



**Maldives National Skills Development Authority**



# **National Competency Standard for Water Supply System Operation and Maintenance**

**Standard Code: CONS03V1/21**

**Qualification Name: National Certificate IV in Water Supply System Operation and Maintenance**  
**Qualification Code: CONS03Q2L4V1/21**

## 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

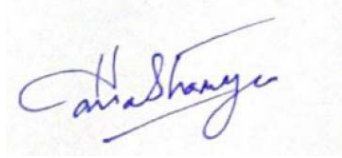

Quality Assurance Consultant

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	Ismail Ibrahim	Assistant General Manager	Male' Water and Sewerage Company
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	Dr Yoosuf Nizam	Lecturer	Maldives National University
11	Mohamed Shaulan Sadiq	Engineer	FENAKA
12	Ali Shareef		STELCO

VERSION	DEVELOPER	DATE	STANDARD CODE
V1	Maldives Institute of Technology	15 <sup>th</sup> February 2021	CONS03V1/21



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: 15 <sup>th</sup> February 2021		Date of Revision: NA	

## Standard Development Process

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To begin with, Water Supply System Operation and Maintenance occupations were profiled through study of relevant occupation across Maldivian workplaces. During the study, relevant occupations within the Utility Sector were reviewed including their job descriptions. In addition to that, international trends were also reviewed and that led to the development of this National Competency Standard for Water Supply System Operations and Maintenance.

Referred draft occupational standard is now ready to be submitted through TVETA to a team of Technical Panel (TP) selected from relevant Maldivian workplaces. Members of the TP will review and may recommend changes to the competency units mapped and selected. Purpose of this process is to develop a competency standard that reflects current work practices of today with provisions to cater for future growth across the utility enterprises of the Maldives. Technical Panel meetings will continue in reviewing this Competency Standard until Final Draft is agreed and accepted by all the participating members.

Final Draft of Water Supply System Operation and Maintenance Standard approved by the TP will then be submitted to the Construction Employment Sector Council (ESC) for endorsement and validation. A brief report on how the National Occupational Standard of Water supply system operations and Maintenance 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 ESC recommends any change, MIT is required to bring those changes and once agreeable, Competency Standard on Water Supply System Operation and Maintenance will be endorsed by the Council.

With the endorsement from the Construction Employment Sector Council, final document of the National Occupational Standard of Water supply system operations and Maintenance will be submitted to the Maldives Qualification Authority (MQA) for final approval. With approval from MQA, the National Occupational Standard of Water Supply System Operation and Maintenance will be published on TVETA website, to be used by training providers in delivering training using these standards.

## Description of “Water Supply System Operations and Maintenance”

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Plant Operators play an important role within the Public Utility Sector of the Maldives as they ensure smooth and effective operation and maintenance of the very expensive water treatment plants being installed across Maldives.

National Certificate IV in “Water Supply System Operations and Maintenance” is mapped and organized in such a way to ensure those competent in the referred qualification will have the knowledge and skills to contribute positively and work as Plant Technician.

### **Prospective Job opportunities**

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Upon successful completion of the National Certificate IV in Water supply system operations and Maintenance, students can work in the following jobs.

- Plant Technician
- Plant Operator

## 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 02		
2. NATIONAL CERTIFICATE IV IN WATER SUPPLY SYSTEM OPERATION AND MAINTENANCE		
3. Qualification code: CONS03Q2L4V1/21		Total Number of Credits: 124
<b>4. Purpose of the qualification</b> National Certificate IV in Water Supply System Operation and Maintenance provides comprehensive training for the water plant operators and technicians with up-to-date knowledge and skills related to smooth and effective operation and maintenance of water plants located across the islands and resorts.		
<b>5. Regulations for the qualification</b>		National Certificate IV in Water Supply System Operation and Maintenance 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+18+19
<b>6. Schedule of Units</b>		
Unit No	Unit Title	Code
<b>Common Competencies</b>		
01	Write technical reports	CONCM08V1/21
02	Apply and maintain Occupational Health and Safety	CONCM09V1/21
03	Carry out data entry and retrieval procedures	CONCM10V1/21
04	Apply Mathematics for Water Operations	CONCM11V1/21
<b>Core Competencies</b>		
05	Prepare basic technical drawing	CONS03CR01V1/21
06	Plan to undertake a routine task	CONS03CR02V1/21
07	Apply science for Water Operations	CONS03CR03V1/21
08	Store fluids in bulk	CONS03CR04V1/21
09	Operate and monitor pneumatic systems and equipment	CONS03CR05V1/21
10	Operate process control systems	CONS03CR06V1/21
11	Monitor and operate water distribution systems	CONS03CR07V1/21
12	Conduct chlorine dosing of water at the point of supply	CONS03CR08V1/21
13	Perform sampling and testing of water	CONS03CR09V1/21
14	Operate and Maintain water production systems	CONS03CR10V1/21
15	Apply accident-emergency procedures	CONS03CR11V1/21
16	Trouble shooting of control systems	CONS03CR12V1/21
17	Apply sustainable and efficient operation	CONS03CR13V1/21
18	Perform Chemical Cleaning	CONS03CR14V1/21
19	Operate and maintain of power generation system (renewable energy)	CONS03CR15V1/21
<b>7. Accreditation requirements</b>		The training provider should place trainees in relevant industry or sector to provide the trainees the hands-on experience exposure related to this qualification.
<b>8. Recommended sequencing of units</b>		As appearing under the section 06

## Units Details

#	Unit Title	Code	Level	No of credits	Credit Hours	Contact Hours
01	Write technical reports	CONCM08V1/21	IV	07	70	35
02	Apply and maintain Occupational Health and Safety	CONCM09V1/21	IV	10	100	50
03	Carry out data entry and retrieval procedures	CONCM10V1/21	IV	10	100	50
04	Apply Mathematics for Water Operations	CONCM11V1/21	IV	07	70	35
05	Prepare basic technical drawing	CONS03CR01V1/21	IV	05	50	25
06	Plan to undertake a routine task	CONS03CR02V1/21	IV	05	50	25
07	Apply science for Water Operations	CONS03CR03V1/21	IV	06	60	30
08	Store fluids in bulk	CONS03CR04V1/21	IV	05	50	25
09	Operate and monitor pneumatic systems and equipment	CONS03CR05V1/21	IV	07	70	35
10	Operate process control systems	CONS03CR06V1/21	IV	06	60	30
11	Monitor and operate water distribution systems	CONS03CR07V1/21	IV	06	60	30
12	Conduct chlorine dosing of water at the point of supply	CONS03CR08V1/21	IV	04	40	20
13	Perform sampling and testing of water	CONS03CR09V1/21	IV	05	50	25
14	Operate and Maintain water production systems	CONS03CR10V1/21	IV	10	100	50
15	Apply accident-emergency procedures	CONS03CR11V1/21	IV	06	60	30
16	Trouble shooting of control systems	CONS03CR12V1/21	IV	06	60	30
17	Apply sustainable and efficient operation	CONS03CR13V1/21	IV	07	70	35
18	Perform Chemical Cleaning	CONS03CR14V1/21	IV	05	50	25
19	Operate and maintain of power generation system (renewable energy)	CONS03CR15V1/21	IV	07	70	35
Total				124	1240	620

### Packaging of National Qualifications:

National Certificate IV in Water Supply System Operation and Maintenance 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+18+19

**Qualification Code:** CONS03Q2L4V1/21

## COMPETENCY BASED ASSESSMENT

The final assessment of the National Competency-Based Programmes conducted by the Maldives National Skills Development Authority (MNSDA) is a competency-based assessment.

The Competency-Based Assessment ensures that the students' performance meets the requirements specified in the National Competency Standards (NCS). This assessment approach is designed to verify that graduates are job-ready and meet established occupational competency requirements within their respective fields.

### Eligibility for Final Assessment

To be eligible for the final Competency-Based Assessment, students must fulfil the following conditions:

- achieve a **minimum of 80%** attendance
- deemed competent in each of the units of the programme in the pre-assessment

### Competency-Based Assessment Process

Upon submission of the Pre-assessment report by the training provider, MNSDA will check for all the necessary supporting documents and conduct Competency-Based Assessment through a National Assessor registered with MNSDA. It is important to note that any trainer involved in the training process is **not permitted** to conduct the assessment to maintain impartiality and integrity of the process.

The final Competency-Based Assessment conducted by MNSDA includes both:

- **Theory:** Evaluating students' knowledge and understanding of key theoretical aspects of the competency.
- **Practical:** Assessing hands-on skills and application of knowledge in real-world or simulated environments.

Once the assessment is completed, the National Assessor will send the Competency-Based Assessment Report to MNSDA.

### Competency Status Requirement

For certification to be granted, the student must be officially declared "**Competent**" in each of the units of the programme by the National Assessor.

### Conclusion

Competency-Based Assessment is a critical component in ensuring the quality and credibility of technical and vocational skills-based training. By adhering to the outlined procedure, MNSDA upholds the standards required to certify students who are fully prepared to meet industry demands.