiring first aid and to decide on a plan of action including seeking help
- ✓ Ability to apply established first aid principles including:
    - Checking and maintaining the casualty's airway, breathing and circulation
    - Checking the site for danger to self, casualty and others and minimizing the danger

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
✓ Basic anatomy and physiology ✓ Resuscitation ✓ Bleeding control ✓ Care of the unconscious ✓ Airway management ✓ Basic infection control principles and procedures ✓ Legal requirements ✓ Duty of care ✓ Reporting requirements	✓ Assertiveness skills ✓ Communication skills ✓ Decision making ✓ Report preparation ✓ Provide first aid ✓ Provide various types of treatments ✓ Demonstrate the four-step process providing basic first aid

UNIT TITLE	Respond to fire				
DESCRIPTOR	This unit covers the competency required to carry out initial response to suppress a fire. It also includes the ability to identify the nature and classification of the fire, report the fire and carry out evacuation procedures. The unit does not cover the competencies needed to become a professional firefighter and will be covered in other related units in relevant standards.				
CODE	CONCM07V1/21	**LEVEL**	III	**CREDIT**	03

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Prepare for fire	1.1 Procedures related to a fire emergency are accessed, interpreted and rehearsed 1.2 Location of firefighting equipment is identified and the equipment is checked in accordance with organizational procedures and referred for maintenance/replacement as required
2. Carry out initial notification and assessment	2.1 Nature and scope of the fire is identified, confirmed and reported to appropriate personnel 2.2 Fire situation is assessed and appropriate course of action is determined in keeping with requirements for personal safety 2.3 Notification of fire threat is undertaken in accordance with authorized procedures 2.4 Emergency evacuation procedures are followed, where appropriate, and in accordance with organizational procedures
3. Extinguish fires	3.1 Fires are extinguished using the appropriate equipment, materials and procedures 3.2 Extinguisher is applied to ensure fast knockdown of fire 3.3 Extinguisher is used at the appropriate range and time 3.4 Extinguisher is used to minimize damage to equipment and facilities and to minimize risk of injury to personnel

Range Statement

The Range Statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. Firefighting equipment may include,

- ✓ Extinguishers
- ✓ Fire blankets
- ✓ Fire hose reels
- ✓ Fire hydrants
- ✓ Firefighting vehicles
- ✓ Personal protection equipment (PPE)

Tools, equipment and material used in this unit may include:

All relevant equipment to develop the competency of providing fire skills relevant.

ASSESSMENT GUIDE

Forms of assessment

Assessment methods must be chosen to ensure that application of firefighting can be practically demonstrated. Methods must include assessment of knowledge as well as assessment of practical skills.

Assessment context

This unit may be assessed in a simulated environment.

Critical aspects (for assessment)

Assessment must ensure:

- ✓ Use of real fire related equipment
- ✓ Ability to assess situations requiring responding to fire and to decide on a plan of action including seeking help

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be developed: ✓composition of teams, and roles and responsibility of team members ✓fire alarm systems ✓local area emergency procedures ✓principles of teamwork, team aims and objectives ✓site emergency plan ✓techniques for supporting others/team members ✓types, operations and application of firefighting equipment including extinguishers, hose reels and, where appropriate, monitors ✓verbal and non-verbal communication techniques including language, language style, active listening	Skills to be development: ✓ access, read and interpret local emergency procedures ✓ apply evacuation procedures ✓ assess fire situation and notify authorities ✓ carry out periodic checks on firefighting equipment ✓ identify emergency alarms and match with response requirement ✓ identify, select and use firefighting equipment ✓ participate in a team ✓ use a variety of verbal and non-verbal communication techniques

UNIT TITLE	Apply Science and Engineering Measurements				
DESCRIPTOR	This unit of competency covers the ability to manage the day-to-day running of science teaching laboratories and the preparation of practical experiments, demonstrations also determining simple drawings.				
CODE	CONS08CR01V1/21	**LEVEL**	III	**CREDIT**	04

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Apply basic mathematics	1.1. Perform simple calculations on: fractions and decimals, calculations to a number of significant figures, decimal places 1.2. Identify and use the multiples and sub-multiples of units 1.3. Perform calculations on: perimeter and area of plane figures (i.e. square and rectangle, triangle, circle), volume and surface area (i.e. cube, rectangular prism, cylinder), mass of containers and their contents (i.e. cube, rectangular prism, cylinder) 1.4. Perform mathematical calculations involving formulas, angles, triangles and geometric construction 1.5. Identify and use formulas for SI quantities: length, area, volume, mass, density 1.6. Identify the elements of a circle Parts: radius, diameter, circumference, chord, sector, segment, arc, tangent 1.7. Identify and use the ratio of sides of 45° and 60° right angled triangles. 1.8. Identify and use the rules of 3:4:5 and 5:12:13 for the sides of right-angled triangles. 1.9. Solve simple workshop problems involving Pythagoras and right-angled triangles. 1.10. Evaluate and transpose simple formulae associated with workshop problems. 1.11. Convert minutes and seconds to decimal fractions of a degree.
2. Apply Fundamental of Science	2.1 Systems of measurements, Motion in one dimension and two dimensions 2.2 Newton's Laws I & II 2.3 Gravity 2.4 Mechanics of solids and fluids

3. Demonstrate simple drawing	3.1. Identify angles, plane figures and types of drawing 3.2. Identify first and third angle orthographic projections of isometric or oblique views. 3.3. Identify single plane sectional views of simple components. 3.4. Perform basic drafting 3.5. Read and interpret drawings 3.6. Introduce basics of AUTOCAD
4. Undertake relevant measurement	4.1 Identify measuring devices 4.2 Follow appropriate measuring procedures 4.3 Keep record of the measurements

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Risk assessment

- ✓ identifying and analyzing the risk, and considering potential consequences in terms of exposure and hazard and likelihood of each
- ✓ assessing the effectiveness of existing controls
- ✓ determining level of risk, comparing with pre-established criteria for tolerance (or as low as reasonably achievable) and ranking of risks requiring control

Tools, equipment and materials required may include:

Typical materials

- ✓ distilled water, reagents, chemicals, disinfectants, detergents, agar media and plates
- ✓ consumable items, such as syringes, pipette tips and weigh boats
- ✓ oils/lubricants, fuels, industrial gases and cryogenics, such as dry ice and liquid nitrogen
- ✓ equipment spares, such as fuses, bulbs and batteries

Typical equipment

- ✓ analytical instruments, such as ultraviolet-visible (UV-VIS) and atomic absorption spectrometers (AAS), gas chromatography (GC) and high-pressure liquid chromatography (HPLC)
- ✓ containment equipment, such as fume hoods, biohazard containers and biological safety cabinets, and animal cages
- ✓ general equipment, such as autoclaves, ultrasonic cleaners, dishwashers, refrigerators, freezers, ovens, microwave ovens, incubators, gas cylinders and muffle furnaces

- ✓ specialized equipment, such as microtomes and tissue processors, cell counters and staining machines, light and fluorescence microscopes, pH meters and ion selective electrodes
- ✓ bench equipment, such as thermometers, balances, blenders, centrifuges and separating equipment, water baths, hotplates, mantles, burners, glassware (burettes, pipettes), plastic ware, glass, plastic and quartz cuvettes
- ✓ teaching aids, such as technology players and computers

ASSESSMENT GUIDE

Forms of assessment

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Competency standard.

Critical aspects (for assessment)

Assessors should ensure that candidates have knowledge of:

- ✓ principles of risk assessment, risk management and hierarchy of control
- ✓ typical hazards and risk assessments associated with practical science classes and demonstrations
- ✓ risk control methods for typical hazards
- ✓ principles of small-scale budgeting, operational planning and efficient resource use
- ✓ scientific terminology and technical details of sampling, testing, equipment and instrumentation used in the education program's practical activities
- ✓ principles of good laboratory practice (GLP)
- ✓ awareness of environmental sustainability issues as they relate to the work task
- ✓ legal, ethical and work health and safety (WHS) requirements specific to the work task.

Assessment conditions

- ✓ use of suitable facilities, equipment and resources, including:
    - laboratory/field work environment, equipment and materials
    - personal protective equipment (PPE) and safety equipment
    - WHS management system, policies and procedures
- ✓ modelling of industry operating conditions, including:
    - access to staff and students.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ Learn about basic mathematics with focus on Perform simple calculations on fractions and decimals, calculations to a number of significant figures, decimal places, perimeter and area of plane figures, volume and surface area. ✓ Identify and use formulas for SI quantities for length, area, volume, mass, density ✓ Solve simple workshop problems involving Pythagoras and right-angled triangles and Evaluate and transpose simple formulae associated with workshop problems. ✓ Systems of measurements, Motion in one dimension and two dimensions ✓ Newton's Laws I & II ✓ Gravity ✓ Mechanics of solids and fluids ✓ Identify angles, plane figures and types of drawing ✓ Identify first and third angle orthographic projections of isometric or oblique views. ✓ Identify single plane sectional views of simple components. ✓ Perform basic drafting ✓ Read and interpret drawings ✓ Identify measuring devices ✓ Follow appropriate measuring procedures ✓ Keep record of the measurements	Skilled to be developed: ✓ Demonstrate capacity to undertake basic mathematics with focus on Perform simple calculations on fractions and decimals, calculations to a number of significant figures, decimal places, perimeter and area of plane figures, volume and surface area. ✓ Interpret use formulas for SI quantities for length, area, volume, mass, density ✓ Solve simple workshop problems involving Pythagoras and right-angled triangles and Evaluate and transpose simple formulae associated with workshop problems. ✓ Perform calculations related to Mechanics of solids and fluids ✓ Undertake basic drawing including identification of angles, plane figures and types of drawing ✓ Identify first and third angle orthographic projections of isometric or oblique views. ✓ Identify single plane sectional views of simple components. ✓ Perform basic drafting ✓ Read and interpret drawings

UNIT TITLE	Perform safe workshop practice				
DESCRIPTOR	Students commencing a career in plumbing need to develop a good basic knowledge of mechanical fittings practices prior to proceeding to the development of Plumbing knowledge and skills				
CODE	CONS08CR04V1/21	LEVEL	III	CREDIT	06

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Identify and explain functions tools used in mechanical workshop	1.1 Sketch and name tools used in the mechanical workshop 1.2 Explain functions of the identified tools and scope of their use
2. Identify and explain properties of various pipes and their applications	2.1 Identify types of pipes used in plumbing and sewerage services 2.2 Interpret functions and their application within plumbing services and sewerage operations 2.3 Demonstrate joining methods of the pipes 2.4 Familiarize with fitting used on these different pipes
3. Use measuring instruments properly	3.1 Identify names and functions of various measuring instruments used in mechanical workshop 3.2 Demonstrate use of various measuring instruments
4. Apply safe electrical skills	4.1 Interpret electrical safety 4.2 Familiarize with functions and applications of electrical tools and equipment 4.3 Perform simple electrical circuits 4.4 Perform electrical measurements using measuring devices on single phase and three phase equipment. 4.5 Diagnose faults on electrical connections on electrically operated appliances
5. Perform basic workshop practices	5.1 Undertake marking out on pipe 5.2 Perform pipe cutting methods 5.3 Perform drilling holes on pipes 5.4 Perform filing on pipes

RANGE STATEMENT

Work connected to this unit shall take place at a mechanical workshop with welding equipment installed.

Tools, equipment and materials required may include:

- ✓ Basic Workshop Tools
- ✓ Basic Measuring Instruments
- ✓ Flow meter

ASSESSMENT GUIDE

Forms of assessment

Continuous/holistic assessment is suitable to assess the competencies of a welder with regard to this unit.

Critical aspects (for assessment)

The assessment must confirm that the candidate is able to:

- ✓ Identify basic workshop tools
- ✓ Undertake basic workshop practices such as cutting, filing, hack sawing
- ✓ Perform electrical safety related to welding
- ✓ Identify metals and their applications,

Assessment conditions

The candidate will have access to

- ✓ All tools, equipment, material, blue prints, sketches, workshop drawings and other documentation required.

The candidate will be required to:

- ✓ Orally, or by other methods of communication, answer questions asked by the assessor.
- ✓ Identify superiors who can be approached for the collection of competency evidence, where appropriate.
- ✓ Present evidence of credit for any off-job training related to this unit.

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, and that he/she possess the required underpinning knowledge.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ Basic workshop tools ✓ Basic measuring instruments ✓ Basic electrical safety ✓ Metals and their applications in engineering ✓ electrical principles, including current, voltage, resistance and power, series circuits, parallel circuits, Ohm's law ✓ basic electrical circuit components, including, cable types and sizes and current carrying capacity, circuit protection devices, switches and relays ✓ diagnose techniques and reading and interpreting technical information, including circuit types, diagrams and symbols ✓ types and operation of electrical testing equipment, including digital multimeters and other tools ✓ Locating faults, validation and reporting	Skills to be developed: ✓ Proper use of tools ✓ Perform workshop practices ✓ Wear safety equipment ✓ Interpret safety and electrical fundamentals ✓ Develop electrical circuits of diverse range ✓ methods to locate and interpret information required to diagnose and repair pumps and motors ✓ application, purpose and operation of electric pumps and motors and components ✓ Application of measuring and diagnostic tools equipment ✓ Demonstrate diagnostic testing using diagnostic flow charts and testing electrical systems, ✓ post-repair testing procedures for pumps and motors

UNIT TITLE	Carry out simple concreting and rendering				
DESCRIPTOR	This unit of competency specifies the outcomes required to perform minor repairs and undertake minor concreting and rendering tasks. This unit of competency supports development of basic concreting skills needed for plumbing applications.				
CODE	CONS08CR02V1/21	**LEVEL**	III	**CREDIT**	03

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Prepare for work	1.1 Work health and safety and quality assurance requirements are identified and adhered. 1.2 Tools and equipment, including personal protective equipment, are selected and checked for serviceability. 1.3 Sustainability principles and concepts are applied.
2. Place concrete.	2.1 Concrete mixture is prepared to meet job and manufacturer requirements. 2.2 Formwork or excavation area is cleaned of excess material and debris prior to concrete placement. 2.3 Concrete is safely transported by an approved method. 2.4 Concrete is placed in formwork or placement site to specified depth ensuring all cavities are filled. 2.5 Concrete is screened to the alignment of formwork and project specified datums. 2.6 Surface of concrete is finished according to specifications.
3. Place rendering	3.1 Render mixture is prepared to meet manufacturer requirements. 3.2 Render is safely transported by an approved method. 3.3 Render is applied in the required location. 3.4 Surface of render is finished according to specifications.
4. Clean up.	4.1 Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification. 4.2 Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

	4.3 Information is accessed and documentation completed according to workplace requirements.

RANGE STATEMENT

It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included

Tools, equipment and material used in this unit may include,

- ✓ levels
- ✓ shovels
- ✓ stipple devices
- ✓ trowels
- ✓ wheel barrows.

ASSESSMENT GUIDE

Forms of assessment

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

Critical aspects (for assessment)

A person who demonstrates competency in this unit must be able to provide evidence of:

- ✓ applying safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- ✓ given the plans and specifications, carrying out simple concreting and rendering projects

Assessment conditions

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Students need to be supplied with tools and equipment appropriate to applying safe work practices, followed by all the materials required for performing the task of concreting and rendering operations.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ basic levelling techniques ✓ categories of materials and their safe handling, storage and transport requirements ✓ concrete and plastering materials ✓ concreting and plastering techniques ✓ material safety data sheets (MSDS) ✓ WHS and environmental legislation and requirements ✓ plans, drawings and specifications ✓ processes for the calculation of material requirements ✓ simple formwork and reinforcing componentry ✓ types of waste and their disposal, including an awareness only of the requirements for asbestos handling and disposal ✓ workplace safety requirements	Skills to be developed: ✓ teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities ✓ technology skills to access and understand site-specific instructions. ✓ Read and interpret drawing and prepare for performing concreting and rendering tasks. ✓ Identify and gather materials for the assignment. ✓ Undertake concreting and rendering ✓ Clean the work area after the operations ✓ Complete paper work related to the completed task.

UNIT TITLE	Prepare Estimates and Read layouts				
DESCRIPTOR	This unit covers the competencies required to plan and prepare estimates for and reading layouts. This unit typically helps to prepare a work plan for the clients to their needs.				
CODE	CONS08CR03V1/21	LEVEL	III	CREDIT	03

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Determine customer requirements	1.1. Data required for welding job, collected from the models, sketches or drawings supplied, or by visiting the client's sites (free hand drawing with isometric drawing) 1.2. Purpose & type of the welding and material required, determined by interpreting sketches/drawings/ models supplied by customer/client 1.3. Conceptual drawings, work plan, for the job prepared, briefed to client & approval for the production obtained
2. Develop a sketch and prepare estimates for the fabrication	2.1 Sketches /drawings prepared with available data 2.2 Accessories, and other fixtures / components listed as required for the welding of the job listed 2.3 Machinery & tools required for the welding job listed 2.4 Material quantified and cost estimated including added percentage for wastage 2.5 Welding time estimated considering worksite conditions and welding hours & charges for welding of individual components of the job calculated 2.6 Complete estimate for the welding prepared, by adding full cost of production, cost for transport & logistics, inclusive of overheads and profit, according to company policy
3. Prepare work plan & obtain clients approval to commence work	3.1 Work plans/flowcharts for the welding each item of the prepared & due dates for

	completion estimated 3.2 Cost of entire welding job & the due date of delivery/handing over informed to the client 3.3 Approval to commence the welding job obtained from the client, by submitting drawings, cost estimate & other relevant information and by negotiating & agreeing to deliver on targets.

RANGE STATEMENT

Work connected to this unit shall take place at a company office or construction work sites.

Tools, equipment and material used in this unit may include:

- ✓ Measuring and marking out tools
- ✓ Free hand Drawing (Isometric drawing)
- ✓ Drawing instruments
- ✓ Drawing paper
- ✓ Flow chart paper
- ✓ Ancillary handling tools
- ✓ Models
- ✓ Specimen forms
- ✓ Safety gear

ASSESSMENT GUIDE

Forms of assessment

Continuous/holistic assessment is suitable to assess the competencies of a welder with regard to this unit.

Critical aspects (for assessment)

The assessment must confirm that the candidate is able to gather information from client, interpret drawings/sketches, calculate costs and effectively communicating these tasks clearly to the client.

Assessment conditions

The candidate will have access to all tools, equipment, material, blue prints, sketches, workshop drawings and other documentation required. The candidate will be permitted to refer to relevant work place procedures, products manufacturer's information and relevant drawings, manuals, codes, standards & reference material. The candidate will be required to orally, or by other methods of communication, answer questions asked by the assessor.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ Properties of various materials used for water and sanitation tasks. ✓ Methods of communication to clients. ✓ Reading and interpretation of plans and related knowledge of symbols in metal fabrication / welding drawings ✓ Professional presentation of drawing, and work estimations with all the relevant details.	Skills to be developed: ✓ Interpret blueprints /sketches/engineering drawing to determine scope of metal fabrication and the skills in developing an idea from details available with clients or model ✓ Measuring of intricate shapes ✓ Drawing sketches and assembly drawings of the components ✓ Measurements & marketing out ✓ Safe working at heights and adherence

UNIT TITLE	Install Domestic water pipe systems				
DESCRIPTOR	This unit of competency specifies the outcomes required to install and test water pipes across buildings. Water pipe system includes setting up water pipe network across the locations within the buildings such as installing water pipes systems in toilets, kitchen and other needful areas.				
CODE	CONS08CR05V1/21	LEVEL	III	CREDIT	04

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Plan and prepare.	1.1 Work instructions and relevant information, including plans, specifications, quality requirements and operational details relevant to the tasks, are obtained, 1.2 Signage requirements are identified and obtained from project traffic management plan and traffic conditions and are implemented. 1.3 Plant, tools and equipment selected to carry out tasks are consistent with requirements of the job, are checked for serviceability and any faults are rectified or reported. 1.4 Environmental requirements are identified from project environmental management plan, confirmed and applied to the allotted task.
2. Set out and excavate.	2.1 Work area and materials are prepared to support efficient installation of the pipe work. 2.2 Dewatering requirements are determined and applied. 2.3 Location, alignment direction, level and grade of mains pipe system are determined from job drawings. 2.4 Works are set out to specification. 2.5 Plant operator is advised of excavation requirements and levels are monitored. 2.6 Mains pipe system support mechanism is installed according to plans, specifications and standards

3. Install pipeline	3.1 Pipes are lowered joined according to manufacturer specifications using pipe joining methods 3.2 Pipes are placed and fittings, valves and flow control devices are fitted according to drawings, specifications and installation procedures 3.3 Alignment level and grade are checked continuously for conformance with design plans and specifications 3.4 Side support or overlay is positioned beside the pipes. 3.5 Main pipe system support structure is checked 3.6 Backfill procedure and concepts are observed when preparing for and undertaking work process
4. Test pipe system	4.1 Testing is performed to relevant authorities' requirement as determined by specifications 4.2 Pipe system test procedure are performed, 4.3 Test results are recorded and reported
5. Clean up.	5.1 Work area is cleared and materials disposed of, reused or recycled according to legislation 5.2 Plant, tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and standard work practices.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Tools, equipment and material used in this unit may include:

- ✓ brooms
- ✓ bull floats
- ✓ edging tools
- ✓ hand floats (steel and wood)
- ✓ levels
- ✓ shovels
- ✓ stipple devices
- ✓ trowels
- ✓ wheel barrows.

ASSESSMENT GUIDE

Forms of assessment

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Competency Standard.

Critical aspects (for assessment)

A person who demonstrates competency in this unit must be able to provide evidence of applying sustainability principles and concepts, locating, interpreting and applying relevant information, standards and specifications complying with site safety plans, communicating and working effectively and safely with others.

Assessment conditions

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context. Assessment is to comply with relevant regulatory or standard requirements.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ equipment types, characteristics, technical capabilities and limitations ✓ excavation and trench safety ✓ installation of booster systems ✓ installation of thrust blocks ✓ mains pipe systems and installation procedures ✓ mains water pressure ✓ materials safety data sheets (MSDS) and materials handling methods ✓ operational, maintenance and basic diagnostic procedures, including testing procedures ✓ plumbing industry terminology ✓ processes for interpreting engineering drawings ✓ processes for calculating pipeline grades and percentages ✓ project quality requirements ✓ sedimentation and erosion controls ✓ site and equipment safety requirements ✓ site isolation and traffic control responsibilities and authorities ✓ valves and flow control devices ✓ water reticulation	Skills to be developed: ✓ communication skills to determine requirements, complete written records and reports of test results ✓ read and interpret documentation from a variety of sources ✓ plans and specifications ✓ numeracy skills to apply measurements and calculations ✓ planning and organising skills to plan and sequence tasks with others ✓ plan and set out work ✓ teamwork skills to work with others ✓ technology skills to access and understand site-specific instructions ✓ Cut pipes to measurements ✓ Install pipe network ✓ Proper use of fitting ✓ Testing domestic water system ✓ Proper documentation filled

UNIT TITLE	Install and fit off sanitary fixtures				
DESCRIPTOR	This unit of competency specifies the outcomes required to install and fit off sanitary fixtures. It applies to the installation of sanitary plumbing, including the connection of discharge pipes to sanitary plumbing and drainage, including soil and waste fixtures.				
CODE	CONS08CR06V1/21	LEVEL	III	CREDIT	04

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Plan system layout	1.1 Site inspection is undertaken to determine job requirements 1.2 Quantity, location and type of fixtures are determined from design drawings, plans and elevations and other relevant information. 1.3 Layout of sanitary plumbing system is planned according to plans and relevant Maldivian standards. 1.4 Materials and fixtures required are determined from proposed design.
2. Identify installation requirements.	2.1 Position of sanitary fixtures is determined in accordance with plans, specifications and site requirements. 2.2 Quantity and type of materials, including pipe materials required, are calculated from design drawings and specifications. 2.3 Materials and equipment are identified, ordered and collected in accordance with workplace procedures. 2.4 Materials and equipment are checked for compliance
3. Install and fit off sanitary fixtures.	3.1 Set out is checked for compliance with design drawings. 3.2 Fixtures are positioned and installed to comply with plans, specifications and manufacturer requirements. 3.3 Fixtures, components and pipework are assembled, installed and tested 3.4 Fixtures are installed and connected without

	damage or distortion to fixture, pipework, surrounding environment or other services. 3.5 Completed installation is checked for correct functioning and compliance with specifications.
4. Identify joining requirements	4.1 Joining materials are selected to comply with plans and specifications. 4.2 Sealants, fixing materials and sheet metal materials are checked for compatibility and are appropriate for the job.
5. Install and test pipe system	5.1 Pipe system is set out to comply with plans, specifications and relevant Maldivian standards. 5.2 Fixings and supports are installed to manufacturer recommendations, job plans and specifications, and relevant Maldivian standards. 5.3 Pipes are installed and jointed according to relevant Maldivian standards, without damage or distortion to pipework, surrounding environment and other services. 5.4 Pipe system is tested to comply with relevant Maldivian standards and adjusted.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Tools, equipment and material used in this unit may include:

- ✓ hand and power tools
- ✓ heating, cutting and bending equipment
- ✓ ladders
- ✓ lifting and load shifting equipment, including chain blocks, elevated work platforms, forklifts, hand trolleys, hoists and jacks
- ✓ measuring equipment.
- ✓ drawing instruments
- ✓ measuring equipment
- ✓ plans, including building plan, sanitary plan and drainage plan.

ASSESSMENT GUIDE

Forms of assessment

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Competency Standard.

Critical aspects (for assessment)

A person who demonstrates competency in this unit must be able to provide evidence of locating, interpreting and applying relevant information, standards and specifications to install and fit off sanitary fixtures, applying safety requirements throughout the work sequence, including electrical requirements and the use of personal protective clothing and equipment.

Assessment conditions

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ characteristics and the application of different pipe fittings and fixture supports, including fixing and joining techniques ✓ levelling and alignment processes ✓ performance measures and characteristics of sanitary fixtures ✓ process of installing and fitting off sanitary fixtures ✓ appropriateness of different fastening methods for different applications ✓ characteristics of various metal materials and their compatibility with different joining methods ✓ application of various sanitary and drainage fixtures and appliances ✓ characteristics and the application of different pipe systems, principles of drainage ✓ principles of sanitary plumbing ✓ materials handling processes ✓ process of fabricating and installing sanitary stacks ✓ product and service standards applicable to the installation ✓ properties of soil and waste discharges, including temperature and corrosive discharges	Skills to be developed: ✓ organisational skills, including the ability to plan and set out work ✓ teamwork skills to work with others ✓ technological skills to access and understand site-specific instructions. ✓ communication skills to determine requirements ✓ planning and organising skills to plan and sequence tasks with others. ✓ Plan and set out work teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities ✓ Perform with care in fixing sanitary fixtures ✓ Inspect and check the fitting.

UNIT TITLE	Locate clear blockages and fix leaks				
DESCRIPTOR	This unit of competency specifies the outcomes required to locate and clear blockages to sanitary plumbing and drainage with the use of mechanically operated drain clearing machines and attachments, and manually operated drain cleaning tools and equipment where applicable.				
CODE	CONS08CR07V1/21	**LEVEL**	III	**CREDIT**	03

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Prepare for work.	1.1 Plans and specifications are obtained from job supervisor. 1.2 Work health and safety (WHS) and environmental requirements associated with locating and clearing blockages are adhered to throughout the work. 1.3 Quality assurance requirements are identified and adhered to in accordance with workplace requirements. 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work. 1.5 Tools and equipment, including personal protective equipment, are selected and checked for serviceability. 1.6 Work area is prepared to support efficient locating and clearing of blockage.
2. Locate and clear blockage.	2.1 Section containing blockage is located and isolated and its material identified. 2.2 Blockage clearing equipment is selected according to the job. 2.3 Where necessary, mechanical drain clearing equipment is assembled and used according to manufacturer instructions. 2.4 Blockage is cleared without causing damage to pipework and fittings. 2.5 Pipework is tested to confirm blockage is cleared from pipe system. 2.6 Where required, authorities are advised of work completion. 2.7 Sustainability principles and concepts are applied throughout the locating and clearing process.
3. Clean up.	3.1 Work area is cleared and materials disposed of, reused or

	recycled according to legislation, regulations, codes of practice and job. 3.2 Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures. 3.3 Information is accessed and documentation completed according to workplace requirements.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Tools, equipment and material used in this unit may include:

- ✓ hacksaw
- ✓ hand and power tools
- ✓ heating equipment
- ✓ manually operated drain cleaning, including plungers and rods
- ✓ measuring equipment
- ✓ mechanically operated drain clearing machines and attachments, including the use of a sanitary snake
- ✓ pipe cameras
- ✓ pipe locating equipment
- ✓ plungers
- ✓ rods.
- ✓ excavation plant and equipment
- ✓ ladders
- ✓ lifting and load shifting equipment
- ✓ manual excavation equipment
- ✓ compression cutters
- ✓ drop saws
- ✓ files
- ✓ grinders
- ✓ hand excavating tools
- ✓ levelling equipment

ASSESSMENT GUIDE

Forms of assessment

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Competency standard.

Critical aspects (for assessment)

A person who demonstrates competency in this unit must be able to provide evidence of locating, interpreting and applying relevant information, standard and specifications to install and fit off sanitary fixtures. Should applying safety requirements throughout the work sequence, including electrical requirements and the use of personal protective clothing and equipment

Assessment conditions

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures. Assessment is to comply with relevant regulatory or Maldivian standards' requirements.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ Types of blockages and the reasons for such blockages ✓ Identify and overcome such blockages ✓ determine process and tools required to overcome such blockages ✓ Aspects of safety measures required while attending similar tasks. ✓ Paper work to be attended related to undertaking such tasks.	Skills to be developed: ✓ communication skills to access determine requirements. ✓ initiative skills to identify and report any faults in tools, equipment. ✓ teamwork skills to work with others ✓ technical skills to locate and clear blockages, such as tree roots and other refuse, from sanitary plumbing, water and sewerage pipe ✓ installations and drainage and roof installations using mechanically operated drain clearing machines and attachments, manually operated drain cleaning tools and equipment

UNIT TITLE	Install below ground domestic waste water				
DESCRIPTOR	This unit of competency specifies the outcomes required to install below ground sanitary drainage systems for sewage and waste discharge from sanitary fixtures to the authorities' approved point of connection.				
CODE	CONS08CR08V1/21	LEVEL	III	CREDIT	05

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Prepare for work.	1.1 Plans and specifications are obtained. 1.2 Work health and safety, quality and environmental requirements analyzed 1.3 Tasks are planned and sequenced in conjunction with others involved in or affected by the work. 1.4 Tools and equipment, including personal protective equipment, are selected and checked for serviceability. 1.5 Location of underground services is identified. 1.6 Work area is prepared to support efficient installation of sanitary drainage systems.
2. Identify installation requirements.	2.1 Quantity and type of materials required are calculated from existing plans 2.2 Materials and equipment are identified, ordered and collected. 2.3 Materials and equipment are checked for compliance 2.4 Sustainability principles and concepts are applied throughout the installation process.
3. Install sanitary drainage systems.	3.1 Pipework is set out according to plans and specifications, site requirements or job instructions. 3.2 Pipework is installed according to plans, specifications, standards and workplace procedures. 3.3 Connections for alterations, additions or repairs to existing systems are made according to standards and manufacturer specifications. 3.4 Installation is checked for compliance with design drawings, specifications, site requirements, standards and authorities' requirements. 3.5 Installation is tested to comply with standards and

	relevant authorities' requirements.
4. Develop catch pit and oil trap to the guidelines provided by sewerage service providers	4.1 Obtain drawing and measurements for catch pit from the service provider 4.2 Arrange the materials to develop the catch pit 4.3 Develop the catch pit to industry standard
5. Clean up.	5.1 Installation is backfilled according to standards, and work area is cleared and materials handled 5.2 Tools and equipment are cleaned, checked, maintained and stored. 5.3 Information is accessed and documentation completed.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Tools, equipment and material used in this unit may include:

- ✓ bending equipment
- ✓ chain blocks
- ✓ compression cutters
- ✓ drop saws
- ✓ forklifts
- ✓ grinders
- ✓ hacksaws
- ✓ hand and power tools
- ✓ hand excavation tools
- ✓ hand trolleys
- ✓ heating equipment
- ✓ hoists and jacks
- ✓ levelling equipment and threading
- ✓ lifting and load shifting equipment
- ✓ measuring equipment
- ✓ mechanical excavation equipment
- ✓ pipe relining equipment
- ✓ rollers
- ✓ trench shoring equipment

ASSESSMENT GUIDE

Forms of assessment

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Competency standard.

Critical aspects (for assessment)

A person who demonstrates competency in this unit must be able to provide evidence of locating, interpreting and applying relevant information, standards and specifications to install and test sanitary drainage systems.

Assessment conditions

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures. The candidate will have access to all tools, equipment, material and documentation required.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be learnt: ✓ characteristics and application of different pipe fittings and fixture ✓ excavation processes and procedures ✓ hazardous materials ✓ levelling and alignment processes ✓ materials relevant to sanitary drainage ✓ principles of drainage design ✓ process of installing and testing sanitary drains ✓ sources of information and processes for calculating material requirements ✓ standards applicable to the installation ✓ water and air test systems and procedures ✓ workplace and equipment safety requirements	Skills to be developed: ✓ communication skills access information and determine work requirements. ✓ read and interpret documentation from a variety of sources ✓ teamwork skills to work with others ✓ technical skills to select, fabricate, joint and install gutter and downpipe systems to effectively drain a roof to an authorized discharge point ✓ technology skills to: access and understand site-specific instructions in a variety of media ✓ Undertake paper work related to the task being performed.

UNIT TITLE	Fabricate and install roof drainage components				
DESCRIPTOR	This unit of competency specifies the outcomes required to fabricate and install roof drainage components and rainwater collection mechanisms for residential roof systems.				
CODE	CONS08CR09V1/21	**LEVEL**	III	**CREDIT**	03

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Prepare for work.	1.1 Plans and specifications are obtained and confirmed 1.2 Tasks are planned and sequenced 1.3 Tools and equipment, including personal protective equipment, are selected and checked 1.4 Work area is prepared to support the fabrication
2. Identify installation requirements.	2.1 Roof drainage components required for installation are identified from drawings and specifications. 2.2 Fabrication patterns are drawn based on design and freehand sketch of roof drainage. 2.3 Quantity, type and sizing of drainage components, rainwater materials and accessories required are calculated from drawings and specifications 2.4 Box gutter support system is fabricated according to relevant Maldivian standard.
3 Fabricate roof drainage components.	3.1 Method of fabrication, tools and machinery requirements are determined to suit job requirements. 3.2 Materials are marked out from drawings to fabricate roof drainage components. 3.3 Roof drainage components are fabricated in compliance with relevant Maldivian standards, drawings, specifications and site measurements.
4. Set out and install roof drainage components	4.1 Roof drainage components are set out to comply with job specifications and site measurements. 4.2 Roof drainage components are jointed in compliance with job specifications and relevant Maldivian standards.

	4.3 Roof drainage system is installed according to relevant Maldivian standards and job specifications. 4.4 System is performance tested for satisfactory installation and remedied.
5 Clean up.	5.1 Work area is cleared and materials disposed 5.2 Tools and equipment are cleaned, checked, maintained and stored 5.3 Documentation is completed according to workplace requirements.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Tools, equipment and materials required may include:

- ✓ drawing equipment
- ✓ fall protection equipment
- ✓ hand and power tools
- ✓ ladders
- ✓ lifting and load shifting equipment, including:
- ✓ chain blocks
- ✓ cranes
- ✓ elevated work platforms
- ✓ forklifts
- ✓ hand trolleys
- ✓ hoists and jacks
- ✓ restricted height scaffolds
- ✓ rollers
- ✓ measuring equipment.

ASSESSMENT GUIDE

Forms of assessment

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Critical aspects (for assessment)

A person who demonstrates competency in this unit must be able to provide evidence of locating, interpreting and applying relevant information, standards and specifications to Fabricate and install roof drainage components.

Assessment condition

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures. The candidate will have access to all tools, equipment, material and documentation required. Theoretical assessment of this unit must be carried out in an examination room where proper examination rules are followed. Assessment of neat work practices must be constantly evaluated.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be developed: ✓ capacity of fabrication machinery involved in the production of roof drainage components ✓ capillary action, thermal expansion and fabrication techniques to prevent leaking installations ✓ characteristics of various metals and finishes ✓ corrosion prevention treatment requirements of cut sheets ✓ design concepts and performance measures for roof drainage components ✓ electrolysis and problems associated with the use of dissimilar metals ✓ joining of materials ✓ processes of fabricating, jointing and fixing roof drainage components ✓ types of fasteners, fixings and sealants and their application to the fabrication and installation of roof coverings	Skills to be developed: ✓ communication skills to determine requirements and follow instructions ✓ initiative and enterprise skills to identify and accurately report to appropriate personnel any faults in tools, equipment or materials ✓ read and interpret documentation from a variety of sources that details plans and specifications ✓ planning and organising skills to plan and sequence tasks with others ✓ technical skills to select, fabricate, joint and install gutter and downpipe systems to effectively drain a roof to an authorized discharge point ✓ technology skills to access and understand site-specific instructions in a variety of media

UNIT TITLE	Perform plumbing to support rain water harvesting systems				
DESCRIPTOR	This unit of competency specifies the outcomes required to design systems for the collection, storage, distribution and re-use of rainwater for drinking and non-drinking uses, including irrigation, toilet flushing and other uses approved by relevant authorities.				
CODE	CONS08CR10V1/21	LEVEL	III	CREDIT	04

ELEMENTS OF COMPETENCIES	PERFORMANCE CRITERIA
1. Evaluate design parameters.	1.1. Scope of work is established for rainwater harvesting systems for wide span and high-rise building projects. 1.2. Design requirements are determined from relevant Maldivian standards, codes, plans, specifications and client brief. 1.3. Potential contamination sources are analyzed and solutions are applied. 1.4. Rainfall patterns and required rainwater storage volumes are established. 1.5. Cost-benefit analysis is conducted comparing a range of pipe materials and system designs. 1.6. Statutory, regulatory requirements and relevant Maldivian standards and codes for the design of rainwater harvesting systems are interpreted, analyzed and applied. 1.7. Manufacturer requirements and trade and technical manuals are interpreted. 1.8. Additional research, including a desktop study, is conducted to outline design parameters. 1.9. Performance requirements are established, considering safety of system users or building occupants.
2. Plan and detail system components.	2.1. Tank type and location are specified. 2.2. Layout of pipework systems and type and location of fittings, valves and controls are planned.

	2.3. First-flush systems are designed and detailed. 2.4. Filtration systems and water contamination solutions are specified. 2.5. Pipe size calculations are completed for a range of applications. 2.6. Separation of services and backflow prevention devices are designed and detailed. 2.7. Approved non-contaminating materials and jointing methods for rainwater harvesting are specified and pipe supports are designed. 2.8. Pump and ancillary requirements are sized and detailed. 2.9. Installation requirements are specified. 2.10. Water treatment is specified according to state and territory health requirements. 2.11. Vermin protection is specified according to manufacturer and state and territory requirements. 2.12. Allowance for expansion and contraction is provided
3. Undertake plumbing tasks associated with the system	3.1. Rainwater harvesting systems are designed and detailed for a range of residential, commercial and industrial applications. 3.2. Rainwater reuse systems are designed and detailed. 3.3. Rainwater harvesting systems are designed and sized using calculation and computer software packages. 3.4. Sustainability principles and concepts are applied throughout the design process.
4. Prepare documentation.	4.1. Client brief of the desired design is prepared. 4.2. Plans and specifications are prepared for a range of rainwater harvesting systems. 4.3. Testing and commissioning schedule is prepared.

	4.4. Operation and maintenance manual is produced, including information on how to properly and safely maintain the system.

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Tools, equipment and materials required may include:

Materials may include:

- ✓ copper (Cu)
- ✓ polyethylene (PE)
- ✓ polypropylene (PP)
- ✓ polybutylene (PB)
- ✓ unplasticized polyvinyl chloride (PVC-U)
- ✓ other approved material

ASSESSMENT GUIDE

Forms of assessment

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment context

This competency is to be assessed using standard and authorized work practices, safety requirements and environmental constraints. Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Critical aspects (for assessment)

A person who demonstrates competency in this unit must be able to provide evidence of locating, interpreting and applying relevant information, standards and specifications to Fabricate and install roof drainage components.

Assessment conditions

This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate

plumbing and services workplace conditions, materials, activities, responsibilities and procedures. The candidate will have access to all tools, equipment, material and documentation required. Theoretical assessment of this unit must be carried out in an examination room where proper examination rules are followed. Assessment of neat work practices must be constantly evaluated.

UNDERPINNING KNOWLEDGE AND SKILLS

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
Knowledge to be developed: ✓ common terminology and definitions used in the design of rainwater collection, storage, distribution and re-use ✓ nature of materials used and effects of performance under various conditions ✓ organisational quality procedures and processes ✓ principles of technology in the design of rainwater collection, storage, distribution and reuse for residential, commercial and industrial applications ✓ terminology and definitions used in hydraulic design	Skills to be developed: ✓ communication skills to confirm job specifications and client requirements ✓ prepare documentation, including operation and maintenance manual plans, specifications and schedules ✓ read and interpret plans, specifications, drawings and design briefs ✓ planning and organising skills to research, collect, organise and understand information relating to the design of rainwater collection, storage, distribution and re-use systems ✓ take initiative and make decisions ✓ technical skills to design systems for the collection, storage, distribution and reuse of rainwater for drinking and non-drinking uses ✓ technology skills to access and understand site-specific instructions in a variety of media