

FIRST EDITION

INDUSTRIAL SKILLS FRAMEWORK FOR WATER & SEWERAGE SERVICES INDUSTRY

IN COLLABORATION WITH





Published by,

PEMBANGUNAN SUMBER MANUSIA BERHAD (545143-D)

Wisma HRDF, Jalan Beringin, Damansara Height, 50490 Kuala Lumpur.

Tel : 1800 88 4800

Fax : +603 2096 4999

Email : support@hrdf.com.my

Website : www.hrdf.com.my

All Right Reserved © 2020. PEMBANGUNAN SUMBER MANUSIA BERHAD

No part of this book may be reproduced, stored in a retrieval system or transmitted in any form or any means, whether by way of electronics, mechanics, copy of photo recording or otherwise, without the prior consent of PSMB.



HRDF IndSF

About Human Resources Development Fund (HRDF)

The establishment of the Human Resources Development Fund (HRDF) in 1993 was of paramount importance to the development of Malaysia. HRDF was established under the Ministry of Human Resources with an objective to encourage employers covered under the Pembangunan Sumber Manusia Berhad Act 2001 to retrain and upgrade the skills of their local employees, apprentices and trainees in line with their business needs and the development strategy of their company.

About HRDF Industrial Skills Framework

The Industrial Skills Framework (IndSF) is developed by the Human Resources Development Fund (HRDF) and aims to support the industry needs of acquiring a skilled workforce that have the levels of competencies needed by the industry.

The development is supported by the participation of subject matter experts that represent the industry associations and respective employers of the Water and Sewerage Services Industry based on the below underlying principles:



Focus is mainly for all level Malaysian Skill Certification or equivalent and above



Accommodate the needs of in service workers.



Built upon the National Occupational Skills Standard (NOSS)



Developed together with the industry and benchmarked against successful framework model(s).



Meet the competency requirements of sectors currently covered under PSMB



With the Skills Framework, employees and employers have an opportunity to their enhance their skills for career progression. The levy utilisation becomes more guided by taking part into account industry relevant training programmes that have a greater return of investment for the company.

PREFACE

This document covers the water supply, sewerage and support services in this first edition. Four (4) workshop sessions among Subject Matter Experts (SMEs) and an engagement session with Human Resource Personnel nationwide have been conducted successfully within six (6) months. Despite the impact of the COVID-19 pandemic, Subject Matter Experts (SMEs) had put in great effort by giving inputs and attending workshops virtually and physically. As such, we are pleased to introduce our national document which will serve as a reference for human capital development needs, career progression in the industry, available job designations in each focus area, skills needed to perform job tasks and critical training programmes in the water supply and sewerage services industry.



01 PREFACE**04 ACKNOWLEDGEMENT****05 FOREWORD**

05 CHIEF EXECUTIVE HRDF

06 CHAIRMAN STC UTILITY & SERVICES

07 PROJECT DIRECTOR INDSF WATER & SEWERAGE SERVICES

08 GUIDELINES**09 BUSINESS OUTLOOK****33 HRDF PERSPECTIVES****35 MOVING FORWARD****36 CAREER PATH STRUCTURE**

37 MOSQF LEVEL DESCRIPTOR

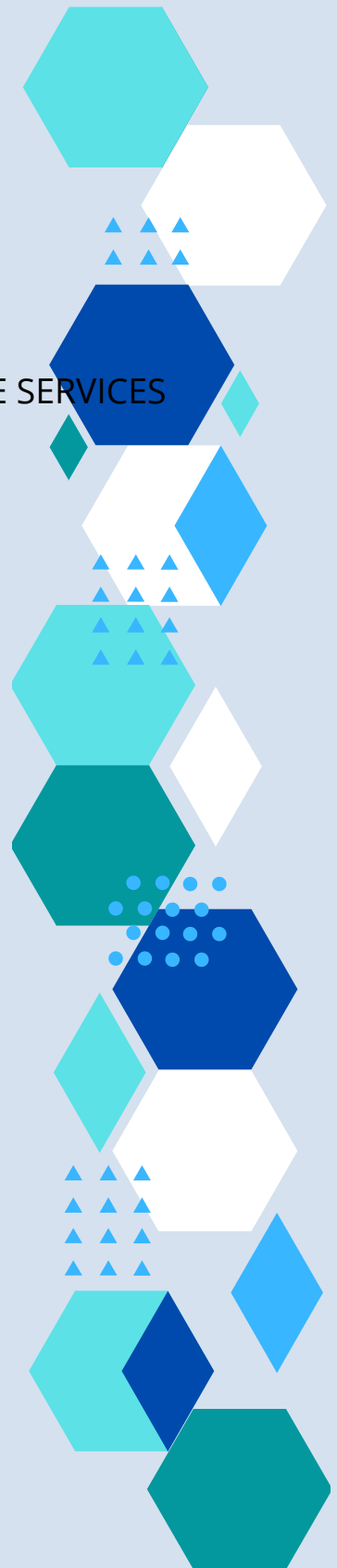
38 REQUIRED COMPETENCY LEVEL

39 FOCUS AREAS & CAREER PATHWAYS

40 FOCUS AREA I : WATER SUPPLY

115 FOCUS AREA II : SEWERAGE

167 FOCUS AREA III : SUPPORT SERVICES

245 LIST OF SOURCES**247 LIST OF ABBREVIATION**

We would like to thank all Subject Matter Experts (SME) who have contributed to the development of the Industrial Skills Framework document for the Water Services and Sewerage Services Industry. The invaluable contributions and commitment during the development of this book are truly appreciated.

INDAH WATER KONSORTIUM

- 1) DR. IDAMYMOON BINTI IBRAHIM
- 2) RUHAIDAH MD HASSAN
- 3) ABI ISHAQ ABD RAHIM BIN IBRAHIM
- 4) AHMAD ZAHRIN BIN SAHMER
- 5) AZRIN BIN ZAHARI
- 6) CINDY DE COSTA D/O JOHN DE COSTA
- 7) J KULASEGARAN A/L JAYABALAN
- 8) JA'FARSIDIK BIN MUHAMMAD
- 9) KAMARUZAMAN BIN IBRAHIM
- 10) MISAL ADIAN MISKAN
- 11) MOHD OSMERA BIN OMAR
- 12) MOHAMAD JOHAN BAHRI @ BAKRI
- 13) MUHAMMAD ADIB BIN MOHD ATIL
- 14) SHAHRULBARIAH BINTI SHAARI
- 15) RAJA SAHARULNIZAM
- 16) WAN ABDUL JALIL B. WAN HUSAIN
- 17) WEE SOON GUAN

SYARIKAT AIR NEGERI SEMBILAN

- 1) ChM. MOHD ASZRAM BIN AHMAD
- 2) MOHD HAMERAM BIN AHMAD
- 3) MOHAMAD THARMIZI BIN MOHAMAD EHSAN
- 4) SHAMSUDIN BIN KARIA

LEMBAGA AIR PERAK

- 1) HJH. FADZILAH BINTI ABDUL KADIR
- 2) IR MUHAMMAD FAZIL BIN HJ MANSOR

AIR KELANTAN SDN. BHD

- 1) MOHD SAFRURAZI BIN SALLEH

AIR SELANGOR

- 1) HJ. YUSOF BIN SAROJI

THE MALAYSIAN WATER ASSOCIATION

- 1) PROF. TS. IR. HJ. MOHAMED HANIFFA BIN ABDUL HAMID
- 2) DR. IR. HJ. MOHMAD ASARI BIN DAUD
- 3) PROF. DR. MOHD RAZMAN SALIM
- 4) DR. HAPIDAH MOHAMED
- 5) TUAN HJ MANSOR BIN ABDUL GHANI
- 6) HJ. ZAINUDDIN BIN TAIB
- 7) ZULHAZMI BIN ELIAS

SURUHANJAYA PERKHIDMATAN AIR NEGARA

- 1) ChM. HJ. ADAM MALIK BIN NAJRI

PERBADANAN BEKALAN AIR PULAU PINANG

- 1) MOHD SUHAIMI BIN SHARIFF

PENGURUSAN AIR SELANGOR SDN BHD

- 1) HJ. MOKHTAR BIN ATAN

JABATAN KERJA RAYA

- 1) MAHAINDRAN A/L KRISTNAN

MIMALIFMA ENGINEERING SERVICES

- 1) ChM. SAWAL BIN YAMON

HACH MALAYSIA

- 1) ChM. SAMSUL ARIFFIN BIN KADRI

RANHILL SAJ SDN BHD

- 1) MOHD JAMIL NASSIR BIN ABDUL RAOH
- 2) NUR FIRDAUS BIN MOHD DAUD
- 3) ZAINUDIN BIN NGADIRAN



CHIEF EXECUTIVE

HUMAN RESOURCE DEVELOPMENT FUND

DATUK SHAHUL HAMEED DAWOOD

The Human Resources Development Fund (HRDF) has continuously worked towards increasing efficiency at the workplace by equipping the Malaysian workforce with proper skills, competencies and trainings. This therefore requires us to work hand in hand with players from the industry to align training needs with suitable certification programs. A well planned investment in human capital development will boost the growth of the industry and economy of Malaysia in the long term.

The recent COVID-19 pandemic has impacted most industries and has rendered conventional job positions obsolete. There are calls for flexible working methods and new jobs that will allow employees to work remotely while maintaining current productivity. HRDF has quickly realized that there is a need to revamp our approach in reaching out to the industry for the purpose of up-skilling and reskilling employees. Our biggest challenge at this point is to aggressively assist retrenched and unemployed Malaysian workers to get back into the workforce.

As such, this Industrial Skills Framework (IndSF) is a well-timed effort geared towards addressing the current challenges of assisting Malaysians to be successfully hired based on new skills and competencies that are required by the industry. I would like to take this opportunity to congratulate all members of the Sectoral Training Committee (STC) on Utility & Services, subject matter experts from the industry for their tireless effort in developing this IndSF document. It is indeed an honour to be able to deliver this initiative to the Malaysian workforce. HRDF looks forward to being the driving force in shaping and empowering our Malaysian workforce so that they are globally competitive and skilful.

Datuk Shahul Hameed Dawood
Chief Executive, HRDF



CHAIRMAN

SECTORAL TRAINING COMMITTEE - UTILITY & SERVICES

DR. HAPIDAH MOHAMED

Firstly, I would like to thank HRDF Sectoral Training Committee (STC) members for appointing me as Chairman of STC for Utilities and Services. I am representing The Malaysian Water Association (MWA) and sincerely accept this appointment as part of MWA commitment to assist HRDF in establishing Industrial Skills Framework (IndSF) for the industry. My gratitude and appreciation to MWA Council Members, Indah Water Konsortium (IWK), Malaysia Water Industry Human Resource (MyWINHR) members and all subject matter experts in Water and Sewerage Services (WSS) Industry for your continuous support and commitment in developing this document despite of this pandemic COVID-19 period.

Hence, within six (6) months we are able to produce our first Industrial Skills Framework for Water and Sewerage Services Industry. This document is a reflection of our industry coming together to address the needs to develop competent workforce and also to comply with Section 49: ACT 655 Water Industry Services Act 2006.

In this first edition, we have identified ten critical job areas for water and sewerage services industry as per described in the Occupational Framework 2016, by the Department of Skills Division. For each job level of the job areas identified, we have recommended soft and technical skills, and recommended trainings for our talent needs. We therefore hope training providers will be able to prepare training modules as per the level of competency required for each job level.

As such, this document can be regard as another national reference for our industry to come together to make trainings and certifications an important agenda. I hope that this document will benefit all parties in this industry and to ensure that rightful parties can make targeted solutions to allocate funding in meeting industry talent development needs. Special thanks to HRDF secretariat for the amazing job in coordinating workshops, be it physical or virtual in order to gather industry inputs and compiled them into this document. And lastly, my gratitude to HRDF as the key sponsor in creating this platform.

Thank you.

Dr. Hapidah Mohamed
Chairman,
HRDF Sectoral Training Committee
Utilities and Services



PROJECT DIRECTOR

SKILLS FRAMEWORK FOR WATER & SEWERAGE SERVICES INDUSTRY

Ir Ts Hj Mohamed Haniffa Hj Abdul Hamid

The Malaysian Water Association (MWA) was established in 1988 as a non-profit organization to promote and advance the science and practice of engineering & management for the water supply and wastewater industries. MWA brings together practitioners from the entire water service industries value chain. MWA is also the industry link towards bringing about enhancement of knowledge and skills of its members and promotes awareness of water issues among the public. Internationally MWA maintains strong linkages with related water organizations abroad to realize water industry's common universal goals.

MWA has been appointed as the Industry Lead Body (ILB) by the Department of Skills Development (JPK - Jabatan Pembangunan Kemahiran) under the Malaysian Human Resources Ministry. As an ILB member, MWA continues to organize and expand Capacity Development initiatives, in particular technical and workforce skills enhancement related to human resources within the water industry. MWA is very glad and excited to work closely with HRDF in coming out with the first edition of this Industry Skills Framework for the Water and Sewerages Services. This edition focusses on selected ten (10) most common skills sought within the Industry. It is hoped that these will be further expanded and improved in the subsequent publications.

I am deeply honored to be appointed as the Project Director of Industrial Skills Framework (IndSF) for Water & Sewerage Services Industry by MWA and HRDF. The task is to complete this inaugural publication within six (6) months during this difficult times of COVID-19 pandemic period. However with cooperation by all parties, the assignment was accomplished to the satisfaction of HRDF. I would like to take this opportunity to express my sincere gratitude to all the Subject Matter Experts (SMEs) for their continuous and untiring efforts in contributing towards the development of this national guide document. Also, special thanks to the secretariat and working committee from Industrial Skills Framework Unit under the Human Resource Development Fund (HRDF) who had worked relentlessly to make sure the document for the industry is published successfully. I believe that this Industrial Skills Framework (IndSF) for Water & Sewerage Services will be another milestone in bringing benefits for the water and sewerage services industry, which includes the identification of critical jobs and skills required as well as the recommendation of critical training programs that are on demand. Feedback from users on positive improvements necessary is also most welcome to continuously upgrade this document during the coming review sessions. The idea is to continue development and enhancement of the water and sewerage services workforce competencies with line of sight over time.

Best Regards and Sincere Thanks to Everyone.

Ir Ts Hj Mohamed Haniffa Hj Abdul Hamid FASc, FIEM, CWEM, ACPE (Prof)
Project Director, Industrial Skills Framework for Water & Sewerage Services Industry

GUIDELINES

This guidelines sum up the three (3) focus areas covered and make it easier for users to understand the content of this book. These are some guidelines which had been set by HRDF follow in developing IndSF Water and Sewerage Services Industry.

1

This booklets serves as a **guide** for individuals, employers and training providers on knowledge, experience and skills mastery in the water and sewerage services industry.

2

The prepared job matrix may serve as a **reference** for career progression within the industry.

3

The Industrial Skills Framework for the Water and Sewerage Services Industry will **focus on** all level of Malaysian Skill Certification (or equivalent).

4

It is a **complementary document** to the existing references developed by National Occupational Skills Standard (NOSS) and Malaysian Qualification Framework (MOF).

5

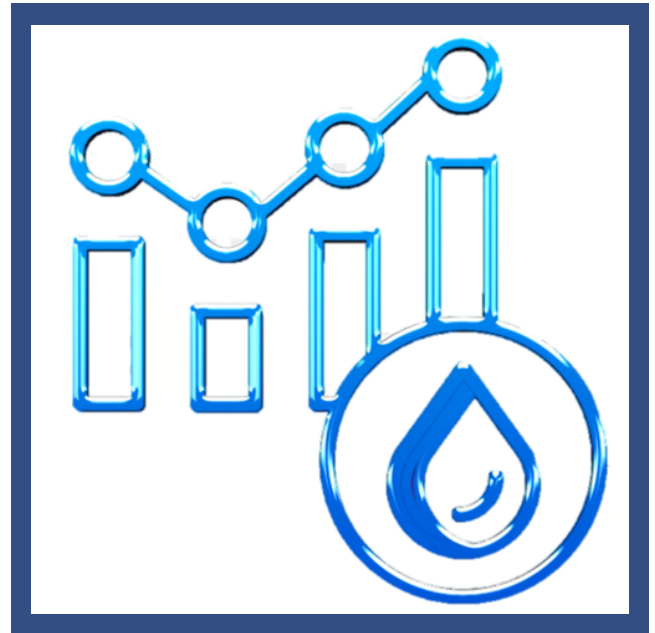
This booklet focuses on **job descriptions, training needed in Water Supply, Sewerage and Support Services.**

6

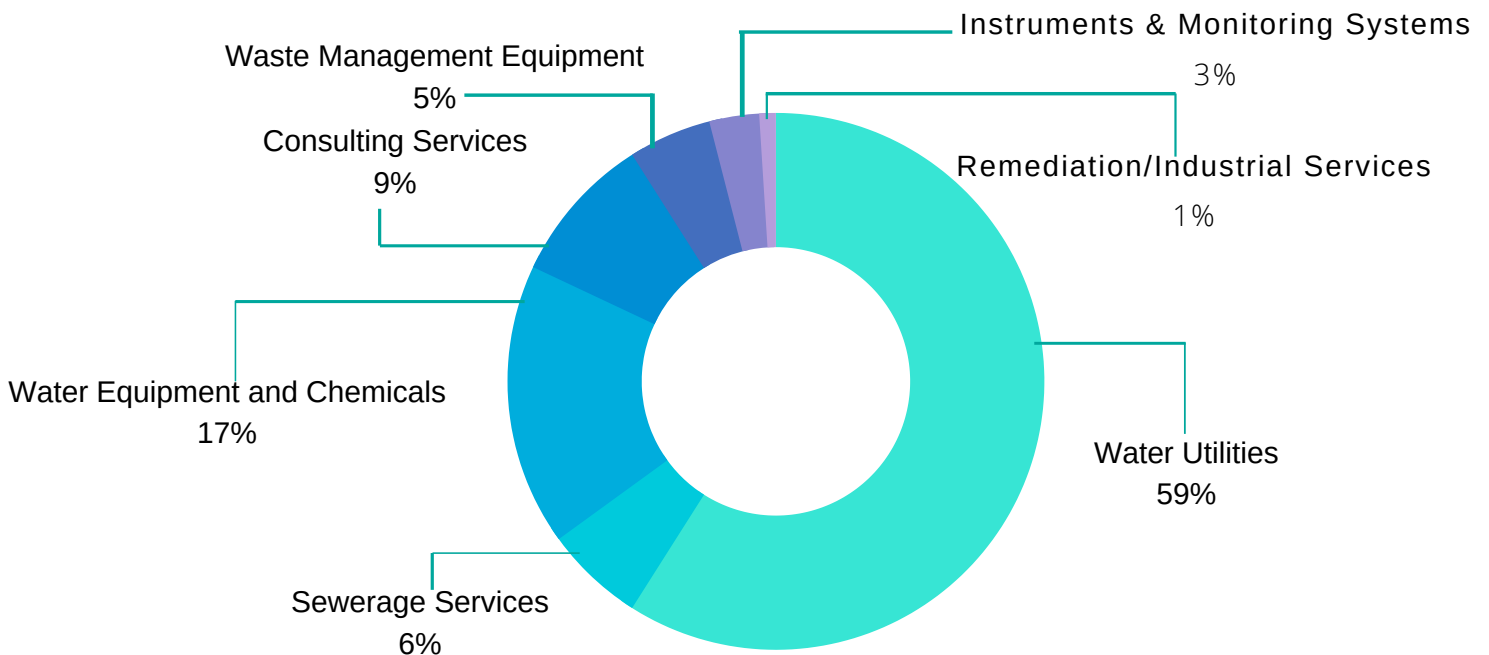
The Industrial Skills Framework document is **not exhaustive** and may be **reviewed from time to time** for continous improvement parallel with the latest changes within the industry.

BUSINESS OUTLOOK

The market size of the Malaysian water industry in 2020 is estimated about RM 11.6 billion in revenue. This is approximately 0.8% of the national (nominal) GDP in 2018. The industry is growing at a CAGR of between 2.5% and 6.6% with an average of 4.6% from 2017 to 2020. The market revenues is mostly contributed by water utilities, which is accounted for 59% from the overall market breakdown.



Market Size Breakdown of the Malaysian Water Industry



**Estimated market size in 2020*

Market Segmentation

Industries that are mainly using the water treatment facilities can be found below:

1



Agriculture and Food was the largest users of water treatment facilities in Malaysia. The country relies on agriculture as it is one of the 3 main standard pillars on which a country's economy is gauged.

2



Rising demand for Oil and Oil based products has increased the demand for water treatment in this industry.

3



Malaysia has emerged as an Electronics and Latex hub promoting large scale use of high grade treated water in this industry.

Regions with the biggest market of water treatment industries are stated as below:

1



Sabah and Sarawak region of Malaysia is the biggest market for water treatment industries accounting for majority of new orders in 2017. Heavy penetration of industrialization in Sabah was the key driver.

2



Southern and Eastern coast region were the second largest contributors with significant market share.

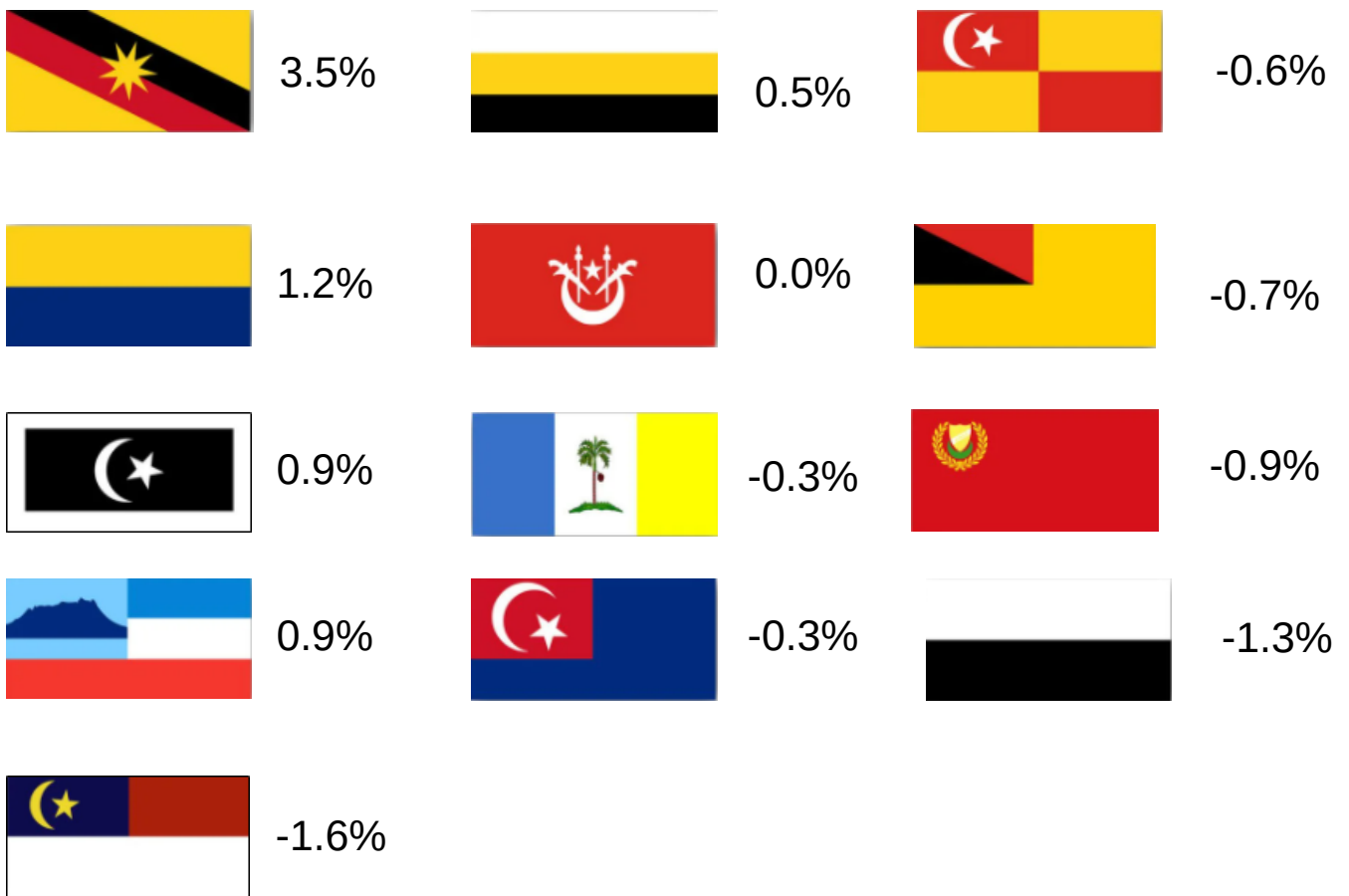
3



It was followed equally by Northern Malaysia and Kuala Lumpur especially after announcement of projects to clean Pantai and the Penang Industrial Complex.

Domestic Consumption

Between 2008-2017, Malaysian's domestic consumption of water has decreased marginally by just 0.2% annually, on average. The average annual growth (%) of domestic water consumption from 2008 to 2017 for each state is ranked as below:



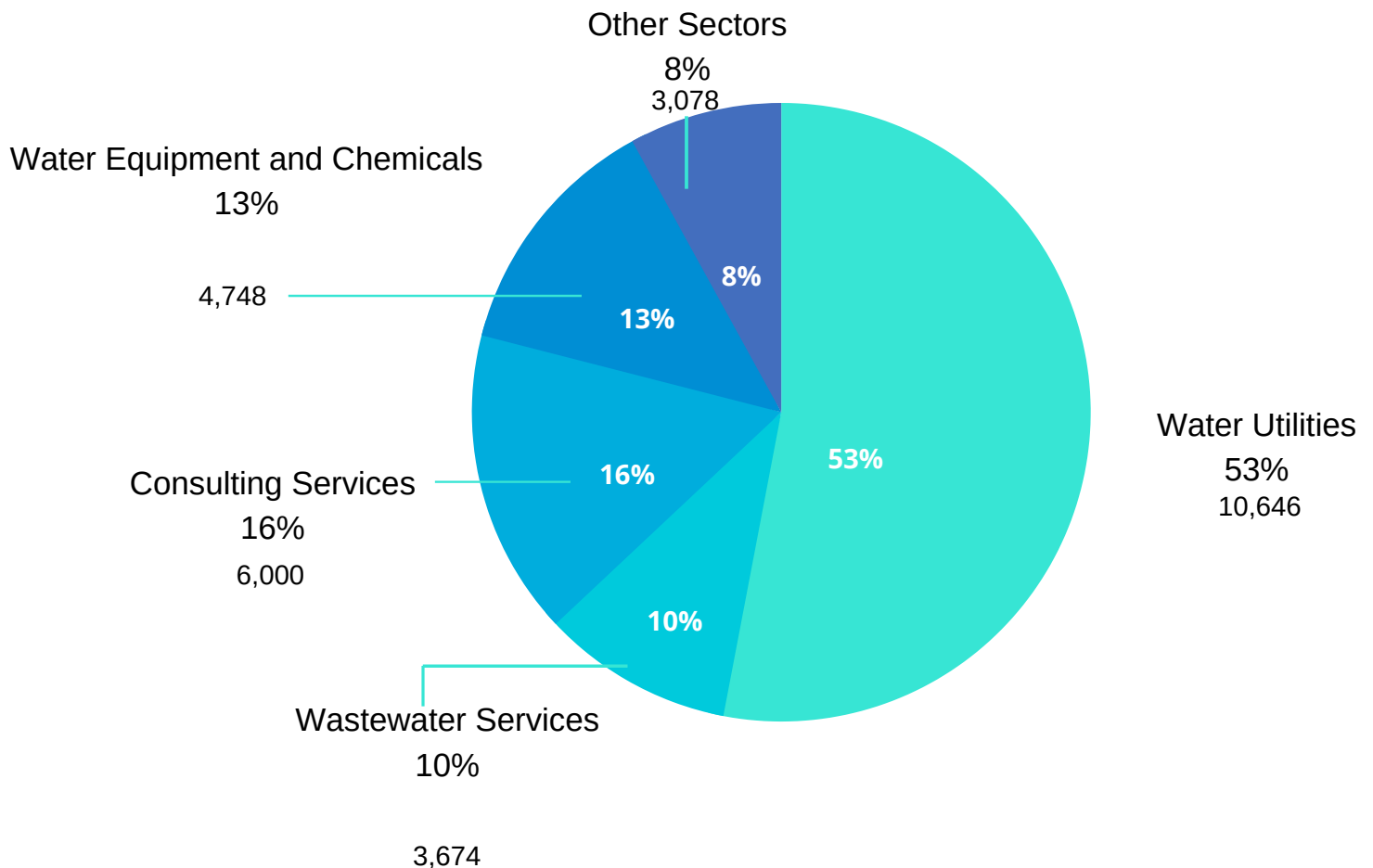
EMPLOYMENT TRENDS IN WATER & SEWERAGE SERVICES INDUSTRY



This section highlight some forecast about the employment trends in water and sewerage services industries.

The Employment Trend in 2020

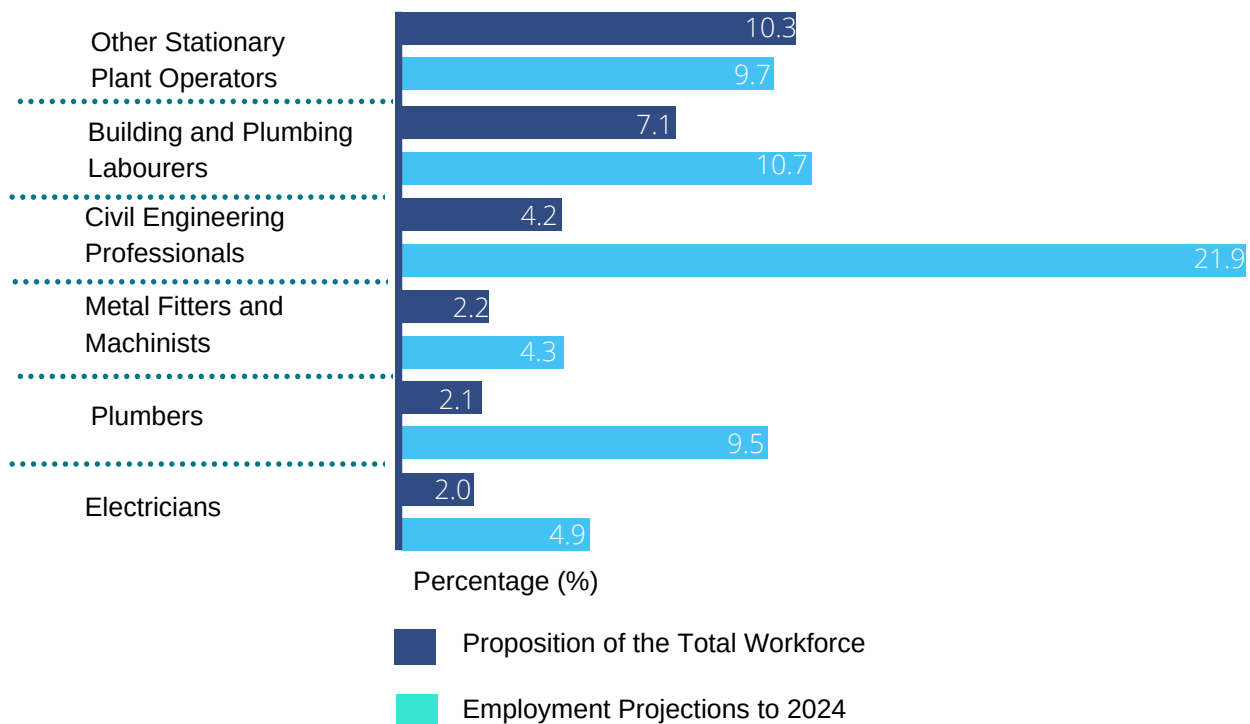
It is estimated that total workers employed in year 2020 is 37,146.



Note: 'Other Sectors' include Waste Management Equipment, Instruments and Monitoring Systems, and Remediation/Industrial Services.

While, looking at the other countries trends, like Australia, Stationary Plant Operators, account for 10% of the workforce and is projected to increase by almost 10% in the next four years, making it as one of the largest employing occupations in the Water Supply, Sewerage and Drainage Services industry sector. Civil Engineering Professionals are expected to see the largest growth in this sector, with employment levels projected to increase by nearly 22% in the next four years, followed by Building and Plumbing Labourers with an increase of about 11%.

Proportion and the Employment Growth for Occupation in Water Supply, Sewerage, and Drainage Services



Although the employment projection increase, there are occupations that have been reported as being in shortage, as follows:

Water Skill Shortages

- 1 Water/Wastewater Treatment Operators
- 2 Maintenance
- 3 Engineers
- 4 Water Quality Management
- 5 Manager

Reasons for Shortage

- 1 Wages/Salaries Considered Too Low
- 2 Competition From Other Organisations
- 3 Geographic Location of the Vacancy
- 4 Ageing Workforce/Current Staff Retiring
- 5 Unattractive Job/Poor Industry Images

TALENT DESIRED ATTRIBUTES

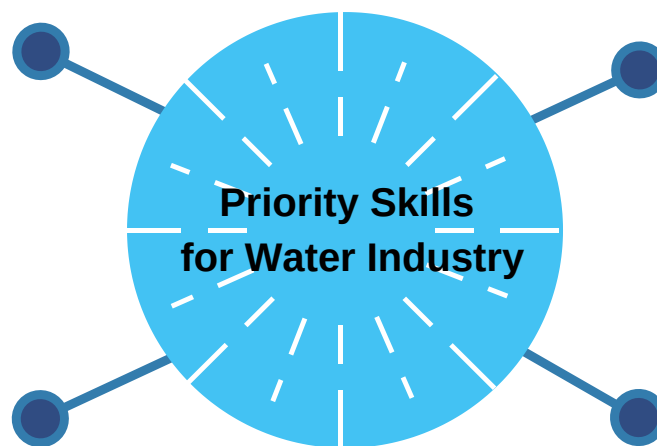
This section is to highlight the paramount skills desired by employers. It works as a tool to guide someone who are interested to venture into this field by equipping themselves with the related skills by attending training and development programme to bridge the gaps in employee skill sets.

Digital Technologies and Automation

The Water industry will be focussing on digital skill sets and away from manual and procedural modes of work to skill the workforce to take advantage of innovations that enable: forecasting the behaviour of the water network; tracing water quality evolution; predicting and locating leaks in the system; reducing energy costs; and underground monitoring.

Industry-specific Cybersecurity

Increasing use of smart meters, Advanced Metering Infrastructures (AMIs), and Supervisory Control and Data Acquisition (SCADA) systems also increases cyber security risk and the need to develop on industry specific cyber security training program to give the workforce the ability to understand the nature of cyber attacks and how to resolve them.



Water Literacy

The Water industry will need to strengthen skills in community engagement, advocacy and education to play an active role in water management issues and raise consumer awareness which could assist in the introduction of water-saving initiatives and controlling risks and business continuity.

Fire Retardants and Water Contamination

Water industry workers will need to be sufficiently skilled to manage and ameliorate contamination of water catchments and river systems caused by chemical residues, ash and charcoal from recent bushfires.

Besides that, according to the job vacancy data, the top requested generic skills by employers were **communication, problem solving, computer literacy skills, planning and detailed oriented**. Also, there are some opportunities to be grabbed and action to be taken to overcome the challenges especially by employee who intend to involve in this sector as per highlighted in the Water IRC’s 2019 Skills Forecast

Technology

The water industry is adopting new technologies and innovative approaches towards the treatment of water, water catchment, and asset management. These changes continue to have far-reaching effects on the way water is delivered and the industry skills required by the workforce. Retraining and upskilling will be needed to ensure the workforce stays abreast with emerging technologies, maintaining asset management, and improving water utility efficiency.

Automation

The rapid on-set of automation in the water industry is anticipated to have a significant impact on the industry and skilling requirements of the current and future workforce. These new systems and remote operations require highly specialised skills to monitor, diagnose and interpret large volumes of data to determine faults and identify areas for investigation. Addressing this emerging skills deficit within the VET skills framework is considered a critical industry priority.







Skill Sets

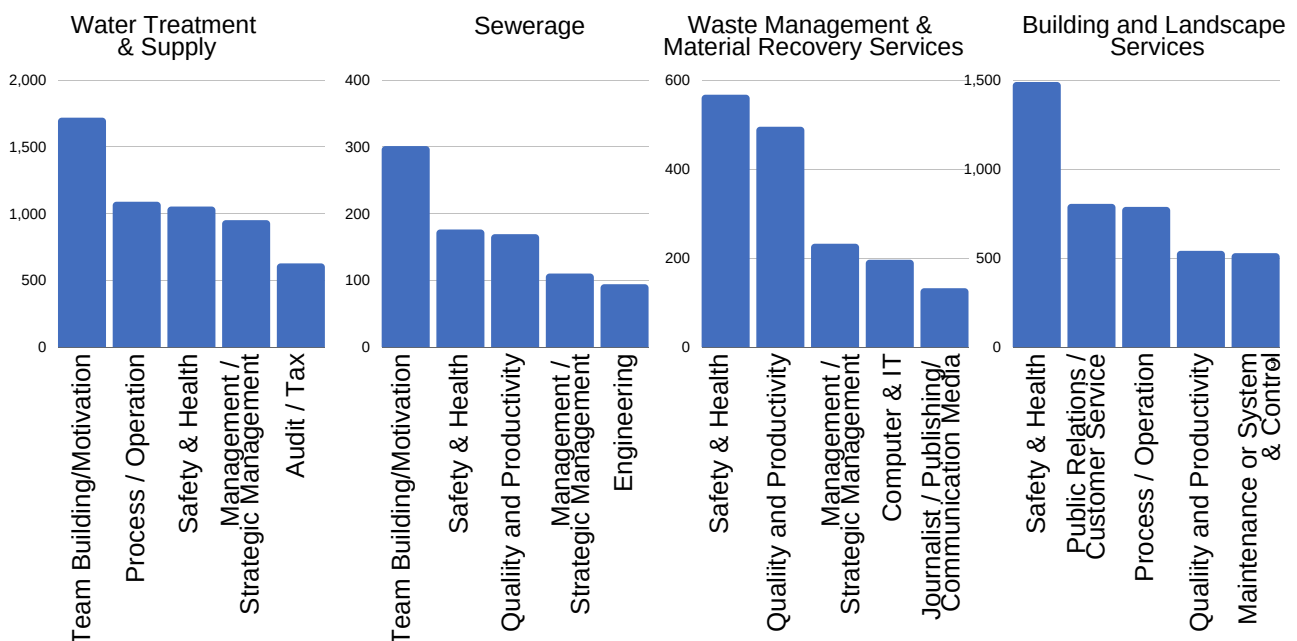
The water sector is moving towards microlearning to improve knowledge gaps. A common theme from stakeholders was the need for shorter training and a skill set can offer a worker the opportunity to move between different sectors of the water industry or to other worksites that use different technology to perform the same skill.

Training Demographics under the HRDF

HRDF is committed in the human capital development in water and sewerage services where it has been clustered under the Utility and Services. The Utility and Services has covered four (4) subsectors as follows :

Subsectors	 Water Treatment & Supply	 Sewerage	 Waste Management & Material Recovery Services	 Building & Landscape Services
No. of Registered Employers	50	12	182	318
No. of Employees Covered	15,939	3,663	14,208	22,855
Levy Collected for 2019	6,165,445	1,447,743	3,186,363	4,713,771
Levy Utilization for 2019	78%	54%	40%	66%
Financial Assistance (RM) for 2019	5,786,172	965,214	1,794,587	4,352,745
Training Places for 2019	9,355	1,147	2,504	7,170

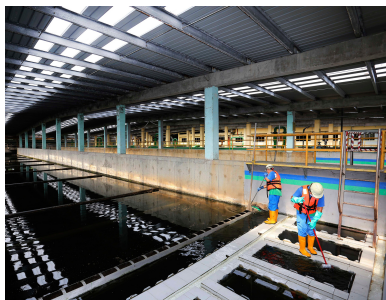
Top 5 skills area approved by HRDF based on training places in Utility and Services Industries are as follows:



BUSINESS OUTLOOK FOR UTILITY & SERVICES

SALES PERFORMANCE
WATER, SEWERAGE & WASTE MANAGEMENT

Expanded by 5.9% During the 1st half of 2017	1st half of 2016 : 7.1 %
	Growth was driven by higher demand from :



Industrial

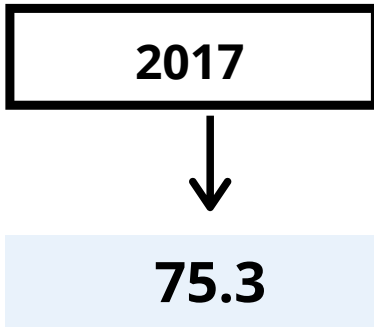
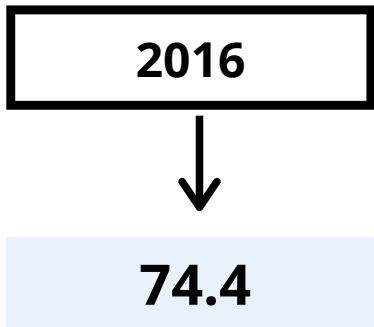


Commercial



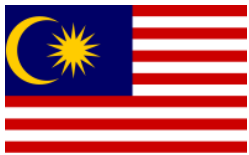
New Residential Area

EMPLOYMENT ('000)
WATER, SEWERAGE AND WASTE MANAGEMENT



The concept of demand management is still relatively uncommon and only seriously practiced whenever there is a water crisis. Compared to the rest of the world, some may view Malaysia as taking our abundance of water for granted and data seemed to support this notion.

200-210 L/C/D

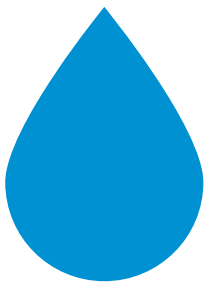


Malaysians are consuming 200 to 210 litres percapita per day (l/c/d), among the highest in the world.



**GLOBAL AVERAGE
140-150 L/C/D**

MALAYSIA ALSO HAS ONE OF THE HIGHEST WATER CONSUMPTION FOOTPRINTS IN THE WORLD



VS. SOUTH EAST ASIA

1st/8

Malaysia has the highest total water consumption footprint among eight (8) countries.

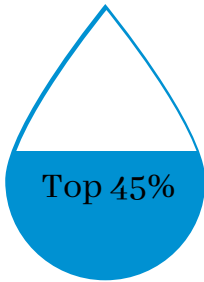


VS. REST OF ASIA

12th/40

Top 30%

Malaysia has the 12th highest total water consumption footprint among 40 countries.

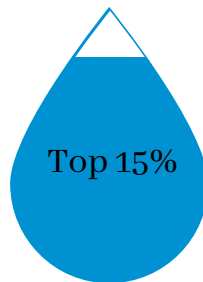


VS. COMPARABLE GDP/C

6th/13

Top 45%

Malaysia has the 6th highest total water consumption footprint among 13 countries.

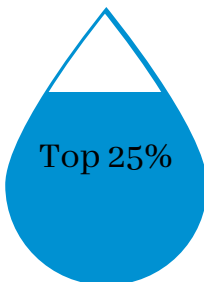


VS. TROPICAL COUNTRIES

10th/72

Top 15%

Malaysia has the 10th highest total water consumption footprint among 72 countries.

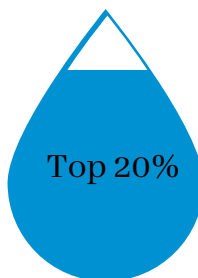


VS. COMMONWEALTH

12th/47

Top 25%

Malaysia has the 12th highest total water consumption footprint among 47 countries.



VS. REST OF THE WORLD

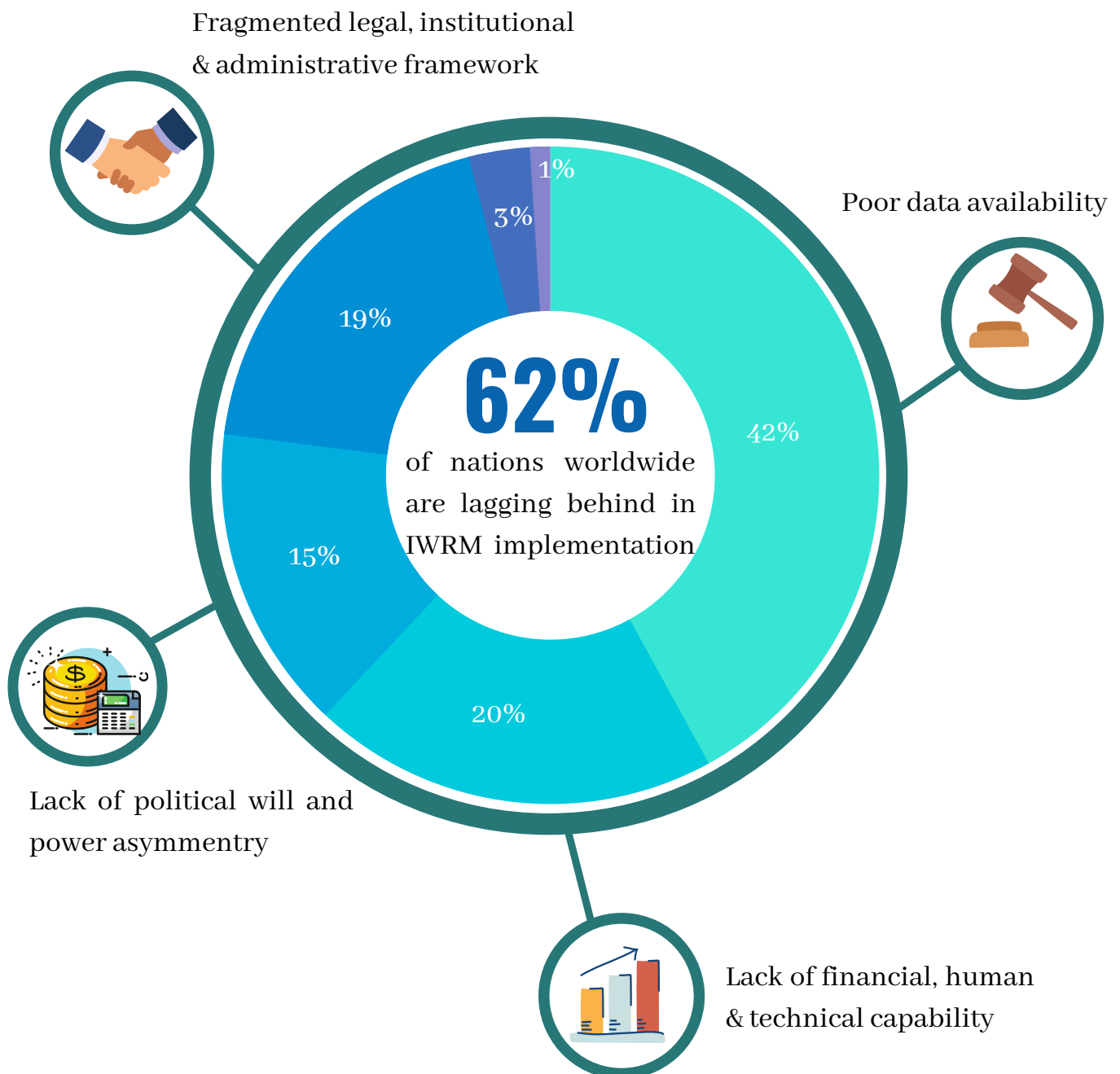
37th/174

Top 20%

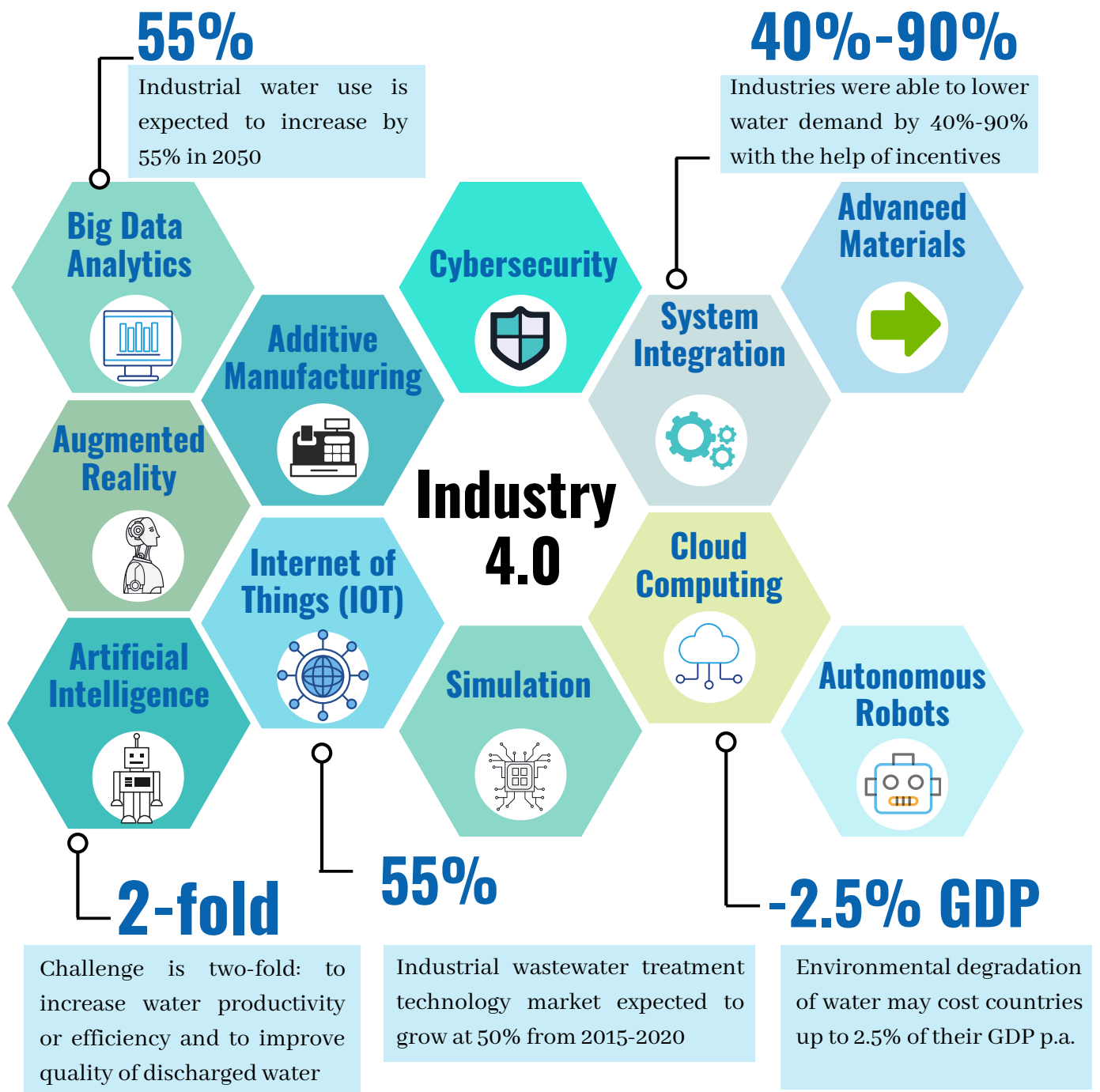
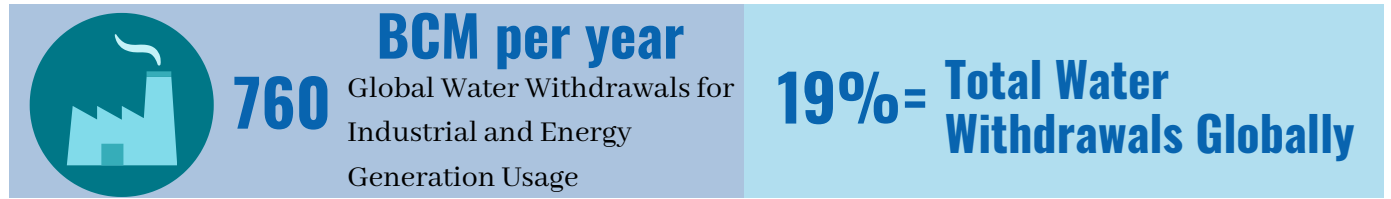
Malaysia has the 37th highest total water consumption footprint among 174 countries.

Challenges Faced by Nations Worldwide in Implementing Integrated Water Resources Management Practices

The barriers are numerous and are particularly prominent where transboundary basins enter the picture. Countries have reported that these barriers include :



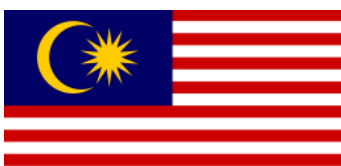
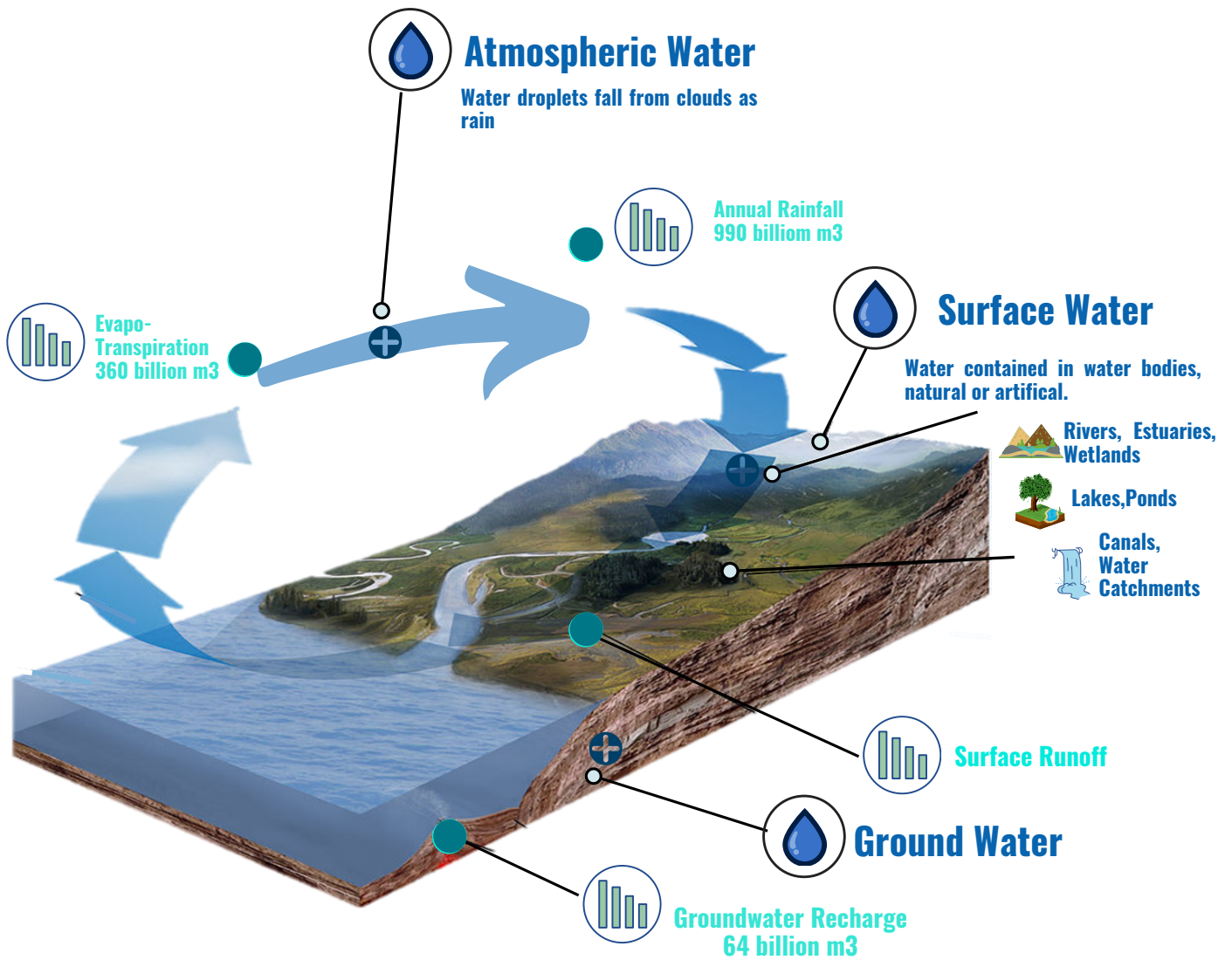
Harnessing the fourth revolution for water is central to unlocking sustainable water for industry, energy and economic value generation.



MALAYSIA'S NATURAL WATER CYCLE

Malaysia has four primary national water resources :

+ Water Sources ● Water Availability (Annual)



Potential Groundwater Storage (Aquifers)
5,000 billion m³

Surface Artificial Storage (Dams)
25 billion m³

STRUCTURE OF THE MALAYSIAN WATER INDUSTRY

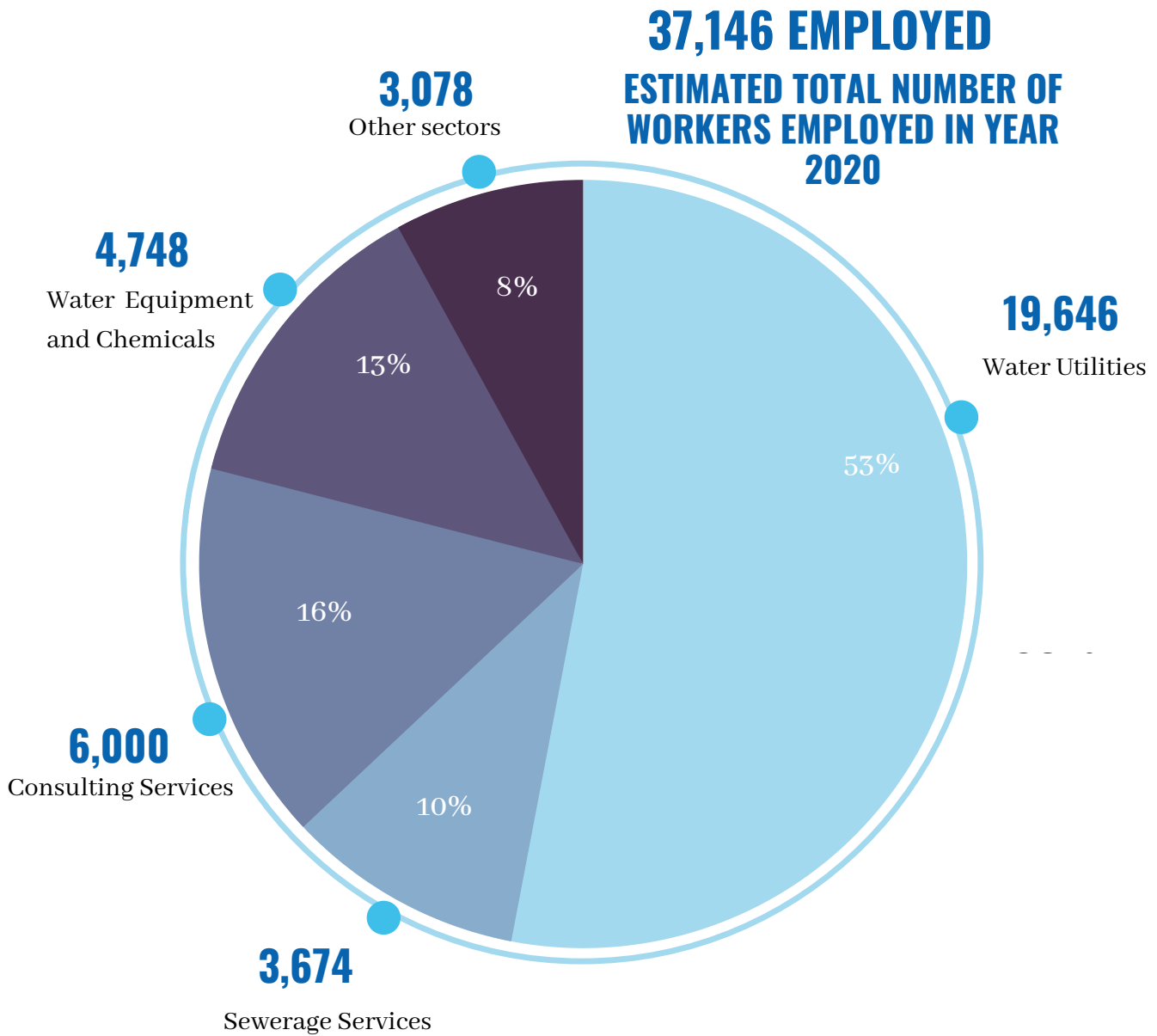
The Malaysian water industry is a complex value chain with several groups of players providing essential goods and services in the water industry. The major group include :

<p>Water Utilities and Sewerage Services</p> <p>Players in this group include water plant operators, water distributors, sewerage service providers.</p>	<p>Water Equipment and Chemicals</p> <p>Players in this group distribute operational equipment such as pumps and pipes as well as chemicals for water treatment.</p>
<p>Consulting Services</p> <p>Players in this group include project, engineering,, analytical and other consulting-related services.</p>	<p>Waste Management Equipment</p> <p>Players in this group distribute equipment such as water filters and related goods.</p>
<p>Instruments and Monitoring Systems</p> <p>Players in this group distribute monitoring equipment such as various types of sensors, equipment and software.</p>	<p>Remediation or Industrial Services</p> <p>Players in this group provide various ancillary services to the industry,including environment remediation services.</p>

The total market size (in revenue terms) of the Malaysian water industry was estimated at RM 10.1 billion in Year 2017. It is estimated that the industry is growing at a Compound Annual Grant Rate (CAGR) of between 2.5 % and 6.6 % with an average of 4.6 % from 2017 to 2020. In 2020, the market size of the Malaysian water industry (in revenue terms) is estimated at RM 11.6 billion, employing roughly 40,000 people.

- **65% of the industry's revenue (or ~ RM 7.5 billion) are contributed by water utilities and sewerage services.**
- **The sector is also the largest employer, hiring 63% of the industry's workforce (or ~ 25,000 people)**
- **In terms of revenue, water equipment and chemicals is the next largest , contributing 17 % of the industry's revenues (~5,000 people employed)**
- **This is followed by consulting services at 9% of industry revenues (~ 6,000 people employed)**

Employment size breakdown of the Malaysian water industry :



Note :

'Other Sectors' include Waste Management Equipment, Instruments and Monitoring Systems, and Remediation/Industrial Services.



Top 5 Challenges in the Malaysian Water Supply Industry

Ranking		Weighted Score
1	Tariff Adjustment/Restructuring	70
2	IWRM	45
3	Non-Revenue Water	43
4	Pollution Management	36
5	New Water Sources	35
6	Rising Operational Cost	27
7	New Projects/Direct Investment	21
8	Circular Economy	20
9	Demand Management	17
10	Implementation/Enforcement	13
11	Technology/Water 4.0	12
12	Laws & Policies	12
13	Training/Skills Gaps	12
14	Sector Restructuring	6
15	Talent Pool Shortages	4
16	Labour Policy Issues	2



Top 5 Challenges in the Malaysian Sewerage Industry

Ranking		Weighted Score
1	Integrated Water/Sewerage Management	69
2	Tariff Restructuring/Adjustment	62
3	Pollution Management	29
4	Projects/Investment	23
5	Technology	21
6	Laws and Policies	19
7	Implementation/Enforcement	18
8	Circular Economy	15
9	Sector Restructuring	12
10	Training/Skill Gaps	9
11	Talent Pool Shortage	8
12	Labour Policy Issues	3



Human Capital/Talent Pool

Main Challenges Faced by the Water Supply Industry



Training is a continuous process, especially in areas where technology is progressing rapidly but there are limited forums or avenues for training available.



Lack of new talent coming into the industry. The industry is experiencing 'brain drain' as older workers move into retirement.



Lack of water management courses which can help bridge the large gap experience between junior and senior workers plus speed up knowledge transfer.



Retention of talent is a challenge. Moreover, there is lack of certain critical skillsets in our local talent pool.



Skills of workers are not standardized and quality is inconsistent. Ultimately, this impacts the quality of our water systems negatively.



Despite mutual recognition that training is important and critical to the industry, government agencies are not progressing in lockstep with the industry on this.



Human Capital/Talent Pool

Suggestions by the Water Supply Industry



Establish a centralized training programme based on standardized curriculum and learning outcomes (to be developed) between industry and education providers.



Perceptions about the industry must be changed, e.g ("3D") perceptions. Education and outreach campaigns should be implemented to change these perceptions.



Encourage career counselors in schools to understand and sell the outlook of a 'water career' . This will help bring new blood into the industry.



Salaries and wages must be increased to retain skilled workers. Salaries and wages must be competitive and commensurate to their skill level.



Government agencies and regulators must mainstream initiatives for training and must work in tandem with industry to promote/implement training programmes



Establish a 'University of Water' which offers all related certification programmes, e.g. technical to management courses, certificate to doctorate levels.



Human Capital/Talent Pool

Main Challenges Faced by the Sewerage Industry



There is not enough skilled and highly trained operation staff, leading to downtime in many plants. There is also a shortage of local talent in sewerage.



Current skillset of our talent pool is very elementary (mostly trained for compliance). There is a knowledge gap in circular economy, green technology and IOT.



The industry requires more diverse certified and recognized programmes. Current courses for sewerage contractors are good, but they should cover engineering as well.



Existing training programmes tend to cover technical aspects too much and not enough on non-technical aspects, eg data analytics, soft skills , etc.



Remuneration of sewerage operators are not up to par with water operators. This is important to retain talent within the sewerage industry.



Human Capital/Talent Pool

Suggestions by the Sewerage Industry



Regulators and NGOs to promote exchange of knowledge and skills between industry players. They should work together to promote the sewerage industry and attract new talent.



Introduce programmes for managing asset life cycles in the green/circular economy, technology automation and IOT/Industry 4.0.



Regulators should lead in improving skills and enhancing expertise in the sewerage industry by providing seed funding for the establishment of centralized skills training centre.



Training programmes should be enhanced/added to cover non-technical aspects, especially since the industry is moving into the era of Big Data/Industry 4.0



Provide continuous training opportunities with better remuneration and benefits that commensurate with worker's skill level.



Technology/Sewerage

Main Challenges Faced by the Sewerage Industry



The sewerage industry is very "closed minded" and does not adopt/open up to new technologies easily.



Telemetry and SCADA systems are not fully implemented, maintained or utilized, leading to poor system control and management.



No real time connectivity by regulators to monitor compliance of effluent quality, thus leading to water pollution.



Technology transfer is slow compared to other industries as conditions set by regulators are unfriendly and returns on investment by industry players are low.



Technology/Sewerage

Suggestions by the Sewerage Industry



The sewerage industry must be more willing to adopt new technologies and design (change in mindset). New technologies, design and cost-saving solutions are needed for industry sustainability.



Incentives should be introduced to encourage industry players to adopt fit-for-purpose technology at the right price point. "Reward" schemes should be introduced for successful implementation of new technology and design along the sewerage system.



Encourage more innovation/invention by allocating budgets and grants for research & development, piloting and commercialization of sewerage technology within our local setting.



Advances in waste water to be incorporated into new design guidelines of plants, e.g. 3R aspects, reclamation of treated effluent, etc. IOT to be used to improved operational efficiency and effectiveness.



The Top 5 Challenges Faced By The Sewerage Industry Today

1. Integrated Water and Sewerage Management

The water supply industry and sewerage industry should be managed under one roof, as they form part of the same water value chain. Principles of integrated water and sewerage management fit IWRM's holistic management concept and is an enabler of the circular economy. Collections in the sewerage industry can also be improved through joint billing with the water supply industry as well as enable cross-subsidization opportunities.

2. Tariff Restructuring/Adjustment

The current sewerage tariff structure of RM8 per household per month (and RM2 per low-income household per month) is well below breakeven costs. Industry revenue is unable to meet operational costs, not to mention CAPEX and environmental cost. Overall, industry revenue is able to meet just 70% of industry cost of sewerage services.

3. Pollution Management

The lack of sufficient enforcement on quality of effluents discharged and greywater/sullage discharge is causing serious river pollution. Authorities and regulators are lacking real-time data and information to monitor the quality of effluents.

4. New Projects Direct Investments

Government funding for new projects and/or innovation is lacking. Industry players are required to fund any initiatives themselves or to source for private funding. However, this is a challenging endeavour, given that the sewerage industry is not profitable (i.e. perpetually loss-making) industry. Investors in the private sector will hesitate to pump funds into the sewerage sector if the current business model remains the same.

5. TECHNOLOGY/SEWERAGE 4.0

The sewerage industry is relatively 'close minded' when it comes to adopting new technologies and ideas. Technology transfer in the sewerage industry is slow compared to other industries as conditions set by regulators are stringent and return on investment by industry players is low. More grants and incentives for research and development, piloting and commercialization of sewerage technology developed for local settings are required.

HOW HRDF CONTRIBUTED TO WATER AND SEWERAGE SERVICES INDUSTRY

HRDF PERSPECTIVE

This section explains the initiative taken by HRDF in terms training and schemes made available to the HRDF registered employers.



For HRDF Registered Employers

SKIM BANTUAN LATIHAN (SBL) & SKIM BANTUAN LATIHAN KHAS (SBL-KHAS)

The schemes are for employers to implement their training programmes based on identification of their own training needs to retrain and upgrade their employees' skills in line with their operational and business requirements.

OKU TALENT MANAGEMENT PROGRAMME (OTEP)

Initiatives to assist Person with Disabilities in securing employment by furnishing them with appropriate knowledge, skills and competencies that are required by the industry.

INDUSTRY CERTIFICATION (INDCERT)

INDCERT scheme is to enable businesses to move up the economic value chain through professional certification programmes for local workers of registered employers.

SME GRADUATES' SCHEME

The proposed of this scheme is to develop leadership and management skills, analytical, and creative decision-making competencies of SME business owners and Chief Executive Officer.

RECOGNITION OF PRIOR EXPERIENTIAL LEARNING (RPEL)

The proposed of this scheme is to qualifies in-service local workers with a secondary and lower education level to be recognised for their current competencies and skills based on the standards determined by the Department of Skills Department, Malaysia.

B40 CAPACITY BUILDING (B40CaB)

The proposed of this scheme is to assist the general society and workers in the B40 households with specific skills and knowledge to up-skills themselves through certification, secure employment and gain entrepreneurship skills.

HOW HRDF CONTRIBUTED TO WATER AND SEWERAGE SERVICES INDUSTRY

HRDF PERSPECTIVE

This section explains the initiative taken by HRDF in terms training and schemes made available to the employees.



For Future Employees

INDUSTRIAL TRAINING SCHEME (ITS)

Industrial Training is for those trainees (students) that are undergoing practical training at the employer's premise before graduating.

FUTURE WORKERS TRAINING SCHEME (FWT)

Future Workers Training is to assist employers with employing talent capable of performing with minimum supervision and to train future workers with the required skills and competencies before entering employment.

GENERATE 2.0

GENERATE 2.0 is an initiative designed to enhance the employability value of our unemployed graduates by fostering high-end skills and competencies required by industries; or through exploring new paths for a trainee's career or a job placement that can provide relevant working experience to enhance their employability.

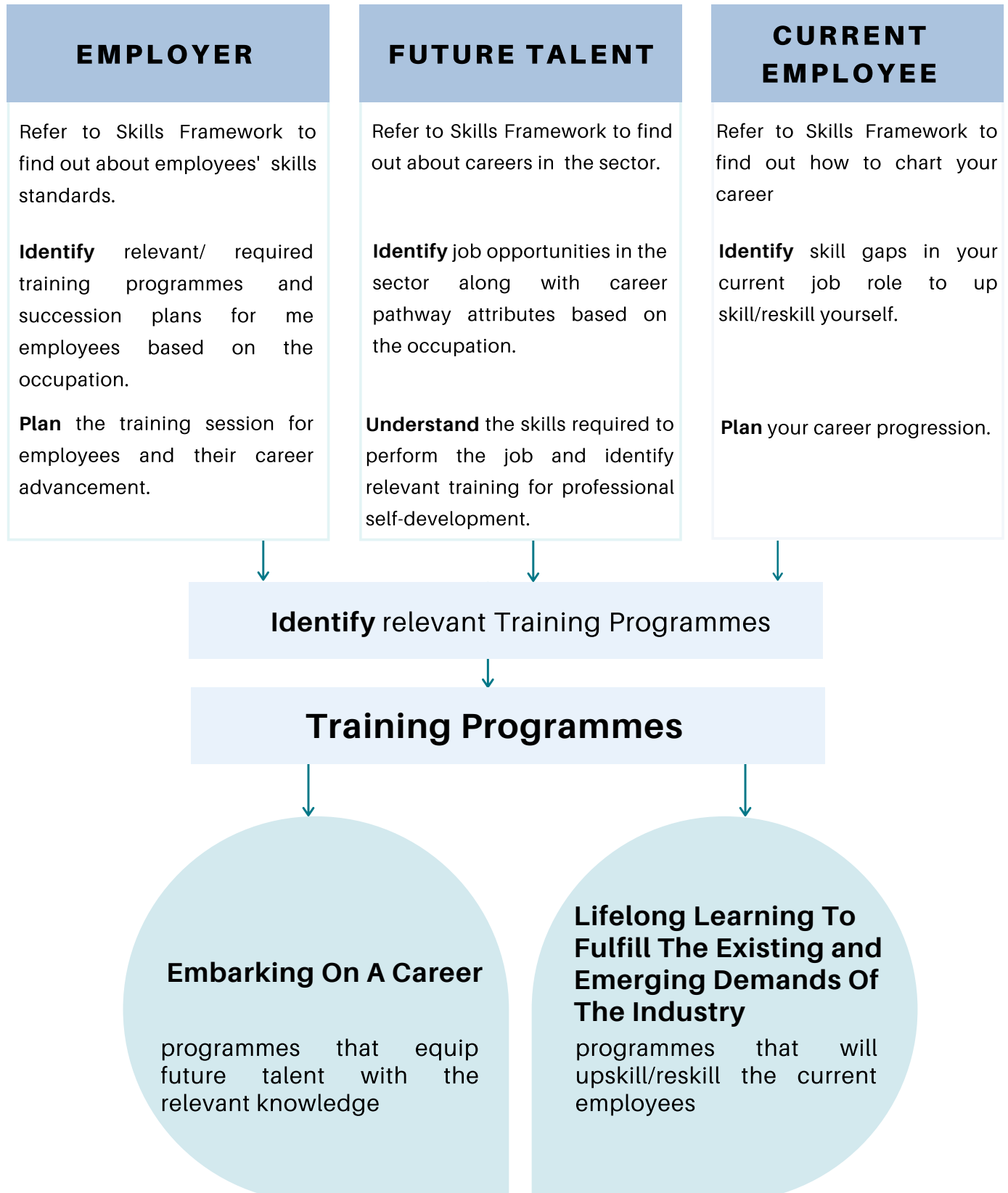
SLDN-APPRENTICESHIP SCHEME

HRDF SLDN-Apprenticeship Scheme address both the youth unemployment issue and the lack of supply of local semi-skilled workers specifically narrowing on Secondary school leavers with poor results.

MOVING FORWARD

Water and Sewerage Services Industry

Take the next step forward in the Water and Sewerage Services Industry with the ideas and initiatives from HRDF's Skills Framework.



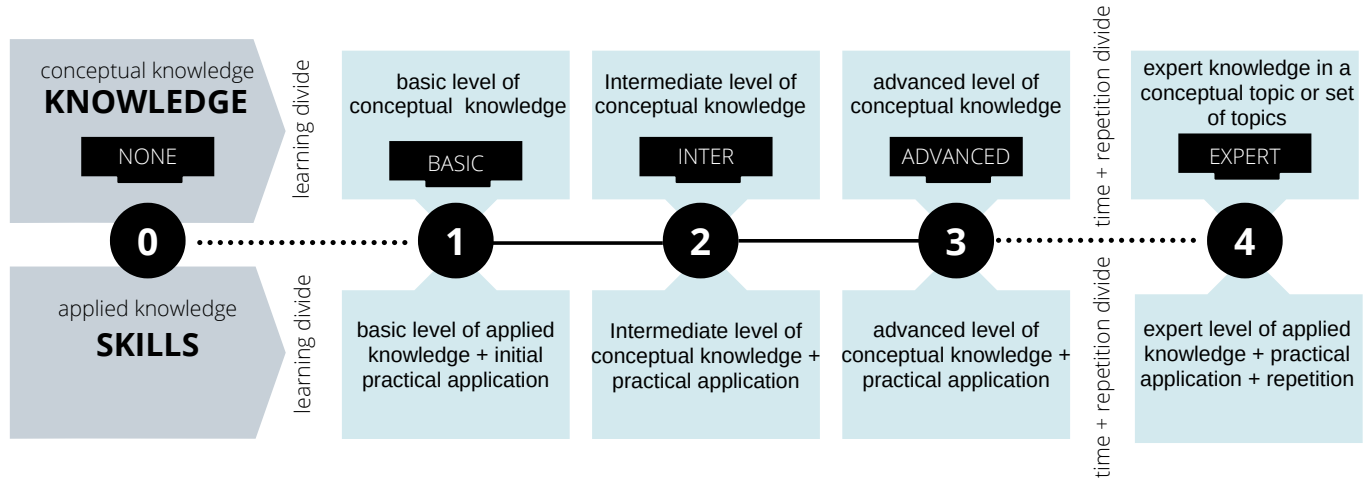
CAREER PATH STRUCTURE

LEVEL	TECHNICAL SPECIALISATION	MANAGEMENT
8	N/A	Top Management
7	Head Technical	Senior Management/ Head of Division/ Department
6	Manager/ Section Head	Middle Management
5	Engineer/ Technologist/ Chemist	Executive
4	Assistant Engineer/ Senior Technician/ Senior Supervisor	Senior Supervisory Level
3	Technician/ Supervisor	Supervisory Level
2	Operator / Fitter/ Electrician	Functional Support Level
1	General Workers	General Support Level

MALAYSIAN OCCUPATIONAL SKILLS QUALIFICATION FRAMEWORK (MOSQF) LEVEL DESCRIPTOR

No.	Descriptions
1	Competent in performing a range of varied work activities, most of which are routine and predictable.
2	Competent in performing a significant range of varied work activities, performed in a variety of context. Some of the activities are non-routine and required individual responsibility and autonomy.
3	Competent in performing a broad range of varied work activities, performed in a variety of context, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required.
4	Competent in performing a broad range of complex technical or professional work activities carried out in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present. Higher level of technical skills should be demonstrated.
5	Competent in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources feature strongly, as do personal accountabilities for analysis and diagnosis, design, planning, execution and evaluation. Specialisation of technical skills should be demonstrated.
6	Achievement at this level reflects the ability to refine and use relevant understanding, methods and skills to address complex problems that have limited definition. It includes taking responsibility for planning and developing courses of action that are able to underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding of different perspectives, approaches of schools of thought and the theories that underpin them
7	Achievement at this level reflects the ability to reformulate and use relevant understanding, methodologies and approaches to address problematic situations that involve many interacting factors. It includes taking responsibility for planning and developing courses of action that initiate or underpin substantial change or development, as well as exercising broad autonomy and judgment. It also reflects an understanding of theoretical and relevant methodological perspectives, and how they affect their sub-area of study or work
8	Achievement at this level reflects the ability to develop original understanding and extend an sub-area of knowledge or professional practice. It reflects the ability to address problematic situations that involve many complexes, interacting factors through initiating, designing and undertaking research, development or strategic activities. It involves the exercise of broad autonomy, judgement and leadership in sharing responsibility for the development of a field of work or knowledge, or for creating substantial professional or organisational change. It also reflects a critical understanding of relevant theoretical and methodological perspectives and how they affect the field of knowledge or work.

REQUIRED COMPETENCY LEVEL



LEVEL	INDICATOR	DESCRIPTION
0	None	Denotes a lack of competence in a specific area or topic
1	Basic	Denotes an understanding of fundamentals and some initial practical application
2	Intermediate	Denotes a solid conceptual understanding and some practical application
3	Advanced	Denotes significant conceptual knowledge and practical experience in performing a competency to a consistently high standard
4	Expert	Denotes extensive knowledge, refined skill and prolonged experience in performing a defined competency at the highest standard

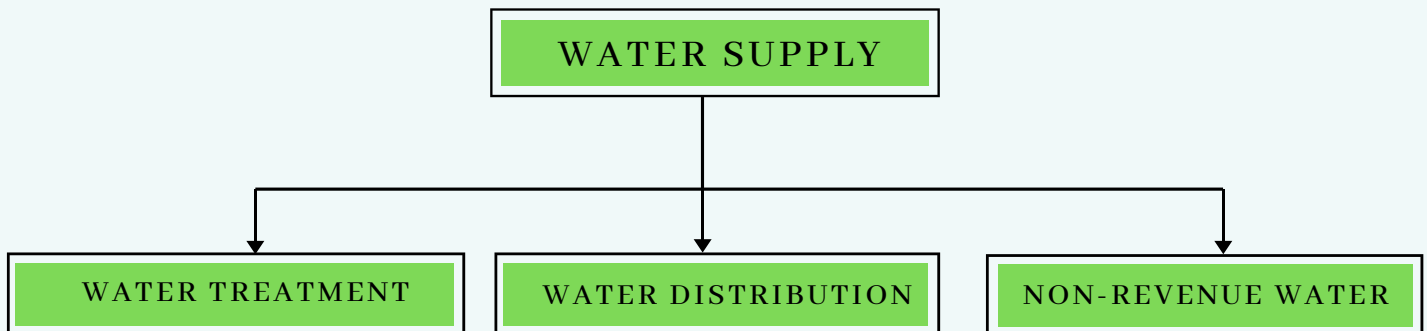
FOCUS AREAS



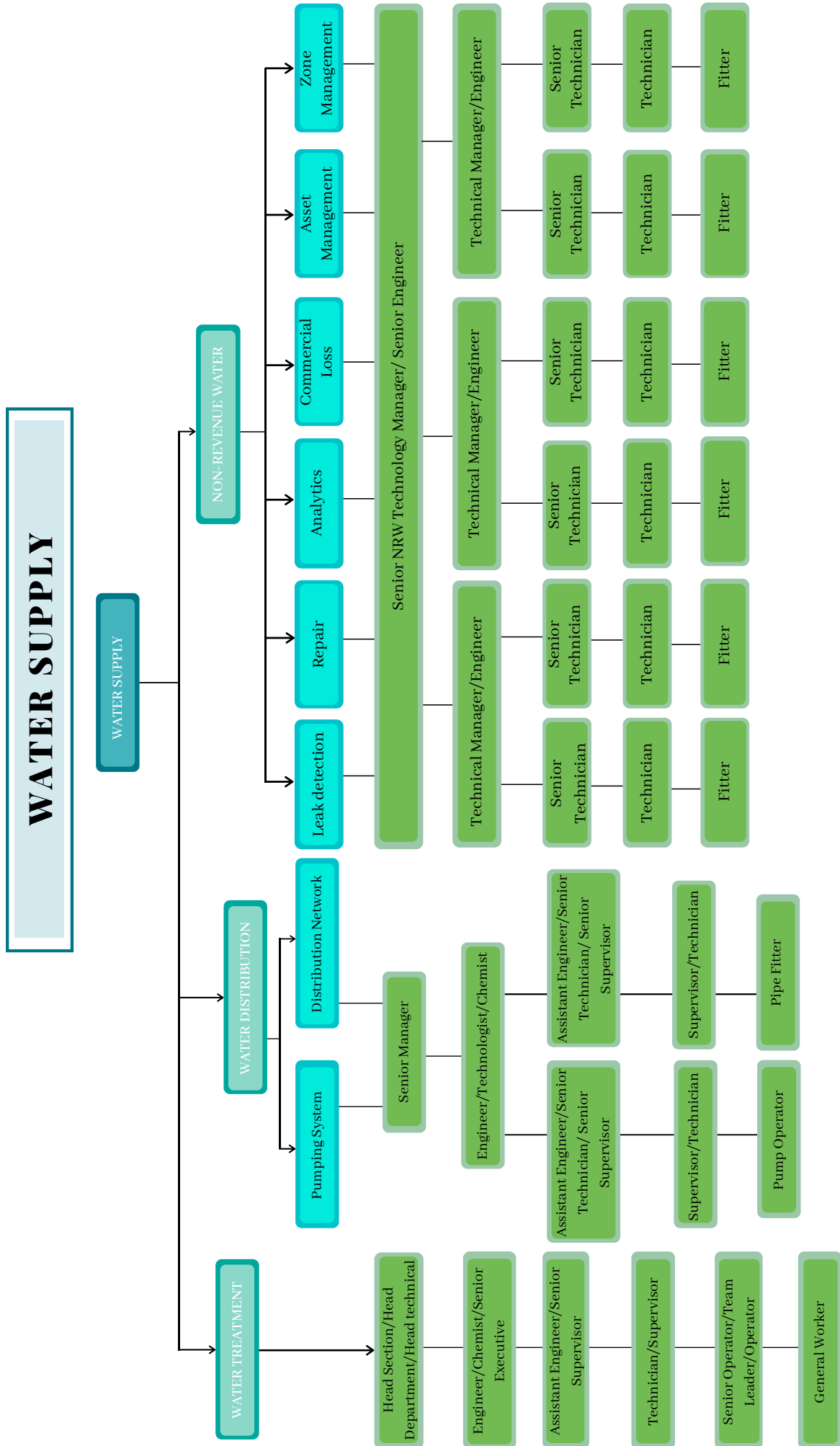
There are three (3) critical focus areas in Water and Sewerage Services Industry has been identified during the development of Industrial Skills Framework (IndSF) document which are water supply , sewerage and support services.

**WATER SUPPLY****SEWERAGE****SUPPORT SERVICES**

FOCUS AREA I: WATER SUPPLY
WATER TREATMENT
WATER DISTRIBUTION
NON-REVENUE WATER



CONTENT :
● CAREER PATHWAYS
● JOB DESCRIPTIONS
● SKILLS COMPETENCIES
● REQUIRED COMPETENCIES LEVEL
● RECOMMENDED TRAINING PROGRAMMES



NO	DETAILS		
1	Area : Water Treatment		
	Job Title : Head Section/ Head Department/ Head Technical	Level : 7	
	Job Description :		
	<p>A Water Treatment Head Technical is responsible for water treatment plant optimization. He/ she must be able to develop operation procedures and policies. He/ she must also be able to manage and ensure treatment plant safety, health, environment, quality and assurance (SHEQ). He/she must be able to manage Water Treatment Plant Asset. He/ she must be able to manage risk and crisis management. He/she must be able to plan upgrading works. He/ she must be responsible for managing water treatment plant regulatory compliance. He/ she must be responsible for planning and managing water supply from the plant based on the demand from consumers. He/ she must be responsible for preparing budget and managing the financial affairs of a water treatment plant. He/ she must be responsible for managing manpower matters for the operation of water treatment plant. He/ she must be responsible for managing water treatment plant refurbishment projects including proposal to top management. He/ she must be responsible for managing the availability and sufficiency of drinking water supply. He/she must be able to ensure the implementation of Quality Management System (QMS), Water Safety Plant (WSP) and Emergency Respond Plan (ERP).</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	4	1. Team-building
2. To communicate with other team members/supervisors	4	1. Effective Communication and Presentation	
3. Managerial skills	4	1. Leadership Training for Head Technical	
4. The ability to use computer for report writing	4	1. Advanced Microsoft Office 2. Effective Delegation 3. Analytical Behavioral Decision Making 4. Conflict Management 5. Performance Management 6. Effective Coaching 7. Leadership Training for Head Technical 8. Water Treatment Plant Manpower Development	

Technical Skills	Required Competency Level	Recommended Training
1. Analyze, manage and evaluate optimisation programme for water treatment process	4	1. Water Treatment Plant Management SKM Level 5
2. Develop, manage, implement, evaluate and ensure implementation of water treatment plant operations procedures, policies and internal regulations	4	1. Implementation of ISO 9001 : 2015 2. Implementation of ISO 14001 3. Implementation ISO 45001 4. Water Treatment Plant Management SKM Level 5
3. Identify Safety, Health, Environmental and Quality Assurance requirements	4	1. Water Treatment Plant Management SKM Level 5 2. Implementation of OHSAS 18001
4. Develop Safety, Health, Environmental and Quality Assurance standard procedure	4	1. Water Treatment Plant Management SKM Level 5 2. Implementation of OHSAS 18001
5. Manage Safety, Health, Environmental and Quality Assurance programme	4	1. Water Treatment Plant Management SKM Level 5 2. Implementation of OHSAS 18001
6. Identify, develop and monitor water treatment plant assets management requirements	4	1. Water Treatment Plant Management SKM Level 5
7. Analyze, manage and evaluate risk and Crisis Management, Water Safety Plant (WSP) and Emergency Response Plan (ERP)	4	1. Water Safety Plant (WSP) Course 2. Water Treatment Plant Management SKM Level 5 3. Emergency Response Plan (ERP)
8. Analyze company and regulatory body requirements on water treatment plant upgrading works	4	1. Training on upgrading works on Water Treatment Plant.

Technical Skills	Required Competency Level	Recommended Training
9. Plan, coordinate, manage and verify water treatment plant upgrading works	4	1. Maintenance and Management of Water Treatment Plant Facilities 2. Contract and Procurement Training
10. Analyze, mitigate, evaluate and ensure Environmental Impact Assessment programme (EIA) implemented	4	1. Environmental Impact Assessment Programme (EIA) Course
11. Identify, verify and carry out water demand management planning	4	1. Water Supply Demand Projection Training
12. Identify water treatment plant financial management requirements	4	1. Variance Analysis/Financial Training
13. Monitor Key Performance Indicator (KPI) achievement	4	1. Key Performance Indicator (KPI) Training 2. Balance Scorecard (BSC) Training 3. Business Plan Training 4. Non-Revenue Water (NRW) training 5. Water Distribution Management Training 6. Profit and Loss (P&L) Training
14. Develop and monitor business plan implementation	4	1. Business Plan Training
15. Plan, coordinate, carry out and monitor human resource management.	4	1. Human Resource Management Training
16. Study, plan, coordinate and manage water treatment plant refurbishment works.	4	1. Contract and Procurement Training
17. Analyze, manage water distribution activities and implement Non-Revenue Water programme	4	1. Non-Revenue Water Programme Training 2. Water Distribution Management Training

NO	DETAILS		
2	Area : Water Treatment		
	Job Title : Engineer/ Chemist/ Senior Executive	Level : 6	
	Job Description :		
	<p>A Water Treatment Engineer/ Chemist/ Senior Executive is responsible for water resources, water intake, and water treatment process operation and management. He/ she must be able to monitor water treatment control and monitoring system and manage water treatment plant facilities maintenance. He/ she must also be able to implement treatment plant safety, health, environment, quality and assurance (SHEQ) as well as to handle sludge management. He / she must also be able to manage advanced water treatment process and water resource dam monitoring. He/she must be able to identify and propose upgrading works. He/she must be able to prepare capital and operational budget for water treatment plant operations. He/she must be able to prepare and monitor the implementation of Quality Management System (QMS), Water Safety Plan (WSP) and Emergency Respond Plan (ERP). He/she must be able to assist on preparation of business plan. He/she must be able to analyze operational reports and propose improvement to his/her superior.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	4	1. Team-building
	2. To communicate with other team members/supervisors	4	1. Effective Communication and Presentation
	3. Supervisory skills	4	1. Leadership Training for Engineers
	4. The ability to use computer for report writing	4	1. Advanced Microsoft Office
	5. The ability to write report	4	1. Business Writing 2. Finance for Non Finance Staff 3. Train the Trainer (TTT)
Technical Skills	Required Competency Level	Recommended Training	
1. Manage, coordinate, evaluate and analyze water resources, security of water catchment including water resources quality and quantity.	4	1. Water Treatment Plant Operation Management SKM Level 4 2. Security of Water Resource of Quality and Quantity	

Technical Skills	Required Competency Level	Recommended Training
2. Manage, coordinate, evaluate and analyze raw water intake operation.	4	1. Water Treatment Plant Operation Management SKM Level 4
3. Manage, coordinate, evaluate and analyze Water Treatment Plant processes	4	1. Water Treatment Plant Operation Management SKM Level 4
4. Manage, coordinate, evaluate, review and analyze data analysis including plant control and monitoring system.	4	1. Water Treatment Plant Operation Management SKM Level 4
5. Plan, coordinate, evaluate and analyze water treatment plant facilities maintenance, upgrading and management.	4	1. Water Treatment Plant Operation Management SKM Level 4 2. Contract and Procurement Training
6. Monitor, coordinate, evaluate and prepare Safety, Health Environmental and Quality Assurance implementation.	4	1. Water Treatment Plant Operation Management SKM Level 4
7. Verify sludge treatment process and coordinate sludge disposal.	4	1. Water Treatment Plant Operation Management SKM Level 4
8. Identify, manage and verify advanced treatment plant processes.	4	1. Water Treatment Plant Operation Management SKM Level 4
9. Analyze, evaluate and coordinate dam monitoring management	4	1. Water Treatment Plant Operation Management SKM Level 4
10. Analyze operational data and produce management reports.	4	1. Implementation of ISO 9001 : 2015 2. Implementation of ISO 14001 3. Implementation ISO 45001
11. Produce Water Treatment operation procedure according to Quality Management System (QMS)	4	1. Implementation of ISO 9001 : 2015

Technical Skills	Required Competency Level	Recommended Training
12. Identify and produce capital and operational budget for water treatment plant operations.	4	1. Contract and Procurement Training 2. Variance Analysis/ Financial Training 3. Business Plan Training Programme 4. Key Performance Indicator (KPI) and Balance Scorecard (BSC) Training 5. Water Treatment Plant Online System Management (IR4.0)
13. Monitor adherence to Occupational Health and Safety regulations	4	1. Occupational Health and Safety for Water Treatment Plant Course 2. Implementation of OHSAS 18001
14. Assist water safety plan activities at water treatment plant	4	1. Implementation of Water Safety Plan (WSP)
15. Assist activities according to Hazard Identification, Risk Assessment and Risk Control (HIRARC) and Chemical Health Risk Assessment (CHRA)	4	1. Hazard Identification, Risk Assessment and Risk Control (HIRARC) Course 2. Chemical Health Risk Assessment (CHRA) Course
16. Coordinate Emergency Respond Plan (ERP)	4	1. Emergency Respond Plan (ERP) Training

NO	DETAILS		
3	Area : Water Treatment		
	Job Title : Assistant Engineer/Senior Supervisor	Level : 5	
	Job Description :		
	<p>A Water Treatment Plant Assistant Engineer/Senior Supervisor must be able to monitor water treatment processes, water quality testing, and sludge treatment. He/ she must also be able to monitor water treatment plant auxiliary, raw water and treated water pumps. He/she must be able to monitor raw and treated water flow operations accordance to current demand and storage capacity. He/ she must be able to monitor chemical stocks, to confirm verification and calibration of chemical dosing pump. He/she must be able to confirm verification and calibration of lab instrumentations. He/she must be able to monitor maintenance works for water treatment operations. He/she must be able to identify and propose upgrading works and prepare operational budget for water treatment plant operations. He/she must be able to confirm corrective action against violation. The personnel has to monitor cleaning works in water treatment plant. He/ she also has to monitor record and produce the report of any power outages, contamination of water from the water source and influx of dirty water into surface water. He/she also monitor water quality data and produce water test records and report. He/ she also must be able to compile and submit operations report to his/ her superior. He/she must be able to monitor the implementation of Quality Management System (QMS), Water Safety Plant (WSP) and Emergency Respond Plan (ERP).</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	4	1. Team-building
	2. To communicate with other team members/supervisor	4	1. Effective Communication
3. Supervisory skills	4	1. Leadership Training for Senior Supervisors	
4. The ability to use computer for report writing	4	1. Intermediate Microsoft Office	
5. The ability to write report	4	1. How to Write a Good Report 2. Water Treatment Plant Supervisory Functions 3. Induction training for Assistant Engineer/ Senior Supervisor	

Technical Skills	Required Competency Level	Recommended Training
1. Monitor raw water intakes operation	4	1. Water Treatment Operation Supervision SKM Level 3 2. Authorised Entrant and Stand-By Person for Confined Space Course 3. Basic Swimming Course
2. Monitor pre chemical dosing and mixing operation	4	1. Water Treatment Operation Supervision SKM Level 3 2. Chemical Preparation, Safety and Handling Training 3. Stream Current Monitoring (SCM) Course 4. Mechanical and Electrical Equipment for Chemical Dosing Course
3. Monitor clarification and filtration operations	4	1. Water Treatment Operation Supervision SKM Level 3
4. Monitor treated water post dosing operations	4	1. Water Treatment Operation Supervision SKM Level 3
5. Identify and monitor laboratory chemical	4	1. Basic Management of Chemical and Chemical Lab Waste
6. Monitor water quality data	4	1. Introduction to ISO 9001 : 2015 2. Implementation of ISO 14001 3. Implementation ISO 45001
7. Monitor and control treated water flow operations	4	1. Treated Water Flow Supervision Course 2. Basic Non-Revenue Water (NRW) Course
8. Coordinate sludge handling operations	4	1. Water Treatment Operation Supervision SKM Level 3 2. Sludge Handling Supervision Course
9. Monitor mechanical and electrical equipment for water treatment operations	4	1. Mechanical and Electrical Equipment for Water Treatment Facilities Course

Technical Skills	Required Competency Level	Recommended Training
10. Identify, prepare and monitor maintenance activities	4	1. Mechanical and Electrical Equipment for Water Treatment Facilities Course
11. Evaluate water quality testing results	4	1. General QA/QC Procedures for Testing Laboratory 2. Basic Management of Chemical and Chemical Lab Waste 3. Jar Testing Procedures for Water Treatment
12. Coordinate corrective action against violation	4	1. Implementation of ISO 9001 : 2015
13. Analyze operational data	4	1. Implementation of ISO 9001 : 2015
14. Compile and produce plant operation reports	4	1. Implementation of ISO 9001 : 2015
15. Identify and propose upgrading works	4	1. Procurement Training
16. Prepare operational budget for water treatment plant operations	4	1. Budget and Financial Training
17. Confirm verification and calibration for lab instrumentation	4	1. Training on Calibration and Verification for Water Quality Instruments
18. Confirm verification and calibration for dosing equipments	4	1. Operation and Maintenance of Dosing Equipments Training 2. Certified Environmental Professional in the Operation of Industrial Effluent Treatment System (CePIETSO) 3. Certified Environment Professional in Schedule Waste Management (CePSWaM)
19. Assist water safety plan activities at water treatment plant	4	1. Implementation of Water Safety Plant (WSP)

Technical Skills	Required Competency Level	Recommended Training
20. Assist activities according to Hazard Identification, Risk Assessment and Risk Control (HIRARC) and Chemical Health Risk Assessment (CHRA)	4	1. Hazard Identification, Risk Assessment and Risk Control (HIRARC) Course 2. Chemical Health Risk Assessment (CHRA) Course
21. Coordinate Emergency Respond Plan (ERP)	4	1. Emergency Respond Plan (ERP) Training
22. Monitor adherence to Occupational Health and Safety regulations	4	1. Occupational Health and Safety for Water Treatment Plant Course 2. Implementation of OHSAS 18001

NO	DETAILS		
4	Area : Water Treatment		
	Job Title : Technician/ Supervisor	Level : 4	
	Job Description :		
	<p>A Water Treatment Plant Technician/ Supervisor must be able to supervise water treatment processes, water quality testing, and sludge treatment.He/ she must also be able to supervise water treatment plant auxiliary, raw water and treated water pumps. He/she must be able to control raw and treated water flow operations accordance to current demand and storage capacity. He/ she must be able to supervise chemical stocks, verify and calibrate chemical dosing pump. He / she must be able to verify and calibrate lab instrumentations. He/she must be able to supervise and inspect maintenance works for water treatment operations. He/she must be able to identify corrective action against violation. The personnel has to inspect cleaning works in water treatment plant. He/ she also has to supervise record and produce the report of any power outages, contamination of water from the water source and influx of dirty water into surface water. He/she also supervise water quality data and produce water test records and report. He/ she also must be able to submit operations report to his/ her superior. He/she must be able to understand and react Emergency Respond Plan (ERP).</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	3	1. Team-building
	2. To communicate with other team members/supervisor	3	1. Effective communication
3. Supervisory skills	3	1. Leadership Training for Supervisors	
4. The ability to use computer for report writing	3	1. Intermediate Microsoft Office 2. How to Write a Good Report 3. Water Treatment Plant Supervisory Functions 4. Induction training for Technician/Supervisor	

Technical Skills	Required Competency Level	Recommended Training
1. Monitor raw water intakes operation	3	1. Water Treatment Operation Supervision SKM Level 3 2. Authorised Entrant and Stand-By Person for Confined Space Course 3. Basic Swimming Course
2. Monitor pre chemical dosing and mixing operation	3	1. Water Treatment Operation Supervision SKM Level 3 2. Chemical Safety and Handling Training 3. Mechanical and Electrical Equipment for Chemical Dosing Course 4. Stream Current Monitoring (SCM) Course
3. Control clarification and filtration operations	3	1. Water Treatment Operation Supervision SKM Level 3
4. Monitor and control treated water post dosing operations	3	1. Water Treatment Operation Supervision SKM Level 3
5. Identify and monitor laboratory chemical	3	1. Basic Management of Chemical and Chemical Lab Waste
6. Monitor water quality data	3	1. Introduction to ISO 9001 : 2015
7. Produce water quality record	3	1. Introduction to ISO 9001 : 2015
8. Monitor and control treated water flow operations	3	1. Water Treatment Operation Supervision SKM Level 3
9. Coordinate sludge handling operations	3	1. Sludge Handling Supervision Course
10. Monitor mechanical and electrical equipment for water treatment operations	3	1. Mechanical and Electrical Equipment for Water Treatment Facilities Course
11. Coordinate Emergency Respond Plan (ERP)	3	1. Emergency Respond Plan (ERP) Training
12. Evaluate data recording	3	1. Implementation of ISO 9001 : 2015 2. Implementation of ISO 14001 3. Implementation ISO 45001

Technical Skills	Required Competency Level	Recommended Training
13. Monitor adherence to Occupational Health and Safety regulations	3	1. Occupational Health and Safety for Water Treatment Plant Course 2. Implementation of OHSAS 18001
14. Assist water safety plan activities at water treatment plant	3	1. Implementation of Water Safety Plan (WSP)
15. Assist activities according to Hazard Identification, Risk Assessment and Risk Control (HIRARC) and Chemical Health Risk Assessment	3	1. Hazard Identification, Risk Assessment and Risk Control (HIRARC) Course 2. Chemical Health Risk Assessment (CHRA) Course
16. Identify, prepare and monitor maintenance activities	3	1. Contract and Procurement Training
17. Evaluate water quality testing results	3	1. General QA/QC Procedures for Testing Laboratory 2. Basic Management of Chemical and Chemical Lab Waste 3. Jar Testing Procedures for Water Treatment
18. Coordinate corrective action against violation	3	1. Implementation of ISO 9001 : 2015
19. Produce water quality report	3	1. Implementation of ISO 9001 : 2015

NO	DETAILS		
5	Area : Water Treatment		
	Job Title : Senior Operator/ Team Leader/ Operator	Level : 2	
	Job Description :		
	<p>A Water Treatment Senior Operator/ Team Leader/ Operator is responsible to carry out water treatment and sludge treatment operation. He/ she also must be able to operate water treatment plant auxiliary, raw water and treated water pumps. He/she is responsible to conduct various physical and chemical tests on raw water, settled water, filtered water and treated water to ensure its quality meet drinking water standard. He/she has to perform water quality sampling and testing periodically ensuring its compliance to the NDWQS. He/she must be able to determine raw and treated water quality parameters, prepare tools and instrument, quality test and sampling, perform water quality testing, monitor water quality data and produce water test records and report. He/she must be able to identify corrective action against violation. He/she must be able to verify lab instrumentations. He/she must be able to identify and used of laboratory chemical for water quality testing procedures. He/ she also has to report and record any power outages, report any contamination of water from the water source, perform corrective action and record influx of dirty water into surface water. He/she must be able to record the data related to water treatment operation. He/she must be able to understand and react Emergency Respond Plan (ERP).</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	2	1. Team-building
	2. To communicate with other team members/supervisor	2	1. Effective communication
	3. The ability to use computer to record data properly	2	1. Basic Microsoft Office
	4. Housekeeping at workplace practice of 3R (reuse, recycle, reduce) concept	2	1. 5S Course 2. Positive work attitude 3. Induction training for plant operator
	Technical Skills	Required Competency Level	Recommended Training
1. Perform raw water intakes operation	2	1. Water Treatment Operation Services SKM Level 2 2. Authorised Entrant and Stand-By Person for Confined Space Course 3. Basic Swimming Course	

Technical Skills	Required Competency Level	Recommended Training
2. Perform pre chemical dosing and mixing operation	2	1. Water Treatment Operation Services SKM Level 2 2. Mechanical and Electrical Equipment for Chemical Dosing Course
3. Execute clarification and filtration operations	2	1. Water Treatment Operation Services SKM Level 2
4. Perform treated water post dosing operations	2	1. Water Treatment Operation Services SKM Level 2
5. Determine water quality parameters	2	1. National Standards for Drinking Water Quality (NSDWQ) Course 2. Water Treatment Operation Services SKM Level 2
6. Prepare tools and instrument water quality test and sampling	2	1. Water Treatment Operation Services SKM Level 2
7. Perform water quality sampling	2	1. Water Treatment Operation Services SKM Level 2 2. Basic Laboratory Skills and Techniques 3. Basic Swimming Course
8. Perform water quality testing	2	1. Water Treatment Operation Services SKM Level 2 2. General QA/QC Procedures for Testing Laboratory 3. Basic Management of Chemical and Chemical Lab Waste
9. Identify and conduct corrective action against violation	2	1. Introduction to ISO 9001 : 2015
10. Carry out treated water flow operations	2	1. Water Treatment Operation Services SKM Level 2
11. Carry out sludge handling operations	2	1. Water Treatment Operation Services SKM Level 2
12. Perform mechanical and electrical equipment for water treatment operations	2	1. Mechanical and Electrical Equipment for Water Treatment Facilities Course

Technical Skills	Required Competency Level	Recommended Training
13. Demonstrate Emergency Respond Plan (ERP)	2	1. Emergency Respond Plan (ERP) Training
14. Perform data recording	2	1. Introduction to ISO 9001 : 2015
15. Adhere to Occupational Health and Safety regulations	2	1. Introduction Occupational Health and Safety for Water Treatment Senior Operator/ Team Leader/ Operator 2. Introduction to OHSAS 18001
16. Perform water safety plan activities at water treatment plant	2	1. Introduction to Water Safety Plant (WSP)
17. Perform activities according to Hazard Identification, Risk Assessment and Risk Control (HIRARC) and Chemical Health Risk Assessment (CHRA)	2	1. Introduction to Hazard Identification, Risk Assessment and Risk Control (HIRARC) 2. Introduction to Chemical Health Risk Assessment (CHRA)

NO	DETAILS		
6	Area : Water Treatment		
	Job Title : General Worker	Level : 1	
	Job Description :		
	A Water Treatment General Worker is responsible to carry out water treatment chemical preparations, cleaning activities, and general housekeeping. He/ she also must be able to perform cleaning activities at raw water intakes, water treatment facilities and sludge treatment facilities. He/ she must also be able to understand and identify chemical stocks, procedures and safety handling. He/she must be able to record the data related to activities. He/she must be able to understand and react Emergency Respond Plan (ERP)		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	1	1. Team-building
	2. To communicate with other team members/supervisor	1	1. Effective Communication
	3. The ability to use computer to record data properly	1	1. Basic Microsoft Office
	4. Housekeeping at workplace practice of 3R (reuse, recycle, reduce) concept	1	1. 5S Course 2. Positive work attitude 3. Induction training for general worker
	Technical Skills	Required Competency Level	Recommended Training
1. Perform raw water intake cleaning activities	1	1. Authorised Entrant and Stand-By Person for Confined Space Course 2. Basic Swimming Course 3. Basic Water Treatment Plant Course for General Worker	
2. Perform water treatment facilities cleaning activities	1	1. Authorised Entrant and Stand-By Person for Confined Space Course 2. Basic Swimming Course 3. Basic Water Treatment Plant Course for General Workers	

Technical Skills	Required Competency Level	Recommended Training
3. Perform chemical preparation activities	1	1. Basic Water Treatment Plant Course for General Workers 2. Chemical preparation, Safety and Handling Training 3. Introduction to Mechanical and Electrical Equipment for Chemical Preparation
4. Perform sludge treatment facilities cleaning activities	1	1. Authorised Entrant and Stand-By Person for Confined Space Course 2. Basic of Sludge Treatment Facilities
5. Perform general housekeeping	1	1. Basic Safety and Health Training
6. Demonstrate Emergency Respond Plan (ERP)	1	1. Emergency Respond Plan (ERP) Training
7. Perform data recording	1	1. Introduction of work procedures
8. Adhere to Occupational Health and Safety regulations	1	1. Introduction Occupational Health and Safety for Water Treatment General Workers

NO	DETAILS		
1	Area : Water Distribution		
	Job Title : Senior Manager	Level : 6	
	Job Description :		
	A Water Distribution Senior Manager is responsible to plan, direct and overall monitoring of water distribution, analysis of budget requirement, future water demand requirement, technical resources, regulatory & audit compliances including risk & crisis management plan.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Motivational skills	4	1. Staff / Team Motivation
	2. Communication skills	4	1. Formal & Informal Communication 2. Public speaking 3. Negotiation skill
	3. Critical & analytical thinking	4	1. Strategic & Analytical thinking
	4. Complex problem-solving	4	1. Knowledge, Processes & Activities in Problem Solving Skills
	5. Active learning	4	1. Continuous Learning & Improvement
	6. Decision-making	4	1. Cost & Benefit Analysis
	7. Innovative thinking	4	1. Creativity, Forecasting & Brain-storming
	8. Chair meeting	4	1. Effective Meeting Management 2. High impact presentation
9. Leadership	4	1. Effective Leadership Style	
10. Strategic planning	4	1. Strategic & Operational Planning	
11. Coaching and mentoring staff	4	1. Coaching & Mentoring Skills	
12. Project Monitoring	4	1. Microsoft office Program 2. Primavera 3. Gantt Chart	

Soft Skills	Required Competency Level	Recommended Training
13. Safety, Health & Environment	4	1. Safety, health & Environment (SHE) Knowledge
14. Prepare career development plan	4	1. Format of Career Development Plan 2. Personnel Management 3. Financial Management 4. Competency & Performance Evaluation
Technical Skills	Required Competency Level	Recommended Training
1. Decide solution for water distribution breakdown	4	1. Water Distribution Maintenance Management
2. Review and decide resources requirement for operation & maintenance	4	1. Water Distribution Resource Planning, Operation, Maintenance & Development
3. Review and decide operation & maintenance of distribution system	4	1. Water Distribution Operation & Maintenance Review
4. Review and decide on upgrading pumping and distribution system	4	1. Pumping System Upgrading Development 2. Mechanical & Electrical Planning & Development in Water Distribution System
5. Review and approve water supply system construction	4	1. Water Distribution System Construction Planning 2. Uniform Technical Guideline (UTG) – reticulation & pipe installation 3. Inspection & Testing Plan Development
6. Review and approve water distribution design	4	1. Water Distribution Design & Analysis
7. Decide policies and direction of office administration and management	4	1. High Impact Management Skills & Office Administration

Technical Skills	Required Competency Level	Recommended Training
8. Review and approve work activities in project management	4	1. Project Management (Microsoft Project or PRIMAVERA)
9. Review and approve risk & crisis management plan	4	1. Water Distribution Risk and Crisis Plan Development
10. Review and approve telemetry system	4	1. Telemetry & SCADA System Upgrading, Planning & Development
11. Review and approve budget requirement and estimate	4	1. Budget Planning & Development
12. Review and approve procurement documents	4	1. Procurement Management
13. Review and approve safety, health and environment plan	4	1. Safety, Health & Environment Management Planning

NO	DETAILS		
2	Area : Water Distribution - Pump System		
	Job Title : Engineer / Technologist / Chemist	Level : 5	
	Job Description :		
	A Water Distribution Engineer / Technologist / Chemist is responsible to analyse, prepare and monitor corrective & preventive maintenance program, plan for future upgrading of pump house and water network system, preparation of budget & related resources requirements including approval of pumping & water distribution operation.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Technical writing	4	1. Format & Content In Technical Writing
	2. Communication	4	1. Formal & Informal Communication 2. Public speaking 3. Negotiation skill
	3. Critical & analytical Thinking	4	1. Strategic & Analytical thinking
	4. Complex problem-solving	4	1. Knowledge, Processes & Activities in Problem Solving Skills
	5. Active learning	4	1. Continuous Learning & Improvement
	6. Decision-making	4	1. Cost & Benefit Analysis
	7. Innovative	4	1. Creativity, Forecasting & Brain-storming
	8. Chair meeting	4	1. Effective Meeting Management 2. High impact presentation
9. Leadership	4	1. Effective Leadership Style	
10. Motivational skills	4	1. Staff / Team Motivation	
11. Operation Planning	4	1. Operation & Strategic Planning	
12. Project Monitoring	4	1. Microsoft office Program 2. Primavera 3. Gantt Chart	

Soft Skills	Required Competency Level	Recommended Training
13. Coaching and mentoring staff	4	1. Coaching & Mentoring Skills
14. Safety, Health & Environment	4	1. Safety, health & Environment (SHE) Knowledge
Technical Skills	Required Competency Level	Recommended Training
1. Analyse water distribution breakdown data	4	1. Water Distribution Operation Management 2. Water Distribution Breakdown Data Collection & Analysis
2. Organise resources requirement for operation and maintenance	4	1. Water Distribution Resource Planning, Operation, Maintenance & Development 2. Water Quality Management
3. Analyse operation and maintenance of distribution system	4	1. Water Distribution NRW Programmes Management
4. Analyse pumping and distribution system	4	1. Mechanical & Electrical Operation in Water Distribution System
5. Monitor water supply system construction	4	1. Water Distribution Planning and Development 2. Water Safety Management
6. Analyse water distribution design	4	1. Uniform Technical Guideline (UTG) – reticulation & pipe installation
7. Monitor office administration and management	4	1. Water Regulatory and Audit Compliance Management 2. Water Distribution Business Plan Development 3. Water Distribution Customer Service Management 4. Water Distribution Assets Management

Technical Skills	Required Competency Level	Recommended Training
8. Analyse work activities in project management	4	1. Project Scheduling / Management (Microsoft Project or PRIMAVERA)
9. Evaluate, analyse and develop risk & crisis management plan	4	1. Water Distribution Risk and Crisis Management
10. Monitor and analyse telemetry system	4	1. Telemetry & SCADA System Analysis
11. Analyse budget requirement and estimate	4	1. Budget Development
12. Review and verify procurement documents	4	1. Procurement Management
13. Review and verify safety, health and environment plan	4	1. Safety, Health & Environment Management Planning

NO	DETAILS		
3	Area : Water Distribution - Pump System		
	Job Title : Assistant Engineer / Senior Technician / Senior Supervisor		Level : 4
	Job Description :		
	A Water Distribution of Pump System Assistant Engineer / Senior Technician / Senior Supervisor is responsible to prepare maintenance program of pumping installation, compilation of data and costing for budgeting, inspection and certification of maintenance works carried out, including preparation of pumping operation reports.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Writing Skills	3	1. Report Writing
	2. Communication Skills	4	1. Formal & Informal Communication 2. Public speaking
	3. Critical Thinking	4	1. Strategic & Critical thinking
	4. Complex problem-solving	3	1. Knowledge, Processes & Activities in Problem Solving Skills
	5. Active learning	3	1. Continuous Learning & Improvement
6. Coordinate and chair meeting	3	1. Preparation & Coordination Meeting Requirement 2. Conduct Operation Staff Meeting	
7. Leadership	3	1. Effective Leadership Style	
8. Project Monitoring	3	1. Microsoft office Program 2. Primavera 3. Gantt Chart	
9. Innovative	3	1. Creativity, Forecasting & Brain-storming	
10. Safety, Health & Environment	4	1. Safety, health & Environment (SHE) Management	

Technical Skills	Required Competency Level	Recommended Training
1. Carry out trouble-shooting for water pump breakdown	3	1. Water Pumping Operation and Maintenance 2. Troubleshooting Water Pump Breakdown
2. Identify and propose tools & equipment for maintenance works	4	1. Tools & equipment - usage & maintenance
3. Monitor mechanical and electrical operation in water pumping system	4	1. Mechanical & Electrical Operation in Water Pumping System
4. Monitor mechanical repair in water pumping system	4	1. Mechanical Repair Works Monitoring
5. Verify measuring instrument requirement in water pumping system	3	1. Instrumentation Requirement Planning
6. Monitor telemetry & SCADA system	3	1. Telemetry & SCADA requiremet Planning
7. Execute work activities in project management	3	1. Project Monitoring
8. Risk & Crisis Management	4	1. Water Pump Operation Risk & Crisis Management
9. Monitor water pumping system	4	1. Non- revenue Water Management 2. Water Assets Management 3. Water Technical Audit Implementation 4. Pumping Operation and Maintenance reporting
10. Analyse operation, breakdown and maintenance data	4	1. Maintenance Operation & Breakdown Data Analysis
11. Identify and compile data for risk & crisis management plan	4	1. Pump Breakdown Data Collection Procedure for Risk & Crisis Management Plan
12. Organise team administration and management	4	1. Inventory Planning

Technical Skills	Required Competency Level	Recommended Training
13. Interpret pump performance for upgrading or replacement	4	1. Water Pumping Planning and Development Program 2. Water Pump Performance testing & Commissioning 3. Uniform Technical Guideline (UTG) – Pumping installation 4. Project Scheduling / Management (Microsoft Project or PRIMAVERA)
14. Prepare budget requirement and estimate	3	1. Water Pumping Department Budget Preparation
15. Prepare procurement documents	4	1. Project and contract administration
16. Ensure to safety, health and environment requirement	4	1. Safety, Health & Environment Management Planning

NO	DETAILS		
4	Area : Water Distribution - Pump System		
	Job Title : Supervisor / Technician	Level : 3	
	Job Description :		
	A Water Distribution of Pump System Supervisor / Technician is responsible to supervise and monitor for pumping of water from suction tank or In-Line pipe booster to storage reservoir, perform inspection and perform preventive and collective maintenance program of pumping equipments, including in troubleshooting of process and system.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Writing Skills	2	1. Writing Skills
	2. Communication Skills	2	1. Formal & Informal Communication 2. Public speaking
	3. Critical Thinking	2	1. Strategic & Critical thinking
	4. Reading Comprehension	2	1. Technical Specification Interpretation
	5. Active learning	2	1. Continuous Learning & Improvement
	6. Coordinate meeting	2	1. Preparation & Coordination Meeting Requirement
	7. Leadership	2	1. Effective Leadership Style
	8. Project Monitoring	2	1. Microsoft office Program 2. Gantt Chart
	9. Safety, Health & Environment	4	1. Safety, health & Environment (SHE) Awareness
Technical Skills	Required Competency Level	Recommended Training	
1. Carry out trouble-shooting for water pumping breakdown	4	1. Water Pumping Operation and Maintenance 2. Troubleshooting Water Pump Breakdown 3. Reporting of pipes, valves, pipe specials / accessories installation & Maintenance 4. Data Collection for Maintenance & Operation	

Technical Skills	Required Competency Level	Recommended Training
2. Identify and propose tools & equipment for maintenance works	4	1. Tools & equipment - usage & maintenance 2. Inventory Management
3. Supervise mechanical and electrical operation in pumping system	4	1. Mechanical & Electrical Operation in Water Pumping System 2. Electrical, switchboard & reading instrumentation Monitoring 3. Mechanical & Electrical Operation Supervision
4. Supervise mechanical repair in pumping system	4	1. Mechanical Repair Works Monitoring
5. Supervise measuring instrument requirement in pumping system	4	1. Pump house & reservoir installations Monitoring 2. Instrumentation reading & interpretation
6. Supervise daily pumping system operation	4	1. Pumping System & Supply Network Supervision 2. Valves Operation & Control Monitoring 3. Pump & Motor Operation 4. Water Pipes Installation Procedure
7. Operate and control telemetry & SCADA system	2	1. Telemetry & SCADA Monitoring
8. Supervise work activities in project management	3	1. Project Monitoring 2. Project supervision 3. Project Scheduling
9. Collect operation, breakdown and maintenance data	3	1. Maintenance Operation & Breakdown Data Collection
10. Compile data for risk & crisis management plan	3	1. Risk and crisis awareness Identification
11. Carry out pump performance testing	4	1. Pump Performance Inspection & Testing Procedure

Technical Skills	Required Competency Level	Recommended Training
12. Supervise pumping operation team	4	1. Pumping Operation Supervision
13. Compile data for budget requirement and estimate	3	1. Data Collection for Budget Preparation
14. Compile data for procurement documents	3	1. Project and contract administration
15. Adhere to safety, health and environment requirement	4	1. Safety, Health & Environment Awareness

NO	DETAILS		
5	Area : Water Distribution - Pump System		
	Job Title : Pump Operator	Level : 2	
	Job Description :		
	A Water Distribution Pump Operator is responsible for the pumping of water from suction tank or In-Line pipe booster to storage resevoir, perform inspection and servicing maintenance of pumping equipments.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Writing Skills	1	1. Writing Skills
	2. Communication Skills	2	1. Informal Communication
	3. Critical Thinking	2	1. Critical Thinking
	4. Reading Comprehension	2	1. Technical Specification Interpretation
	5. Active learning	2	1. Continuous Learning & Improvement
	6. Housekeeping skills	2	1. House Keeping Procedure
	7. Teamwork Skills	2	1. Team Building
	8. Safety, Health & Environment	4	1. Safety, health & Environment (SHE) Awareness
	Technical Skills	Required Competency Level	Recommended Training
1. Carry out tools & equipment for maintenance works	4	1. Safety, health & Environment (SHE) Awareness	
2. Read, record and interpret instrumentation readings	3	1. Pumps Operation and Maintenance Reporting 2. Reporting of pipes, valves, pipe specials / accessories installation & Maintenance 3. Instrumentation reading & interpretation	
3. Utilise tools & equipment for maintenance works	4	1. Water pump Installation 2. Tools & equipment - usage & maintenance	

Technical Skills	Required Competency Level	Recommended Training
4. Carry out mechanical & Electrical repair in pumping system	3	1. Mechanical & Electrical Repair in Pumping System
5. Carry out daily pumping system operation	4	1. Water Booster Pump House Operation 2. Pumping System 3. Pump house & reservoir installations observation & minor repair
6. Record and report operation, breakdown & maintenance data	3	1. Risk and crisis awareness
7. Prepare for pump performance testing	2	1. Pump Performance Inspection & Testing Preparation
8. Obey to safety, health and environment requirement	4	1. Safety, Health & Environment Awareness
9. Perform inspect security and perimeter conditions	3	1. Pump House Security Inspection Requirement

NO	DETAILS		
6	Area : Water Distribution - Distribution Network		
	Job Title : Assistant Engineer / Senior Technician / Senior Supervisor	Level : 4	
	Job Description :		
	A Water Distribution Network Assistant Engineer / Senior Technician / Senior Supervisor is responsible to prepare maintenance program of water distribution system, compilation of data and costing for budgeting, inspection and certification of maintenance works carried out, including preparation of water distribution system operation reports.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Writing Skills	3	1. Report Writing
	2. Communication Skills	4	1. Formal & Informal Communication 2. Public speaking
	3. Critical Thinking	4	1. Formal & Informal Communication 2. Public speaking
	4. Complex problem-solving	3	1. Knowledge, Processes & Activities in Problem Solving
	5. Active learning	3	1. Continuous Learning & Improvement
6. Coordinate and chair meeting	3	1. Preparation & Coordination Meeting Requirement 2. Conduct Operation Staff Meeting	
7. Leadership	3	1. Effective Leadership Style	
8. Innovative	3	1. Creativity, Forecasting & Brain-storming	
9. Project Monitoring	3	1. Microsoft office Program 2. Primavera 3. Gantt Chart	
10. Safety, Health & Environment	4	1. Safety, health & Environment (SHE) Management	

Technical Skills	Required Competency Level	Recommended Training
1. Carry out trouble-shooting for water distribution breakdown	4	1. Water Distribution Operation and Maintenance 2. Troubleshooting Water Distribution Back Ground
2. Identify and propose tools & equipment for maintenance works	4	1. Tools & equipment - usage & maintenance
3. Monitor mechanical and electrical operation in water distribution system	4	1. Mechanical & Electrical Operation in Water Distribution System
4. Monitor mechanical repair in water distribution system	4	1. Mechanical Repair Works Monitoring
5. Verify measuring instrument requirement in water distribution system	4	1. Instrumentation Requirement Planning
6. Monitor daily water distribution system operation	4	1. Water Hydraulic Engineering Design 2. Water Distribution Planning and Development Program 3. Non-revenue Water Management
7. Monitor telemetry & SCADA system	3	1. Telemetry & SCADA requirement Planning
8. Execute work activities in project management	3	1. Project Monitoring 2. Project Scheduling / Management (Microsoft Project or PRIMAVERA)
9. Monitor water distribution system	4	1. Water pipe testing & connection Planning 2. Uniform Technical Guideline (UTG) – reticulation & pipe installation
10. Analyse operation, breakdown and maintenance data	4	1. Breakdown & Maintenance Data Analysis Procedure
11. Identify and compile data for risk & crisis management plan	3	1. Water Supply Risk Management

Technical Skills	Required Competency Level	Recommended Training
12. Interpret pump performance for upgrading or replacement	3	1. Pump Performance Upgrading and/or Replacement
13. Organise team administration and management.	4	1. Water Distribution Customer Service Operation 2. Water Assets Management 3. Water Distribution Technical Audit Implementation 4. Water Quality Operation 5. Inventory Planning 6. Water safety management
14. Prepare budget requirement and estimate	3	1. Water Distribution Department Budget Preparation
15. Prepare procurement documents	3	1. Project and contract administration
16. Ensure to safety, health and environment requirement	4	1. Safety, health & Environment (SHE) Management Planning

NO	DETAILS		
7	Area : Water Distribution - Distribution Network		
	Job Title : Supervisor / Technician	Level : 3	
	Job Description :		
	A Water Distribution Network Supervisor / Technician is responsible to monitor, endorse testing, coordinate pipe connection, pipe repair, monitor valves operation, analyse water pressure including preparation of reports, validate pipe connection, testing and maintenance work.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Writing Skills	2	1. Report Writing
	2. Communication Skills	2	1. Formal & Informal Communication 2. Public speaking
	3. Critical Thinking	2	1. Strategic & Critical thinking
	4. Reading Comprehension	2	1. Technical Specification Interpretation
	5. Active learning	2	1. Continuous Learning & Improvement
	6. Coordinate meeting	2	1. Preparation & Coordination Meeting Requirement
	7. Leadership	2	1. Effective Leadership Style
	8. Project Monitoring	2	1. Microsoft office Program 2. Gantt Chart
9. Safety, Health & Environment	4	1. Safety, health & Environment (SHE) Awareness	
Technical Skills	Required Competency Level	Recommended Training	
1. Supervise mechanical and electrical operation in water distribution system	3	1. Mechanical & Electrical Operation in Water Distribution System 2. Electrical, switchboard & reading instrumentation 3. Mechanical & Electrical Operation	

Technical Skills	Required Competency Level	Recommended Training
2. Carry out trouble-shooting for water distribution system breakdown	4	1. Water Distribution Operation and Maintenance 2. Troubleshooting Water Distribution Breakdown 3. Reporting of pipes, valves, pipe specials / accessories installation & Maintenance 4. Data Collection for Maintenance & Operation
3. Supervise Water Supply Distribution System Installation	4	1. Water Pipes Installation Supervision 2. Water Pipe Specials /accessories Installation Supervision 3. Water Pipe Specials /accessories Maintenance & Replacement Supervision 4. Valves Installation, Maintenance & Replacement Supervision 5. Water Pipes Maintenance & Replacement Supervision 6. Water pipe testing & Commissioning Preparation Supervision 7. Water pipe connection preparation Supervision
4. Identify and propose tools & equipment for maintenance works	4	1. Tools & equipment - usage & maintenance 2. Inventory Management 3. Water System Maintenance Planning 4. Water supply operation & Maintenance Supervision
5. Supervise mechanical repair in water distribution system	3	1. Mechanical Repair Works Supervision
6. Operate and control telemetry & SCADA system	4	1. Telemetry & SCADA Monitoring 2. Water Piping System Control

Technical Skills	Required Competency Level	Recommended Training
7. Supervise measuring instrument requirement in water distribution system	4	1. Instrumentation reading & interpretation 2. Water Meter Management Control 3. Water Reservoir & Booster Pump House Coordination
8. Supervise daily water distribution system operation	4	1. Water Distribution System Operation Procedure 2. Non- Revenue Water Analysis 3. Treated Water Quality Analysis 4. Water Supply Distribution system Monitoring
9. Supervise work activities in project management	2	1. Project Monitoring 2. Project supervision 3. Project Scheduling
10. Collect operation, breakdown and maintenance data	4	1. Maintenance Operation & Breakdown Data Collection
11. Compile data for risk & crisis management plan	3	1. Risk and crisis awareness Identification
12. Carry out water distribution performance testing	4	1. Water Distribution Inspection & Testing Procedure
13. Supervise water distribution operation team	4	1. Water Distribution Operation Supervision
14. Compile data for budget requirement and estimate	3	1. Data Collection for Budget Preparation
15. Compile data for procurement documents	3	1. Project and contract administration
16. Adhere to safety, health and environment requirement	4	1. Safety, Health & Environment Awareness

NO	DETAILS		
8	Area : Water Distribution - Distribution Network		
	Job Title : Pipe Fitter		Level : 2
	Job Description :		
	A Water Distribution Network Pipe Fitter is responsible to carry out distribution operation, valves operation, monitor water pressure, survey water pipe lines and repair & pipe maintenance including repair, testing & resumption of water supply.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Writing Skills	1	1. Writing Skills
	2. Communication Skills	2	1. Informal Communication
	3. Critical Thinking	2	1. Critical Thinking
	4. Technical Data Comprehension	2	1. Technical Specification Interpretation
	5. Active learning	2	1. Continuous Learning & Improvement
	6. Teamwork Skills	2	1. Team Building
	7. Safety, Health & Environment	4	1. Safety, health & Environment (SHE) Awareness
	Technical Skills	Required Competency Level	Recommended Training
	1. Prepare tools & equipment for pipes installation & maintenance works	4	1. Water Piping Installation & Connection
2. Prepare tools & equipment for valves & pipe specials / accessories installation and maintenance works	4	1. Water Assets Maintenance Work	
3. Read, record and interpret instrumentation readings	3	1. Instrumentation reading & interpretation	
4. Utilise tools & equipment for maintenance works	4	1. Tools & equipment - usage & maintenance	

Technical Skills	Required Competency Level	Recommended Training
5. Carry out mechanical repair in water distribution system	4	1. Mechanical Repair Works Supervision
6. Carry out water distribution system installation	4	1. Water Pipe Specials /accessories Installation 2. Water Pipe Specials /accessories Maintenance & Replacement 3. Valves Installation 4. Valves Maintenance & replacement 5. Water Quality Operation 6. Reporting of pipes, valves, pipe specials / accessories installation 7. Reporting of pipes, valves, pipe specials / accessories maintenance
7. Carry out daily water distribution system operation	4	1. Water Meter Installation & Activation 2. Water Reservoir Maintenance 3. Water Booster Pump House Operation 4. Water System Operation 5. Non-revenue Water (NRW) Data Collection 6. Water Supply Distribution
8. Record and report operation, breakdown & maintenance data	3	1. Risk and crisis awareness & support
9. Prepare for water distribution performance testing	3	1. Water Distribution Inspection & Testing Procedure
10. Obey to safety, health and environment requirement	4	1. Safety, Health & Environment Awareness

NO	DETAILS		
1	Area: Non-Revenue Water (Leak detection & Repair)		
	Job Title : Senior NRW Technology Manager / Senior Engineer	Level : 6	
	Job Description :		
	A Senior NRW Technology Manager / Senior Engineer is responsible to manage NRW effectively develop and strategies to lower the NRW level for the state, manage the annual budget for the NRW department. To plan and monitor on reduction of physical and commercial losses. To effectively communicate to stakeholders and inter department person in charge.		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have proficient analytical skills, leadership skills, documentation skills and communication skills	4	1. Advanced Computer Knowledge (Word/Excel) 2. Proficient of Complaint System Training
	2. Advance report writing & presentation skills	4	1. Technical Report Writing Negotiation Skills 2. Cost -Benefit Analysis
	3. The ability to motivate and work as part of a team	4	1. Public Speaking
	4. To be proactive and responsive	4	1. Technical Report Writing Negotiation Skills 2. Cost-Benefit Analysis
	5. To pay close attention to details and always be alert	4	1. Risk Management Training 2. Early Warning Systems (EWS) Training
	6. Skills on IR4.0	4	1. Training on IR4.0 2. Internet of Things (IOT)
	Technical Skills	Required Competency Level	Recommended Training
	1. Knowledge and skills of Non Revenue Water implementation	4	1. Leak Detection Training 2. Step Test Training 3. Utilisation of Non-Revenue Water Leakage Equipment
2. Knowledge and skills in the usage and application of NRW equipment and tools	4	1. Geographical Information System (GIS) Training	

Technical Skills	Required Competency Level	Recommended Training
3. Knowledge and skills of Step Test	4	1. Data Logger Training
4. To apply green technology and sustainability practices	4	1. Preventive Maintenance Training
5. To adhere to Occupational Safety and Health regulations	4	1. Safety, Health and Environment (SHE) Regulations
6. To gain skills on repair jobs (workmanship, material and quality of repair)	4	1. Pipe & Fittings Maintenance 2. Training Job Management System
7. To gain skills on job management system	4	1. Big Data Management 2. I.R 4.0 Technology Based
8. To gain skills on hydraulics modelling	4	1. Hydraulics Modelling Training
9. To gain skills on commercial losses	4	1. Advance Commercial Losses Training
10. To gain skills on asset management.	4	1. Advance Asset Management Training.
11. To gain skills on zone management	4	1. Advance Zone Management Training
12. To gain skills on NRW analysis	4	1. Advance Non-Revenue Water Analysis Training
13. To apply Non Revenue Water practices	4	1. Valve Operation

NO	DETAILS		
2	Area : Non-Revenue Water (Leak detection & Repair)		
	Job Title : Technical Manager/ Engineer	Level : 5	
	Job Description :		
	<p>A Non Revenue Water Technical Manager / Engineer is responsible to control, plan and manage the loss of water due to NRW. He/She functions to monitor and manage activities related to leak detection and repair. He/she also has to monitor reports on leaking complaints until repair job completion status. A Non Revenue Water Technical Manager is responsible to monitor DMA Zone work activities and Step Test analysis. He/She will monitor monthly performance reports of team members, zone performance report and job repair. Responsible to manage the purchasing of tools and equipment for NRW department and pressure management work activities. He/she has to check monthly report, verify all data and information for auditing purposes and has to attend meetings and communicate effectively with other departments and management.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have proficient analytical skills, leadership skills, documentation skills and communication skills	4	1. Integrity Training 2. Leadership and Managerial Training 3. Communication Skills Training 4. Train the Trainer (TTT)
	2. Advance report writing & presentation skills	3	1. Microsoft Word and Excel 2. Proficient of Complaint System Training
	3. The ability to motivate and work as part of a team	3	1. Integrity Training 2. Leadership and Managerial Training
	Technical Skills	Required Competency Level	Recommended Training
	1. Knowledge and skills of Non Revenue Water implementation	4	1. Leak Detection Training 2. Step Test Training 3. Utilisation of Non-Revenue Water Leakage Equipment
2. To apply Non Revenue Water practices	4	1. Valve operation	

Technical Skills	Required Competency Level	Recommended Training
3. Knowledge and skills in the usage and application of NRW equipment and tools	4	1. Geographical Information System (GIS) Training
4. Knowledge and skills of Step Test	4	1. Data Logger Training
5. To apply green technology and sustainability practices	4	1. Preventive Maintenance Training
6. To adhere to Occupational Safety and Health regulations	4	1. Safety Health and Environment (SHE) Regulations Training
7. To gain skills on repair jobs (workmanship, material and quality of repair)	4	1. Pipe & Fittings Maintenance 2. Training Job Management System
8. To gain skills on job management system	4	1. Data Management Training 2. Big Data Management Training
9. To gain skills on hydraulics modelling	4	1. Hydraulics Modelling Training
10. To gain skills on asset management	4	1. Advance Asset Management Training
11. To gain skills on zone management	4	1. Advance Zone Management Training
12. To gain skills on NRW analysis	4	1. Advance Non-Revenue Water Analysis Training
13. To gain skills on commercial losses	4	1. Advance Commercial Losses Training

NO	DETAILS		
3	Area : Non-Revenue Water (Leak detection & Repair)		
	Job Title : Senior Technician	Level : 4	
	Job Description :		
	<p>A Non Revenue Water Senior Technician is responsible to control the loss of water due to NRW. He/She functions to monitor visual inspection & sounding (VIS) and Step test. He/She is to carry out leak detection using advanced leakage equipment. The personnel have to ensure that the equipment use for work at the site is in good condition. He/She also to monitor DMA Zone work activities and carry out Step Test analysis. He/She will provide monthly performance reports of team members and zone performance report.He/She to responsible and manage all team or panel contractor to do repair pipe work . The personel have to ensure all problem at site will solve and job repair done. He/She also to liase with local authorities to get permission or permit to do the repair work until complete of works or any defect period time (if). He/she also has to monitor the leaking complaints and job completion status.He/she also has to carry out the monthly report to leader (Manager) He/She will provide monthly performance reports of team members or panel contractor repair.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have analytical skills, leadership skills, documentation skills and communication skills	3	1. Team Building
	2. The ability to work as part of a team	2	1. Personality Grooming
3. Report writing	2	1. Microsoft Word and Excel 2. Proficient of Complaint System Training	
4. To be proactive and responsive	2	1. Report Writing 2. Negotiation Skills 3. Cost -Benefit Analysis	
5. To pay close attention to details and always be alert	2	1. Risk Management Training 2. Early Warning Systems (EWS) Training	

Technical Skills	Required Competency Level	Recommended Training
1. Knowledge and skills of Non Revenue Water implementation	3	1. Non-Revenue Water Awareness
2. Apply Non Revenue Water practices	3	1. Valve Operation
3. Competent to utilise leakage equipment	3	1. Leak Detection Training
4. Procurement skills	1	1. Step Test Training
5. Knowledge to know all fitting's pipe and repair pipe work	3	1. Non-Revenue Water Leakage Equipment Training
6. Knowledge and skills in NRW zone management	3	1. Geographical Information System (GIS) Training
7. Knowledge and skills to use job management system	3	1. Data Logger Training
8. To apply green technology and sustainability practices	3	1. Training to Know All Fitting's Pipe
9. To adhere to Occupational Safety and Health regulations	3	1. Safety Health and Environment (SHE) Regulations Training
10. To gain skills on repair jobs (workmanship, material and quality of repair)	3	1. Pipe & Fittings Maintenance 2. Training Job Management System

NO	DETAILS		
4	Area : Non-Revenue Water (Leak Detection & Repair)		
	Job Title : Technician	Level : 3	
	Job Description :		
	<p>A Non Revenue Water Technician is responsible to assist in controlling the loss of water due to NRW. He/She functions to perform visual inspection & sounding (VIS). He/She is to carry out leak detection using leakage equipment. The personnel have to ensure that the equipment use for work at the site is in good condition. He/she also has to monitor the leaking complaints and job completion status. He/She also responsible to monitor DMA Zone work activities and carry out Step Test. He/She will assist in providing monthly performance reports of each team members. He/She to assist and manage all team or panel contractor to do repair pipe work . The personnel have to ensure all problem at site will solve and job repair done. He/she also has to carry out the monthly report to leader (Senior Technician)</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have analytical skills, leadership skills, documentation skills and communication skills	2	1. Team Building 2. Personality Grooming 3. Leadership Skills Training
	2. Report writing	2	1. Microsoft Word and Excel 2. Proficient of Complaint System Training
	Technical Skills	Required Competency Level	Recommended Training
	1. Knowledge and skills of Non Revenue Water implementation	2	1. Non-Revenue Water Awareness
	2. Must be proficient in terms of the whole piping system and within the DMA	2	1. Valve Operation
3. Carry out STEP testing at site	2	1. Leak Detection Training	
4. Competent to utilise leakage equipment	2	1. Step Test Training	
5. Knowledge to know all fitting's pipe	2	1. Utilisation of Non-Revenue Water Leakage Equipment Training	

Technical Skills	Required Competency Level	Recommended Training
6. Knowledge and skills in repair pipe work	2	1. Geographical Information System (GIS) Training
7. Knowledge and skills to use job management system	2	1. Data Logger Training
8. To apply green technology and sustainability practices	1	1. Training to Know All Fitting's Pipe
9. To adhere to Occupational Safety and Health regulations	1	1. Safety Health and Environment (SHE) Regulations Training
10. To gain skills on repair jobs (workmanship, material and quality of repair)	2	1. Pipe & Fittings Maintenance 2. Training Job Management System

NO	DETAILS		
5	Area : Non-Revenue Water (Leak detection & Repair)		
	Job Title : Fitter	Level : 2	
	Job Description :		
	<p>A Non Revenue Water Fitter functions to carry out cleaning work on site and perform visual inspection & sounding (VIS). He/She is to carry out leak detection using electronic ground microphone. The personnel have to ensure that the equipment to work at the site is in good condition. He/she also has to key in leaking complaints into complaint management system. He/She also to be a team leader in carrying out repair pipe work. He/she also has to give information to leader (technician) when he has problem while the repair work is being carry out.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To be proactive and responsive	1	1. Team Building
	2. The ability to work as part of a team and receive instructions from superior	1	1. Personality Grooming
	3. Basic computer knowledge	1	1. Microsoft Word and Excel 2. Awareness of the Complaint System
	Technical Skills	Required Competency Level	Recommended Training
	1. Knowledge and skills of Non Revenue Water implementation	1	1. Non-Revenue Water Awareness
	2. To apply Non Revenue Water practices	1	1. Leak Detection Training
	3. Knowledge and skills in the usage and application of NRW equipment and tools	1	1. Step Test Training
	4. Knowledge and skills of Step Test	1	1. Utilisation of Non-Revenue Water Leakage Equipment Training
5. Competent to operate valve	1	1. Valve Operation	

Technical Skills	Required Competency Level	Recommended Training
6. Knowledge to know all fitting's pipe	1	1. Training to Know All Fitting's Pipe
7. Knowledge and skills in repair pipe work	1	1. Training Repair Pipe Work
8. To apply green technology and sustainability practices	1	1. Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based
9. To adhere to Occupational Safety and Health regulations	1	1. Safety Health and Environment (SHE) Regulations Training

NO	DETAILS		
6	Area : Non-Revenue Water (Data Technologist, Hydraulic & Commercial Losses Analysis)		
	Job Title : Senior NRW Technology Manager/ Senior Engineer	Level : 6	
	Job Description :		
	<p>A Non Revenue Water Senior NRW Technology Manager to verify and manage a big volume of credible NRW data integrity, transmission and extraction process, reports and present the findings based on data forensic, forecasting and statistical study. To verify credible findings and regulatories reports of various NRW key performance indicators. To strategy and propose the water supply system improvement or NRW reduction based on findings and reports provided by the sub ordinates.</p> <p>A Non Revenue Water Senior Engineer to manage the department in performing NRW Reduction activities and control the NRW, physical and commercial losses inclusive the authorised unbilled usage. Develop specific policy, budget and strategy to achieve the NRW Key Performance Indicator.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have analytical skills, leadership skills, documentation skills and communication skills	4	1. Team Building 2. Personality Grooming 3. Leadership Skills Training
	2. Report writing	4	1. Report Writing Training
	3. Able to demonstrate the effective communication skills	4	1. Effective and Crucial Communication Skills
4. Able to perform fault findings analysis	4	1. SWOT Analysis	
5. Able to fulfill and achieve target	4	1. Balance Score Card	
6. Able to plan and manage task	4	1. Key Performance Indicator	

Technical Skills	Required Competency Level	Recommended Training
1. Knowledge and skills of Non Revenue Water implementation	4	1. Microsoft Excel, Word and Powerpoint
2. Proficient in statistics and related computer statistic application software inclusive statistical analysis system, spread sheet, word processing and presentation	4	1. Statistics and Forecasting Application Software 2. Tableau 3. Statistical Analysis System (SAS) 4. Systems Applications and Products (SAP)
3. Proficient in computer information technology, web database software, engineering software, computer networking, water losses monitoring through clouds or computer system.	4	1. Computer Application Software for Hydraulic Modelling 2. Geographical Information System (G.I.S) 3. Geocoding 4. Hydraulic Analysis 5. Engineering Computer System
5. To gain knowledge and skill in water supply asset and fittings installation and maintenance, repair works, NRW equipment deployment and result generated, analysis and interpreted	4	1. Advance Level of Non-Revenue Water Equipment Deployment and Result Generates, Analysis and Interpretation
6. To gain knowledge and skill in various type of water meter installation and maintenance, working principles, meter accuracy, meter testing result and data trend analysis	4	1. Advance Level of Water Meter Type, Installation, Servicing, Maintenance, Working Principles and Accuracy 2. Smart Metering Technology such as Automatic Meter Reading (AMR) 3. Narrow Broadband Internet of Things (NB IOT).
7. To apply green technology, artificial intelligent and I.R 4.0 technology based and sustainability practices	4	1. Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based

Technical Skills	Required Competency Level	Recommended Training
8. To adhere to Occupational Safety and Health regulations	4	1. Safety Health and Environment (SHE) Regulations Training

NO	DETAILS		
7	Area : Non-Revenue Water (Data Technologist, Hydraulic & Commercial Losses Analysis)		
	Job Title : Technical Manager / Engineer	Level : 5	
	Job Description :		
	<p>A Non Revenue Water Technical Manager / Engineer to manage a big volume of credible NRW data integrity, transmission and extraction process, reports and present the findings based on data forensic, forecasting and statistical study. To provide credible calculation, findings and regulatories reports of various NRW key performance indicators. To carry out hydraulic fault findings analysis based on hydarullic models and NRW key performance tools and indicators.</p>		
	<p>A Non Revenue Water Technical Manager / Engineer to coach and manage the section in performing technical and forensic desktop study, consumption trends analysis and data screening, and carry out Visual, Inspection and Sounding (V.I.S) with sophisticated NRW equipment for findings the possibilities of water theft & illegal connection. NRW Engineer to monitor works progress and monthly report of Key Performance Indicator (KPI).</p>		
	<p>A Non Revenue Water Technical Manager / Engineer responsible as liason officer which to coordinate the enforcement events with regulators and authorities, protect and preserve the evidence for legal action taking by the regulator.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have analytical skills, leadership skills, documentation skills and communication skills	4	1. Report Writing
	2. Report writing	4	1. Report Writing
	3. Able to demonstrate the effective communication skills	4	1. Effective and Crucial Communication Skills
4. Able to perform fault findings analysis	4	1. Fault Findings Analysis	
5. The ability to work as part of a team	4	1. Finance for Non Finance Executive	
6. To pay close attention to details and always be alert	4	1. SWOT Analysis, Balance Score Card & Key Performance Indicator	

Technical Skills	Required Competency Level	Recommended Training
1. Knowledge and skills of Non Revenue Water implementation	4	1. Microsoft Excel, Word and Powerpoint
2. Proficient in statistics and related computer statistic application software inclusive statistical analysis system, spread sheet, word processing and presentation	4	1. Advance Level for Statistics and Forecasting Application Software 2. Tableau, Statistical Analysis System (SAS), 3. Systems Applications and Products (SAP)
3. Proficient in computer information technology, web database software, engineering software, computer networking	3	1. Computer Application Software for Hydraulic Modelling, 2. Geographical Information System (G.I.S) 3. Geocoding and others Hydraulic Analysis 4. Engineering Computer System
4. Knowledge in overall concept of water supply and assets maintenance, and NRW equipment deployment and maintenance	4	1. NRW Equipment Deployment, Result Generates, Analysis and Interpretation Training
5. To gain knowledge and skill in water supply asset and fittings installation and maintenance, repair works, NRW equipment deployment and result generated, analysis and interpreted	4	1. NRW Equipment Deployment, Result Generates, Analysis and Interpretation Training
6. To apply green technology, artificial intelligent and I.R 4.0 technology based and sustainability practices	3	1. Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based
7. To adhere to Occupational Safety and Health regulations	2	1. Safety Health and Environment (SHE) Regulations Training

NO	DETAILS		
8	Area : Non-Revenue Water (Data Technologist, Hydraulic & Commercial Losses Analysis)		
	Job Title : Senior Technician	Level : 3	
	Job Description :		
	<p>A Non Revenue Water Senior Technician to carry out data integrity audit on data transmission, communication and integration process inclusive consistencies of data extraction and gathered from various sources. To provide and verify the integrity of NRW key performance indicators calculation and report. To carry out hydraulic analysis, investigation, forecasting and statistical study on a big data volume related to NRW calculation, analysis and reports.</p>		
	<p>A Non Revenue Water Senior Technician to coach and manage the team and panel surveyor performing desktop study, consumption trends analysis and data screening, and carry out Visual, Inspection and Sounding (V.I.S) for finding possibilities of water theft & illegal connection. NRW Senior Technician to monitor team efficiency, works progress and monthly report of Key Performance Indicator (KPI) of each team.</p>		
	<p>A Non Revenue Water Senior Technician responsible to coordinate the enforcement events with regulators and authorities, protect and preserve the evidence for legal action taking by the regulator.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have analytical skills, leadership skills, documentation skills and communication skills	3	1. Team Building
2. Report writing	3	1. Personality Grooming	
3. Able to demonstrate the effective communication skills	3	1. Report Writing 2. Public Speaking	
4. Able to perform fault findings analysis	3	1. Key Performance Indicator (KPI)	
5. The ability to work as part of a team	3	1. Effective and Crucial Communication Skills	
6. To pay close attention to details and always be alert	3	1. Fault Findings Analysis	

Technical Skills	Required Competency Level	Recommended Training
1. Knowledge and skills of Non Revenue Water implementation	3	1. Microsoft Excel, Word and Powerpoint
2. Proficient in statistics and related computer statistic application software inclusive statistical analysis system, spread sheet, word processing and presentation	3	1. Statistics and Forecasting Application Software 2. Tableau 3. Statistical Analysis System (SAS) 4. Systems Applications and Products (SAP)
3. Proficient in computer information technology, web database software, engineering software, computer networking	3	1. Computer Application Software for Hydraulic Modelling 2. Geographical Information System (G.I.S) 3. Geocoding 4. Hydraulic Analysis 5. Engineering Computer System
4. Knowledge in overall concept of water supply and assets maintenance, and NRW equipment deployment and maintenance	3	1. Computer Application Software with Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based
5. To gain knowledge and skill in water supply asset and fittings installation and maintenance, repair works, NRW equipment deployment and result generated, analysis and interpreted	3	1. Non-Revenue Water Equipment Deployment, Result Generates, Analysis and Interpretation
6. To gain knowledge and skill in various type of water meter installation and maintenance, working principles, meter accuracy, meter testing result and data trend analysis	3	1. Water Meter Type, Installation, Servicing, Maintenance, Working Principles and Accuracy 2. Smart Metering Technology such as Automatic Meter Reading (AMR), Narrow Broadband Internet of Things (NB IOT)

Technical Skills	Required Competency Level	Recommended Training
7. To apply green technology, artificial intelligent and I.R 4.0 technology based and sustainability practices	3	1. Artificial Intelligent (A.I) 2. Big Date Management 3. I.R 4.0 Technology Base
8. To adhere to Occupational Safety and Health regulations	2	1. Safety Health and Environment (SHE) Regulations Training

NO	DETAILS		
9	Area : Non-Revenue Water (Data Technologist, Hydraulic & Commercial Losses Analysis)		
	Job Title : Technician	Level : 3	
	Job Description :		
	<p>A Non Revenue Water Technician carry out checking and troubleshooting the data processing and transmission from the site to the clouds and then to the end user. The personnel have to ensure that the equipment installed to work at the site and successfully transmitting and communicating to each other. To ensure the are no data missing during the data transmission processing from the equipment at site to the clouds or server and up to the user dashboard. To check and verify the data entry processes and the results produced as to ensure high level of data entry integrity during the completion of the reporting of NRW key performance indicators</p> <p>A Non Revenue Water Technician to coach and lead the team and panel surveyor performing desktop study, meter inaccuracies, consumption trends analysis and data screening, and carry out Visual, Inspection and Sounding (V.I.S) for findings possibilities of water theft & illegal connection. NRW Technician to monitor team efficiency, works progress and monthly report of Key Performance Indicator (KPI) of each team.</p> <p>A Non Revenue Water Technician responsible as liason officer which to coordinate the enforcement events with regulators and authorities, protect and preserve the evidence for legal action taking by the regulator.</p>		
	<p align="center">Soft Skills</p>	<p align="center">Required Competency Level</p>	<p align="center">Recommended Training</p>
	1. To have analytical skills, leadership skills, documentation skills and communication skills	2	1. Team Building
2. Report writing	2	1. Personality Grooming	
3. Able to demonstrate the effective communication skills	2	1. Report Writing	
4. Able to perform fault findings analysis	2	1. Effective and Crucial Communication Skills	
5. Able to apply and monitor Key Performance Area (KPI)	2	1. Key Performance Indicator (KPI)	

Technical Skills	Required Competency Level	Recommended Training
1. Knowledge and skills of Non Revenue Water implementation	3	1. Non-Revenue Water Awareness
2. Proficient in statistics and related computer statistic application software inclusive statistical analysis system, spread sheet, word processing and presentation	2	1. Microsoft Excel, Word, Powerpoint
3. Proficient in computer information technology, web database software, engineering software, computer networking	2	1. Statistics and Forecasting Application Software such as Tableau 2. Statistical Analysis System (SAS) 3. Systems Applications and Products (SAP)
4. Knowledge in overall concept of water supply and assets maintenance, and NRW equipment deployment and maintenance	2	1. Computer Application Software with Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based
5. To gain knowledge and skill in water supply asset and fittings installation and maintenance, repair works, NRW equipment deployment and result generated, analysis and interpreted	2	1. Non-Revenue Water Equipment Deployment and Result Generates, Analysis and Interpretation Training
6. To gain knowledge and skill in various type of water meter installation and maintenance, working principles, meter accuracy, meter testing result and data trend analysis	2	1. Water Meter Type, Installation, Servicing, Maintenance, Working Principles and Accuracy

Technical Skills	Required Competency Level	Recommended Training
7. To apply green technology, artificial intelligent and I.R 4.0 technology based and sustainability practices	2	1. Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based
8. To adhere to Occupational Safety and Health regulations	2	1. Safety Health and Environment (SHE) Regulations Training

NO	DETAILS		
10	Area : Non-Revenue Water (Data Technologist, Hydraulic & Commercial Losses Analysis)		
	Job Title : Fitter	Level : 2	
	Job Description :		
	<p>A Non Revenue Water Fitter assist team leader in carrying out checking and troubleshooting the data processing and transmission from the site to the clouds and then to the end user dashboard. To carry out data entry from various sources involving inter-departments and division as to ensure the reporting of NRW key performance indicators will be completed with highest data entry integrity</p>		
	<p>A Non Revenue Water Fitter assist team leader in carrying out survey and find water meter relocation to reduce possibility of internal leak and water theft & illegal connection. The personnel have to ensure that the equipment to work at the site is in good condition.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To be proactive and responsive.	1	1. Team Building
	2. The ability to work as part of a team and receive instructions from superior	2	1. Personality Grooming
	3. Intermediate computer knowledge	1	1. Microsoft Excel 2. Microsoft Access
	Technical Skills	Required Competency Level	Recommended Training
1. Knowledge and skills of Non Revenue Water implementation	1	1. Non-Revenue Water Awareness	
2. Proficient in statistics and related computer statistic application software inclusive statistical analysis system, spread sheet, word processing and presentation	1	1. Microsoft Office Training	

Technical Skills	Required Competency Level	Recommended Training
3. Proficient in computer information technology, web database software, engineering software, computer networking	1	1. Statistics and Forecasting Application Software such as Tableau, 2. Statistical Analysis System (SAS), 3. Systems Applications and Products (SAP)
4. Knowledge in overall concept of water supply and assets maintenance, and NRW equipment deployment and maintenance	1	1. Computer Application Software for Hydraulic Modelling, 2. Geographical Information System (G.I.S) and Geocoding 3. Hydraulic Analysis 4. Basic Engineering Computer System
5. To gain knowledge and skill in water supply asset and fittings installation and maintenance, repair works, NRW equipment deployment and result generated	1	1. Computer Application Software with Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based
6. To apply green technology, artificial intelligent and I.R 4.0 technology based and sustainability practices	1	1. Water Supply Assets, Fittings Installation and Maintenance. 2. Water Meter Type, Installation, Servicing, Maintenance, Working Principles and Accuracy
7. To adhere to Occupational Safety and Health regulations	1	1. NRW Equipment Deployment and Result Generates, Analysis and Interpretation Training

NO	DETAILS		
11	Area : Non-Revenue Water (Zone & Asset Management)		
	Job Title : NRW Senior Manager	Level : 6	
	Job Description :		
	<p>A Non-Revenue Water Senior Manager nature of job covers the main work activities namely, the Pressure Management, Active Leakage Control (ALC), Asset Management and Analysis of Quality Repairs work. The job incumbent will be responsible in reviewing feasibility study report, carry out detailed design of non revenue water (NRW) reduction works, collect and analyse the customer data related to NRW reduction works, works with other departments such as Distribution and Production departments in finding the engineering solutions, monitor the implementation of NRW related projects and/or programs and prepare guidelines/strategy for efficient and effective execution and monitoring of NRW reduction measures. Personnel in this field are required to adhere to Quality, Safety, Health and environmental policies, procedures and practices at all time.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have proficient analytical skills, leadership skills, documentation skills and communication skills	4	1. Team Building 2. Train the Trainer (TTT) Training 3. Communication Skills Training
	2. Advance report writing & presentation skills	4	1. Problem Solving and Decision Making Training
	3. The ability to motivate and work as part of a team	4	1. Leadership And Managerial Training
	4. To be proactive and responsive	4	1. Report Writing 2. Negotiation Skills 3. Cost-Benefit Analysis
	5. To pay close attention to details and always be alert	1	1. Risk Management Training
6. Able to perform fault findings analysis	1	1. SWOT Analysis Training	
7. Able to plan and manage task	1	1. Balance Score Card Training	
8. Able to motivate the staff	1	1. Train the Trainer (TTT) Training	

Technical Skills	Required Competency Level	Recommended Training
1. Knowledge and skills of Non Revenue Water implementation	4	1. Advance NRW Training
2. To apply Non Revenue Water practices	4	1. Pressure Management Area (PMA) Analysis
3. Knowledge and skills in the usage and application of NRW equipment and tools	3	1. District Metering Area (DMA) Management
4. Knowledge and skills of Zero Pressure Test (ZPT)	3	1. NRW Water Balance Report
5. To apply green technology and sustainability practices	3	1. SCADA and Telemetry System Management
6. To adhere to Occupational Safety and Health regulations	3	1. NRW Maintenance Programme Development
7. Knowledge and skills in PRV setting	3	1. Hydraulic Modelling System Application
8. Knowledge and skills in DMA Management	2	1. NRW Budget Planning
9. Knowledge and skills in maintaining DMA Asset and Equipment	4	1. NRW Level Counter Measure
10. Knowledge and skills of Geographical Information System (GIS)	3	1. NRW Asset Management System
11. Knowledge and skills of all equipment in GIS	3	1. NRW Regulatory Report Writing
12. Knowledge and skills in PMA analysis	3	1. Procurement Training
13. Knowledge and skills in Water Balance Report	4	1. Artificial Intelligent (A.I), 2. Big Data Management 3. I.R 4.0 Technology Based
14. Knowledge in Hydraulic Modelling	4	1. Hydraulic Modelling System Application Training
15. Knowledge IR 4.0 technology	4	1. Computer Application Software with Artificial Intelligent (A.I) 2. I.R 4.0 Technology Based

NO	DETAILS		
12	Area : Non-Revenue Water (Zone & Asset Management)		
	Job Title : NRW Manager	Level : 5	
	Job Description :		
	<p>A Non Revenue Water Manager is responsible to control, plan and manage the loss of water due to NRW. He/She functions to monitor and manage activities related to water distribution, supply and zone management. He/she also has to monitor and manage on DMA, PMA activities. Also has to monitor and manage all water supply assets. To carry out monthly reports for stakeholders. He/she has to check monthly report, verify all data and information for auditing purposes and has to attend meetings and communicate effectively with other departments and management.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have proficient analytical skills, leadership skills, documentation skills and communication skills	4	1. Team Building 2. TTT Training 3. Communication Skills Training
	2. Advance report writing & presentation skills	4	1. Microsoft Word and Excel 2. Presentation Skills Training
	3. The ability to motivate and work as part of a team	4	1. Leadership And Managerial Training
	4. To be proactive and responsive	3	1. Problem Solving and Decision Making Training 2. Negotiation Skills
5. Able to pay close attention to details and always be alert	3	1. Integrity Training 2. Risk Management Training	
6. Able to perform fault findings analysis	3	1. SWOT Analysis Training	
7. Able to plan and manage task	3	1. Balance Score Card Training	

Technical Skills	Required Competency Level	Recommended Training
1. Knowledge and skills of Non Revenue Water implementation	4	1. Advance NRW Training
2. To apply Non Revenue Water practices	4	1. Pressure Management Area (PMA) Analysis
3. Knowledge and skills in the usage and application of NRW equipment and tools	4	1. District Metering Area (DMA) Management
4. Knowledge and skills of Zero Pressure Test (ZPT)	3	1. NRW Water Balance Report
5. To apply green technology and sustainability practices	3	1. SCADA and Telemetry System Management
6. To adhere to Occupational Safety and Health regulations	3	1. NRW Maintenance Programme Development
7. Knowledge and skills in PRV setting	3	1. Hydraulic Modelling System Application
8. Knowledge and skills in DMA Management	3	1. NRW Budget Planning
9. Knowledge and skills in maintaining DMA Asset and Equipment	3	1. NRW Level Counter Measure
10. Knowledge and skills of Geographical Information System (GIS)	2	1. NRW Asset Management System
11. Knowledge and skills of all equipment in GIS	2	1. NRW Regulatory Report Writing
12. Knowledge and skills in PMA analysis	2	1. Procurement Training
13. Knowledge and skills in Water Balance Report	3	1. Computer Application Software with Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based
14. Knowledge in Hydraulic Modelling	3	1. Basic Hydraulic Modelling Training
15. Knowledge IR 4.0 technology	3	1. Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based

NO	DETAILS		
13	Area : Non-Revenue Water (Zone & Asset Management)		
	Job Title : NRW Senior Technician / Asst. Engineer	Level : 4	
	Job Description :		
	<p>A Non Revenue Water Senior Technician / Asst. Engineer functions to carry out establishment of DMA and PMA. He/she also has to plan DMA/PMA Asset and Equipment Maintenance and monitor the progress work. He/she also has to compile all DMA data and assist Engineer in analyze DMA/PMA performance. He/she also has to propose NRW Action Plan and assist Engineer in preparing DMA Management Report.</p>		
	<p>A Non Revenue Water Senior Technician / Asst. Engineer to assist and manage all team for for asset management work include GIS and Network Modelling work. The personnel have to ensure that the equipment to work at the site is in good condition.He/She also to make sure all data collected and record must be proper and complete for key in to asset management system and GIS system.He/She also provide data for Network Modelling work.He/she also has to carry out the monthly report to leader (Engineer).</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To have analytical skills, leadership skills, documentation skills and communication skills	3	1. Team Building 2. TTT Training 3. Communication Skills Training
	2. The ability to work as part of a team	3	1. Problem Solving and Decision Making Training 2. Leadership And Managerial Training
3. Report writing	3	1. Microsoft Word and Excel 2. Proficient of Complaint System Training 3. Report Writing Skills	
4. To be proactive and responsive	2	1. Negotiation Skills 2. Cost -Benefit Analysis	
5. To pay close attention to details and always be alert	1	1. Integrity Training 2. Risk Management Training	

Technical Skills	Required Competency Level	Recommended Training
1. Knowledge and skills of Non Revenue Water implementation	3	1. Basic NRW Training
2. To apply Non Revenue Water practices	3	1. Pressure Management Area (PMA) Analysis
3. Knowledge and skills in the usage and application of NRW equipment and tools	3	1. District Metering Area (DMA) Management
4. Knowledge and skills of Zero Pressure Test (ZPT)	1	1. NRW Water Balance Report
5. To apply green technology and sustainability practices	1	1. SCADA and Telemetry System Management
6. To adhere to Occupational Safety and Health regulations	1	1. NRW Maintenance Programme Development
7. Knowledge and skills in PRV setting	1	1. Hydraulic Modelling System Application
8. Knowledge and skills in DMA Management	2	1. NRW Level Counter Measure
9. Knowledge and skills in maintaining DMA Asset and Equipment	1	1. DMA Asset and Equipment Maintenance
10. Knowledge and skills of Geographical Information System (GIS)	2	1. Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based
11. Knowledge and skills of all equipment in GIS	2	1. Geographical Information System (GIS) Training
12. Knowledge and skills in PMA analysis	2	1. Pressure Management Area (PMA) Establishment Training
13. Knowledge and skills in Water Balance Report	3	1. Water Balance Training (Advance Level)
14. Knowledge in Hydraulic Modelling	2	1. Basic Hydraulic Modelling Training
15. Knowledge IR 4.0 technology	2	1. Computer Application Software with Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based

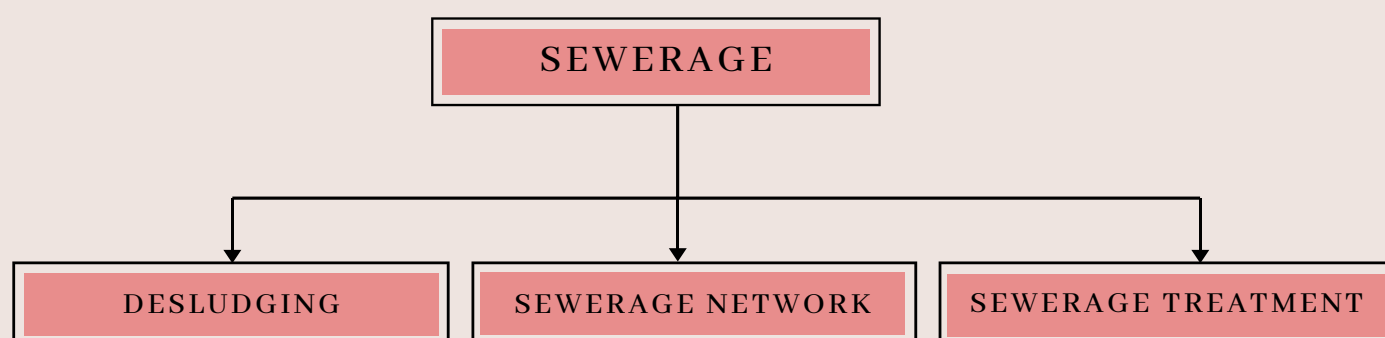
NO	DETAILS																																																		
14	Area : Non-Revenue Water (Zone & Asset Management)																																																		
	Job Title : NRW Technician	Level : 3																																																	
	Job Description :																																																		
	<p>A Non Revenue Water Technician is a team leader for installation of data logger and collecting information from data logger. He/she has to make sure all related activities is followed procedure and planning. He/she also has to verify all related information and submit to Sr Technician/Asst. Engineer. The personnel have to ensure all equipment is adequate to related work at the site. A Non Revenue Water Technician to monitor Asset Management work at site. He/She also to make sure all data collected and record must be proper and complete for key in to asset management system and GIS system.He/She also provide data for Network Modelling work.He/she also has to carry out the monthly report to leader (Senior Technician).</p>																																																		
	<table border="1"> <thead> <tr> <th data-bbox="188 913 667 1010">Soft Skills</th> <th data-bbox="667 913 1034 1010">Required Competency Level</th> <th data-bbox="1034 913 1482 1010">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1010 667 1122">1. To be proactive and responsive</td> <td data-bbox="667 1010 1034 1122">2</td> <td data-bbox="1034 1010 1482 1122">1. Team Building</td> </tr> <tr> <td data-bbox="188 1122 667 1272">2. The ability to work as part of a team and receive instructions from superior</td> <td data-bbox="667 1122 1034 1272">2</td> <td data-bbox="1034 1122 1482 1272">1. Personality Grooming</td> </tr> <tr> <td data-bbox="188 1272 667 1346">3. Basic computer knowledge</td> <td data-bbox="667 1272 1034 1346">2</td> <td data-bbox="1034 1272 1482 1346">1. Microsoft Word and Excel</td> </tr> <tr> <td data-bbox="188 1346 667 1413">4. Integrity</td> <td data-bbox="667 1346 1034 1413">1</td> <td data-bbox="1034 1346 1482 1413">1. Integrity Training</td> </tr> <tr> <td data-bbox="188 1413 667 1532">5. Report Writing</td> <td data-bbox="667 1413 1034 1532">1</td> <td data-bbox="1034 1413 1482 1532">1. Report Writing</td> </tr> <tr> <td colspan="3" data-bbox="188 1532 1482 1628"> <table border="1"> <thead> <tr> <th data-bbox="188 1532 667 1628">Technical Skills</th> <th data-bbox="667 1532 1034 1628">Required Competency Level</th> <th data-bbox="1034 1532 1482 1628">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1628 667 1765">1. Knowledge and skills of Non Revenue Water implementation</td> <td data-bbox="667 1628 1034 1765">2</td> <td data-bbox="1034 1628 1482 1765">1. Basic NRW Training</td> </tr> <tr> <td data-bbox="188 1765 667 1854">2. To apply Non Revenue Water practices</td> <td data-bbox="667 1765 1034 1854">1</td> <td data-bbox="1034 1765 1482 1854">1. Pipeline Pressure Control</td> </tr> <tr> <td data-bbox="188 1854 667 1989">3. Knowledge and skills in the usage and application of NRW equipment and tools</td> <td data-bbox="667 1854 1034 1989">2</td> <td data-bbox="1034 1854 1482 1989">1. District Metering Area (DMA) Establishment</td> </tr> <tr> <td data-bbox="188 1989 667 2161">4. Knowledge and skills of Zero Pressure Test (ZPT)</td> <td data-bbox="667 1989 1034 2161">2</td> <td data-bbox="1034 1989 1482 2161">1. NRW Step Test Operation</td> </tr> </tbody> </table> </td> </tr> <tr> <td data-bbox="188 1628 667 1765">1. Knowledge and skills of Non Revenue Water implementation</td> <td data-bbox="667 1628 1034 1765">2</td> <td data-bbox="1034 1628 1482 1765">1. Basic NRW Training</td> </tr> <tr> <td data-bbox="188 1765 667 1854">2. To apply Non Revenue Water practices</td> <td data-bbox="667 1765 1034 1854">1</td> <td data-bbox="1034 1765 1482 1854">1. Pipeline Pressure Control</td> </tr> <tr> <td data-bbox="188 1854 667 1989">3. Knowledge and skills in the usage and application of NRW equipment and tools</td> <td data-bbox="667 1854 1034 1989">2</td> <td data-bbox="1034 1854 1482 1989">1. District Metering Area (DMA) Establishment</td> </tr> <tr> <td data-bbox="188 1989 667 2161">4. Knowledge and skills of Zero Pressure Test (ZPT)</td> <td data-bbox="667 1989 1034 2161">2</td> <td data-bbox="1034 1989 1482 2161">1. NRW Step Test Operation</td> </tr> </tbody> </table>			Soft Skills	Required Competency Level	Recommended Training	1. To be proactive and responsive	2	1. Team Building	2. The ability to work as part of a team and receive instructions from superior	2	1. Personality Grooming	3. Basic computer knowledge	2	1. Microsoft Word and Excel	4. Integrity	1	1. Integrity Training	5. Report Writing	1	1. Report Writing	<table border="1"> <thead> <tr> <th data-bbox="188 1532 667 1628">Technical Skills</th> <th data-bbox="667 1532 1034 1628">Required Competency Level</th> <th data-bbox="1034 1532 1482 1628">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1628 667 1765">1. Knowledge and skills of Non Revenue Water implementation</td> <td data-bbox="667 1628 1034 1765">2</td> <td data-bbox="1034 1628 1482 1765">1. Basic NRW Training</td> </tr> <tr> <td data-bbox="188 1765 667 1854">2. To apply Non Revenue Water practices</td> <td data-bbox="667 1765 1034 1854">1</td> <td data-bbox="1034 1765 1482 1854">1. Pipeline Pressure Control</td> </tr> <tr> <td data-bbox="188 1854 667 1989">3. Knowledge and skills in the usage and application of NRW equipment and tools</td> <td data-bbox="667 1854 1034 1989">2</td> <td data-bbox="1034 1854 1482 1989">1. District Metering Area (DMA) Establishment</td> </tr> <tr> <td data-bbox="188 1989 667 2161">4. Knowledge and skills of Zero Pressure Test (ZPT)</td> <td data-bbox="667 1989 1034 2161">2</td> <td data-bbox="1034 1989 1482 2161">1. NRW Step Test Operation</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	1. Knowledge and skills of Non Revenue Water implementation	2	1. Basic NRW Training	2. To apply Non Revenue Water practices	1	1. Pipeline Pressure Control	3. Knowledge and skills in the usage and application of NRW equipment and tools	2	1. District Metering Area (DMA) Establishment	4. Knowledge and skills of Zero Pressure Test (ZPT)	2	1. NRW Step Test Operation	1. Knowledge and skills of Non Revenue Water implementation	2	1. Basic NRW Training	2. To apply Non Revenue Water practices	1	1. Pipeline Pressure Control	3. Knowledge and skills in the usage and application of NRW equipment and tools	2	1. District Metering Area (DMA) Establishment	4. Knowledge and skills of Zero Pressure Test (ZPT)	2	1. NRW Step Test Operation
	Soft Skills	Required Competency Level	Recommended Training																																																
	1. To be proactive and responsive	2	1. Team Building																																																
	2. The ability to work as part of a team and receive instructions from superior	2	1. Personality Grooming																																																
	3. Basic computer knowledge	2	1. Microsoft Word and Excel																																																
	4. Integrity	1	1. Integrity Training																																																
	5. Report Writing	1	1. Report Writing																																																
	<table border="1"> <thead> <tr> <th data-bbox="188 1532 667 1628">Technical Skills</th> <th data-bbox="667 1532 1034 1628">Required Competency Level</th> <th data-bbox="1034 1532 1482 1628">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1628 667 1765">1. Knowledge and skills of Non Revenue Water implementation</td> <td data-bbox="667 1628 1034 1765">2</td> <td data-bbox="1034 1628 1482 1765">1. Basic NRW Training</td> </tr> <tr> <td data-bbox="188 1765 667 1854">2. To apply Non Revenue Water practices</td> <td data-bbox="667 1765 1034 1854">1</td> <td data-bbox="1034 1765 1482 1854">1. Pipeline Pressure Control</td> </tr> <tr> <td data-bbox="188 1854 667 1989">3. Knowledge and skills in the usage and application of NRW equipment and tools</td> <td data-bbox="667 1854 1034 1989">2</td> <td data-bbox="1034 1854 1482 1989">1. District Metering Area (DMA) Establishment</td> </tr> <tr> <td data-bbox="188 1989 667 2161">4. Knowledge and skills of Zero Pressure Test (ZPT)</td> <td data-bbox="667 1989 1034 2161">2</td> <td data-bbox="1034 1989 1482 2161">1. NRW Step Test Operation</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	1. Knowledge and skills of Non Revenue Water implementation	2	1. Basic NRW Training	2. To apply Non Revenue Water practices	1	1. Pipeline Pressure Control	3. Knowledge and skills in the usage and application of NRW equipment and tools	2	1. District Metering Area (DMA) Establishment	4. Knowledge and skills of Zero Pressure Test (ZPT)	2	1. NRW Step Test Operation																																	
	Technical Skills	Required Competency Level	Recommended Training																																																
	1. Knowledge and skills of Non Revenue Water implementation	2	1. Basic NRW Training																																																
2. To apply Non Revenue Water practices	1	1. Pipeline Pressure Control																																																	
3. Knowledge and skills in the usage and application of NRW equipment and tools	2	1. District Metering Area (DMA) Establishment																																																	
4. Knowledge and skills of Zero Pressure Test (ZPT)	2	1. NRW Step Test Operation																																																	
1. Knowledge and skills of Non Revenue Water implementation	2	1. Basic NRW Training																																																	
2. To apply Non Revenue Water practices	1	1. Pipeline Pressure Control																																																	
3. Knowledge and skills in the usage and application of NRW equipment and tools	2	1. District Metering Area (DMA) Establishment																																																	
4. Knowledge and skills of Zero Pressure Test (ZPT)	2	1. NRW Step Test Operation																																																	

Technical Skills	Required Competency Level	Recommended Training
5. To apply green technology and sustainability practices	2	1. DMA Asset and Equipment Maintenance
6. To adhere to Occupational Safety and Health regulations	2	1. Safety Health and Environment (SHE) Regulations Training
7. Competent to operate valve	2	1. NRW Level Counter Measure
8. Knowledge and skills in PRV setting	2	1. NRW Administrative Functions
9. Knowledge and skills in DMA/PMA Establishment	1	1. Computer Application Software with Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based
10. Knowledge and skills in maintaining DMA Asset and Equipment	2	1. District Metering Area (DMA) Management
11. Knowledge and skills of Geographical Information System (GIS)	1	1. Geographical Information System (GIS) Training
12. Knowledge and skills of all equipment in GIS	1	1. Geographical Information System (GIS) Training
13. Knowledge IR 4.0 technology	2	1. Computer Application Software with Artificial Intelligent (A.I) 2. Big Data Management 3. I.R 4.0 Technology Based

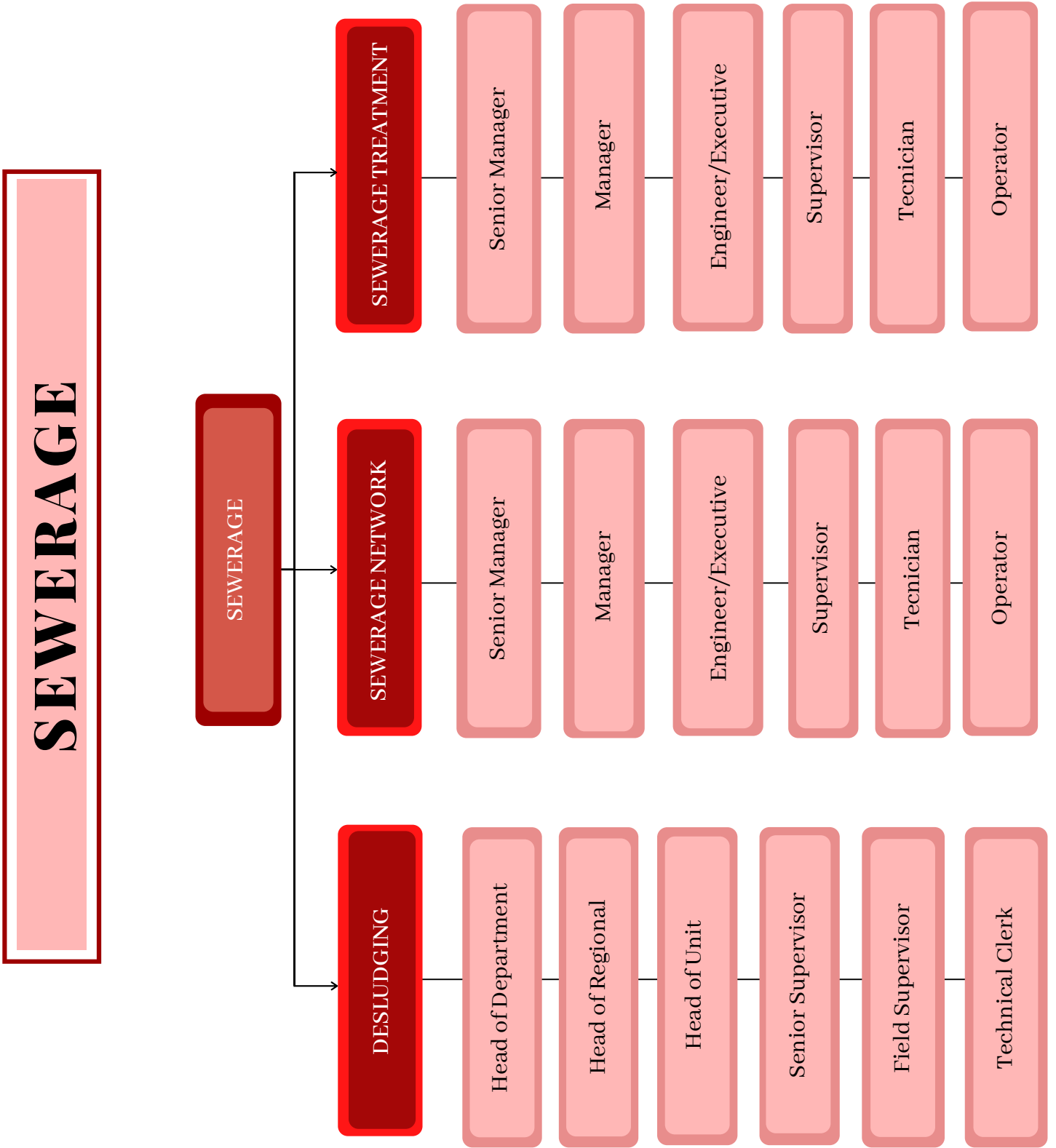
NO	DETAILS		
15	Area : Non-Revenue Water (Zone & Asset Management)		
	Job Title : NRW Fitter	Level : 2	
	Job Description :		
	<p>A Non Revenue Water Fitter has to carrying installation of data logger and collecting information from data logger. He/she has to do the setting of data logger. He/she also has to record all information from DMA Meter and submit to NRW Technician. The personnel have to ensure that the equipment to work at the site is in good condition. A Non Revenue Water Fitter has to collect all data for Asset Management. He/she also has to give information to team leader (technician) when he has problem while the collecting data at site.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. To be proactive and responsive	1	1. Team Building
	2. The ability to work as part of a team and receive instructions from superior	1	1. Personality Grooming
	3. Basic computer knowledge	1	1. Microsoft Word and Excel (Basic)
	4. Integrity	1	1. Integrity Training
	Soft Skills	Required Competency Level	Recommended Training
	1. Data logger Handling	1	1. Basic NRW Training
	2. Valve Operation	1	1. Water Data Logger and Control Equipment Setting
	3. Knowledge and skills in the usage and application of NRW equipment and tools	1	1. District Metering Area (DMA) Establishment
	4. Knowledge and skills of Zero Pressure Test (ZPT)	1	1. NRW Step Test Operation
	5. To apply green technology and sustainability practices	1	1. DMA Asset and Equipment Maintenance
6. To adhere to Occupational Safety and Health regulations	1	1. Safety Health and Environment (SHE) Regulations Training	

Technical Skills	Required Competency Level	Recommended Training
7. DMA Operation	1	1. Level on District Metering Zone (DMA)
8. Knowledge and skills of Geographical Information System (GIS)	1	1. Geographical Information System (GIS) Training
9. Knowledge and skills of all equipment in GIS	1	1. Geographical Information System (GIS) Training

FOCUS AREA II : SEWERAGE
DESLUDGING
SEWERAGE NETWORK
SEWERAGE TREATMENT



CONTENT :
● CAREER PATHWAYS
● JOB DESCRIPTIONS
● SKILLS COMPETENCIES
● REQUIRED COMPETENCIES LEVEL
● RECOMMENDED TRAINING PROGRAMMES



NO	DETAILS		
1	Area : Desludging		
	Job Title : Head of Department		Level : 7
	Job Description :		
	A Head of Department is responsible to establish a fundamental plan and direction of the Desludging Department to ensure achieve company's objectives. They are also required to conduct and attend meetings with other departments and management.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Establish department targets and work plan towards company objectives.	3	1. Induction Program
	2. Establish management measures and leadership skills.	3	1. Integrity Programme 2. Leadership Development Programme 3. Development Program for Executives & Managers - Role & Responsibilities and KPI
	3. Develop team work concept.	2	1. Team Building
4. Determine and develop communication.	2	1. Art of Business Communication	
5. Analyse, evaluate data and prepare report.	2	1. IR 4.0 2. Desludging Management System (DMS) 3. System Applications and Products (SAP) 4. Facility Management (Maintenance Scheduling, Analysis, Manpower) 5. Business Writing Skills 6. Effective Presentation Skills	
6. Establish target, plan and develop strategic Sales and Marketing activities.	2	1. Marketing Strategy and Management 2. Business to Business (B2B) Marketing 3. Marketing Research 4. Retail and Sales Management	

Soft Skills	Required Competency Level	Recommended Training
7. Develop, plan and implement financial management.	2	1. Budget Management 2. Finance for Non-Finance Staff 3. Facility Management (Analysis, PR, Budgeting, Manpower)
8. Maintain ISO Integrated Management System (IMS)	2	1. Integrated Management System (IMS) Awareness 2. Integrated Management Systems 3. Quality Management System 4. Environmental Management System 5. Occupational Health and Safety (OHS)
Technical Skills	Required Competency Level	Recommended Training
1. Develop desludging work plan at sewerage treatment system.	2	1. Introduction to Sanitation and Sewerage 2. Introduction to Operations and Maintenance of Sewerage Systems
2. Establish target, develop plan and manage desludging services.	2	1. Basic Septic Tank Design 2. Desludging Management System (DMS)
3. Identify needs, develop module and train staffs for competency and skills.	3	1. Desludging Work 2. Know Your Tanker
4. Analyse, evaluate, identify staff performance and improvement plan.	3	1. Characteristics of Top Employee 2. Quality of High Performers
5. Establish regulatory requirement on staffs competency and skills.	3	1. Sijil Kemahiran Malaysia (E 382-001-5:2017 Desludging and Discharge Management Level 5)

Technical Skills	Required Competency Level	Recommended Training
6. Establish regulatory requirement on desludging activities.	3	1. Environmental Obligation 2. Environmental Best Practice for Disposal Site 3. OSH Legislation & IWK H&S Policy Manual & Standard
7. Develop safe working practices on company health and safety policy.	3	1. Hazard Identification, Risk Assessment & Control (HIRAC) 2. Occupational Safety & Health Hazard at Workplace

NO	DETAILS		
2	Area : Desludging		
	Job Title : Head of Regional	Level : 6	
	Job Description :		
	A Head of Regional is responsible to plan and manage desludging activities within designated areas to ensure optimum productivity and customer satisfaction, conduct staff development training and activities to improve team work and achieve company's objectives. They are also required to conduct and attend meetings with other departments and management.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Establish Regional targets and work plan towards department objectives.	3	1. Induction Program
	2. Establish management measures and leadership skills.	3	1. Integrity programme 2. Leadership development programme 3. Development Program for Executives & Managers - Role & Responsibilities, KPI and Staff Discipline
3. Develop team work concept and train staff.	2	1. Team Building	
4. Determine and develop communication within and inter section staffs.	2	1. Communication skills 2. Art of Business Communication	
5. Analyse, evaluate data and prepare report.	2	1. IR 4.0 for Desludging Management System (DMS) 2. System Applications and Products (SAP) 3. Facility Management (Maintenance Scheduling, Analysis, Manpower) 4. Business Writing Skills 5. Effective Presentation Skills	

Soft Skills	Required Competency Level	Recommended Training
6. Establish target, plan and develop strategic Sales and Marketing activities.	2	1. Marketing Strategy And Management 2. Business to Business (B2B) Marketing 3. Marketing Research 4. Retail and Sales Management
7. Develop, plan and implement financial management.	2	1. Budget Management 2. Finance for Non-Finance Staff 3. Facility Management (Analysis, PR, Budgeting, Manpower)
8. Maintain ISO Intergrated Management System (IMS)	2	1. Intergrated Management System (IMS) Awareness 2. Integrated Management Systems 3. Quality Management System 4. Environmental Management System 5. Occupational Health and Safety (OHS)
Technical Skills	Required Competency Level	Recommended Training
1. Develop desludging work plan at sewerage treatment system.	2	1. Introduction to Sanitation and Sewerage 2. Introduction to Operations and Maintenance of Sewerage Systems
2. Establish target, develop plan and manage desludging services.	2	1. Basic Septic Tank Design 2. Desludging Management System
3. Identify needs, develop module and train staffs for competency and skills.	3	1. Desludging Work 2. Know Your Tanker
4. Analyse, evaluate, identify staff performance and improvement plan	3	1. Characteristics of Top Employee 2. Quality of High Performers

Technical Skills	Required Competency Level	Recommended Training
5. Establish regulatory requirement on staffs competency and skills.	3	1. Sijil Kemahiran Malaysia (E 382-001-5:2017 Desludging and Discharge Management Level 5) 2. Sijil Kemahiran Malaysia (E 382-001-4:2017 Desludging and Discharge Administraion Level
6. Establish regulatory requirement on desludging activities.	3	1. Environmental Obligation 2. Environmental Best Practice for Disposal Site 3. OSH Legislation & IWK H&S Policy Manual & Standard
7. Develop safe working practices on company health and safety policy.	3	1. Hazard Identification, Risk Assessment & Control (HIRAC) 2. Occupational Safety & Health Hazard at Workplace 3. Work Place Inspection 4. Accident Reporting and Investigation

NO	DETAILS		
3	Area : Desludging		
	Job Title : Head of Unit	Level : 5	
	Job Description :		
	A Head of Unit is responsible to plan and manage desludging activities within designated areas to ensure optimum productivity and customer satisfaction, improve team work and conduct staff development training within budgeted allocation. Ensure contractors perform according to obligations in the contract agreement and timely submission of payment claim. They are also required to conduct and attend meetings with other sections and departments.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Establish Unit targets and yearly work plan towards Regional objectives.	3	1. Induction Program
	2. Establish management measures and leadership skills.	3	1. Integrity programme 2. Leadership development programme 3. Supervisory Development Program for Executives & Managers - Role & Responsibilities, KPI and Staff Discipline
	3. Develop team work concept and train staff.	2	1. Team Building
4. Determine and develop communication within and inter section staffs.	2	1. Communication skills 2. Art of Business Communication	
5. Establish and develop communication skills with customer.	2	1. Customer contact programme / customer order system.	
6. Develop, plan and implement financial management.	2	1. Budget Management 2. Finance for Non-Finance Staff 3. Facility Management (Analysis, PR, Budgeting, Manpower)	

Soft Skills	Required Competency Level	Recommended Training
7. Analyse, evaluate data and prepare report.	2	1. IR 4.0 for: <ul style="list-style-type: none"> - Desludging Management System (DMS) - System Applications and Products (SAP) - Facility Management (Maintenance Scheduling, Analysis, Manpower) 2. Business Writing Skills 3. Effective Presentation Skills
8. Establish target, plan and develop strategic Sales and Marketing activities.	2	1. Marketing Strategy And Management 2. Business to Business (B2B) Marketing 3. Marketing Research 4. Retail and Sales Management
9. Maintain ISO Intergrated Management System (IMS)	3	1. Integrated Management System (IMS) Awareness 2. Integrated Management Systems: <ul style="list-style-type: none"> - Quality Management System - Environmental Management System - Occupational Health and Safety (OHS) 3. Documents Control
Technical Skills	Required Competency Level	Recommended Training
1. Develop desludging work plan at sewerage treatment system.	2	1. Introduction to Sanitation and Sewerage 2. Introduction to Operations and Maintenance of Sewerage Systems 3. Operation and Maintenance of Sludge Reception Facility (SRF) 4. Operation and Maintenance of MDU

Technical Skills	Required Competency Level	Recommended Training
2. Establish target, develop plan and manage desludging services.	2	1. Basic Septic Tank Design 2. Desludging Management System
3. Identify needs, develop module and train staffs for competency and skills.	3	1. Desludging Work 2. Know Your Tanker
4. Analyse, evaluate, identify staff performance and improvement plan.	3	1. Characteristics of Top Employee 2. Quality of High Performers
5. Establish regulatory requirement on staffs competency and skills.	3	1. Sijil Kemahiran Malaysia (E 382-001-5:2017 Desludging and Discharge Management Level 5) 2. Sijil Kemahiran Malaysia (E 382-001-4:2017 Desludging and Discharge Administraion Level 4) 3. Sijil Kemahiran Malaysia (E 382-001-3:2017 Desludging and Discharge Supervision Level 3)
6. Establish regulatory requirement on desludging activities.	3	1. Environmental Obligation 2. Environmental Best Practice for Disposal Site 3. OSH Legislation & IWK H&S Policy Manual & Standard
7. Develop safe working practices on company health and safety policy.	3	1. Hazard Identification, Risk Assessment & Control (HIRAC) 2. Occupational Safety & Health Hazard at Workplace 3. Work Place Inspection 4. Accident reporting and investigation 5. First Aid Certification Program

NO	DETAILS		
4	Area : Desludging		
	Job Title : Senior Supervisor		Level : 4
	Job Description :		
	A Senior Supervisor is responsible to execute workable and efficient working method, equipment and tools to optimise manpower and increase efficiency. Designated to supervise employee output and ensure that sludge is transported out, treated and disposed of safely according to OSHA regulations and DOE regulations.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Execute workable and efficient work plan towards Unit targets and yearly work plans.	3	1. Induction Program
	2. Execute and lead team.	2	1. Intergrity Programme 2. Positive Work Attitude 3. Counseling Skill Programme 4. Team Building
	3. Monitor communication within team members, superior and internal staffs.	1	1. Good Communication Skills
	4. Motivate and coach staff communicate effectively to resolve customers request or issue.	1	1. Customer Contact Programme.
5. Operate SMART device to input data, work assigned and prepare report.	2	1. IR 4.0 - Desludging Management System (Update daily work order via device) - System Applications and Products (SAP)	
6. Promote company and customer needs and type of desludging services.	2	1. Marketing / Sales Strategy	
7. Supervise team work activities.	2	1. Supervisory Development Program - Role & Responsibilities, KPI and Staff Discipline	

Soft Skills	Required Competency Level	Recommended Training
8. Maintain ISO Integrated Management System (IMS)	2	1. Intergrated Management System (IMS) Awareness 2. Intergrated Management Systems - Quality Management System - Environmental Management System - Occupational Health and Safety (OHS) 3. Documents Control
Technical Skills	Required Competency Level	Recommended Training
1. Identify work hazard and apply Safety Training Observation Program (STOP) at workplace.	1	1. Occupational Safety & Health Hazard at Workplace 2. Safety Training Observation Program (STOP)
2. Identify work site hazard, assess risk and preventive measures to resolve.	2	1. Hazard Identification, Risk Assessment and Control (HIRAC)
3. Identify type of sewerage treatment system and its basic process.	2	1. Introduction to Sanitation and Sewerage
4. Identify septic tank condition and inspect its functionality.	2	1. Basic Septic Tank Design, Treatment Process and Performance
5. Supervise desludging activity and identify condition of confined space.	2	1. Confined Space 2. Confined Space Refresher Course
6. Plan, supervise and execute Desludging work activities.	1	1. Sijil Kemahiran Malaysia (E 382-001-2:2017 Desludging and Discharge Operation Level 2) 2. Sijil Kemahiran Malaysia (E 382-001-3:2017 Desludging and Discharge Supervision Level 3) 3. Desludging Operational Work

Technical Skills	Required Competency Level	Recommended Training
7. Schedule, monitor and supervise Operation and Maintenance of desludging tanker.	2	1. Operation and Maintenance of Desludging Tanker
8. Inspect designated sludge disposal site and prepare status report.	1	1. Sludge Disposal Type and Basic Requirements.

NO	DETAILS		
5	Area :Desludging		
	Job Title : Field Supervisor	Level : 3	
	Job Description :		
	A Field Supervisor is responsible to verify, inspect and update Septic Tank (IST) customer database for planning of desludging activities to achieve targeted level of service and customer satisfaction.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Execute workable and efficient work plan towards Unit targets and yearly work plans.	3	1. Induction Program
	2. Execute and lead team.	2	1. Integrity programme 2. Positive Work Attitude 3. Team Building
	3. Communicate with team members, superior and internal staffs.	1	1. Good Communication Skills
	4. Identify and communicate to resolve customers request or issue.	1	1. Customer Contact Programme with Basic Sales Skill.
5. Operate SMART device to resolve daily work assigned.	2	1. IR 4.0 for: - Desludging Management System (Update daily work order via device)	
6. Identify customer needs and promote type of desludging services.	2	1. Marketing / Sales Strategy	
7. Maintain ISO Intergrated Management System (IMS)	2	1. Integrated Management System (IMS) Awareness 2. Integrated Management Systems - Quality Management System - Environmental Management System - Occupational Health and Safety (OHS) 3. Documents Control	

Technical Skills	Required Competency Level	Recommended Training
1. Identify work hazard and apply Safety Training Observation Program (STOP) at workplace.	1	1. Occupational Safety & Health Hazard at Workplace 2. Safety Training Observation Program (STOP)
2. Identify type of sewerage treatment system and its basic process.	1	1. Introduction to Sanitation and Sewerage
3. Identify septic tank condition and inspect its functionality.	1	1. Basic Septic Tank Design, Treatment Process and Performance
4. Differentiate and perform various type of Desludging work activities.	2	1. Sijil Kemahiran Malaysia (E 382-001-2:2017 Desludging and Discharge Operation Level 2) 2. Sijil Kemahiran Malaysia (E 382-001-3:2017 Desludging and Discharge Supervision Level 3) 3. Desludging Operational Work
5. Identify confined space condition when performing desludging activity.	2	1. Confined Space 2. Confined Space Refresher Course
6. Identify designated site and perform proper sludge disposal.	2	1. Sludge Disposal Type and Basic Requirements.

NO	DETAILS		
6	Area : Desludging		
	Job Title : Tanker Driver		Level : 2
	Job Description :		
	A Tanker Driver designated to drive, operate tanker and lead in performing desludging services in a proper and safe manner, checking septic tank for any defect to meet customer satisfaction and clean the desludging tanker. Provide all necessary information and feedback to Senior Supervisor after attending to the services.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Execute workable and efficient work activities towards customer satisfaction.	3	1. Induction Programme 2. Integrity Programme
	2. Execute desludging work in a team.	1	1. Positive Work Attitude 2. Team Building
	3. Communicate with team members, superior and internal staffs.	1	1. Good Communication Skills
	4. Communicate with customers at site.	1	1. Customer Contact Programme with Basic Sales Skill.
	5. Operate SMART device to resolve daily work assigned.	2	1. IR 4.0 for: - Desludging Management System (Update daily work order via device)
Technical Skills	Required Competency Level	Recommended Training	
1. Identify work hazard and apply Safety Training Observation Program (STOP) at workplace.	1	1. Occupational Safety & Health Hazard at Workplace 2. Safety Training Observation Program (STOP)	
2. Identify type of sewerage treatment system and its basic process.	1	1. Introduction to Sanitation and Sewerage	

Technical Skills	Required Competency Level	Recommended Training
3. Identify septic tank condition and inspect its functionality.	1	1. Basic Septic Tank Design, Treatment Process and Performance
4. Identity and differentiate tanker components to operate desludging tanker.	1	1. Desludging Tanker Operation
5. Inspect and conduct preventive maintenance of desludging tanker.	1	1. Inspection and Maintenance of Desludging Tanker
6. Differentiate and perform various type of Desludging work activities.	1	1. Sijil Kemahiran Malaysia (E 382-001-2:2017 Desludging and Discharge Operation Level 2) 2. Desludging Operational Work
7. Identify confined space condition when performing desludging activity.	1	1. Confined Space 2. Confined Space Refresher Course
8. Identify designated site and perform proper sludge disposal.	1	1. Sludge Disposal Type and Basic Requirements.
9. Posses regulators requirement and meet company Standard Operation Procedure, Rules and Regulation requirements to drive tanker.	2	1. Competent with Licence E and Goods Driving Licence (GDL) 2. Driver Familiarization And Safety & Eco-cien Drivers Training 3. Defensive Driving

NO	DETAILS		
7	Area : Desludging		
	Job Title : Operator		Level : 2
	Job Description :		
	An Operator is designated to assist in performing desludging services in a proper and safe manner, checking septic tank for any defect to meet customer satisfaction and clean the desludging tanker. Assist in providing all necessary information and feedback to Senior Supervisor after attending to the services.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Execute workable and efficient work activities towards customer satisfaction.	3	1. Induction Programme 2. Integrity Programme
	2. Execute desludging work in a team.	1	1. Positive Work Attitude 2. Team Building
	3. Communicate with team members, superior and internal staffs.	1	1. Good Communication Skills
	4. Communicate with customers at site.	1	1. Customer Contact Programme with Basic Sales Skill.
	5. Operate SMART device to resolve daily work assigned.	2	1. IR 4.0 for: - Desludging Management System (Update daily work order via device)
	Technical Skills	Required Competency Level	Recommended Training
	1. Identify work hazard and apply Safety Training Observation Program (STOP) at workplace.	1	1. Occupational Safety & Health Hazard at Workplace
2. Identify type of sewerage treatment system and its basic process.	1	1. Introduction to Sanitation and Sewerage	
3. Identify septic tank condition and inspect its functionality.	1	1. Basic Septic Tank Design, Treatment Process and Performance	

Technical Skills	Required Competency Level	Recommended Training
4. Identity and differentiate tanker components to operate desludging tanker.	1	1. Desludging Tanker Operation
5. Inspect and conduct preventive maintenance of desludging tanker.	1	1. Basic Septic Tank Design, Treatment Process and Performance
6. Differentiate and perform various type of Desludging work activities.	1	1. Sijil Kemahiran Malaysia (E 382-001-2:2017 Desludging and Discharge Operation Level 2) 2. Desludging Operational Work
7. Identify confined space condition when performing desludging activity.	1	1. Confined Space 2. Confined Space Refresher Course
8. Identify designated site and perform proper sludge disposal.	1	1. Sludge Disposal Type and Basic Requirements.

NO	DETAILS		
8	Area : Desludging		
	Job Title : Technical Clerk		Level : 2
	Job Description :		
	A Technical Clerk is responsible to provide administrative and clerical support for implementation of desludging services in order to achieve uninterrupted operations process and to maintain proper records required for management reporting and billing purpose.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Prepare work orders too execute desludgeing activities in timely manner.	3	1. Induction Programme 2. Integrity Programme 3. Effective Filing and Record Keeping
	2. Execute desludging work in a team.	1	1. Positive Work Attitude 2. Team Building
	3. Communicate with team members, superior and internal staffs.	1	1. Good Communication Skills
	4. Communicate with customers at site.	1	1. Customer Contact Programme with Basic Sales Skill.
	5. Operate SMART device to resolve daily work and customer profile.	1	1. IR 4.0 for: - Microsoft Office - Intermediate - Desludging Management System (DMS). - Billing, Records and Information System (BRAINS) - System Applications and Products (SAP)
Technical Skills	Required Competency Level	Recommended Training	
1. Identify work hazard and apply Safety Through Observation & Practice (STOP) at workplace.	1	1. Occupational Safety & Health Hazard at Workplace	

Technical Skills	Required Competency Level	Recommended Training
2. Identify type of sewerage treatment system and its basic process.	1	1. Introduction to Sanitation and Sewerage
3. Identify septic tank condition and inspect its functionality.	1	1. Basic Septic Tank Design, Treatment Process and Performance
4. Maintain ISO Integrated Management System (IMS)	2	1. Integrated Management System (IMS) Awareness 2. Integrated Management Systems - Quality Management System - Environmental Management System - Occupational Health and Safety (OHS) Documents Control 3. Safety (OHS) Documents Control

NO	DETAILS		
1	Area : Sewerage Network		
	Job Title : Senior Manager	Level : 7	
	Job Description :		
	A Senior Manager is responsible to lead, plan, manage and review the operation & maintenance of public Sewer networks and to carry out responsive services for private sewer network, to meet the required performance standards and targeted level of service.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Able to work as part of a team	3	1. Team building
2. Communicate with other team members/supervisor	3	1. Effective Communication 2. Motivation and Self-Empowerment Skills 3. Counseling Skill 4. Managing Disciplinary Workshop	
3. Possess leadership skills, communication skills and documentation skills	3	1. Effective Scientific, Technical writing, and Communication 2. Delivering High-Impact Presentation Skills 3. Leadership Training for Managers	
4. Possess management skills	3	1. Managerial Development Program 2. Critical Thinking, Strategic Problem Solving and Decision Making 3. Effective Time Management Skills	

Technical Skills	Required Competency Level	Recommended Training
1. Plan and manage the operation & maintenance program for public network system to minimize blockages and overflows also efficient responsive private sewer network services, to ensure targeted level of service is achieved.	4	1. Sewer Network Maintenance
	2	2. Sewer Rehabilitation and Property Connection
	1	3. Sewer Network Maintenance - SCV/Jetter Work
	1	4. Sewer Network Maintenance - Rodding work
	2	5. Construction of Sewers
	3	6. Asset Management System
2. Manage all network contract works efficiently so as to ensure compliance with the specification requirements, agreed quality standards, contract obligations and timely submission of claims.	4	1. Sewerage Policies and Procedures
	2	2. Testing And Commission of Sewerage Systems
	3	3. MSIG Workshop for Planning, Design and Construction for Sewerage System
	2	4. Sewerage Construction Manager (SCM): Construction Industry Development Board (CIDB) Module A & D
3. Plan, implement and manage CCTV inspection program for sewer preventive maintenance.	2	1. Sewer Closed-Circuit Television (CCTV) Condition Classification - under WRC
	2	2. Sewer Network Maintenance - Introduction to Trench less Technology In Sewer Maintenance
4. Liaise and coordinate with all relevant parties (internal and external) in carrying out activities relating to sewers to ensure smooth implementation, including preparing accurate and timely reporting.	2	1. Network Maintenance Record using GIS
	3	2. Microsoft Office Programmes

Technical Skills	Required Competency Level	Recommended Training
5. Ensure the employees are equipped with necessary skills and experience through regular training to meet quality service and Health & Safety standard set by the Company, and ensure they are being followed rigorously, in order to prevent accidents.	4	1. Health and Safety Awareness for Managers
	2	2. Hazard Identification Risk Assessment & Risk Control & Workplace Inspection (HIRARC-WI)
	2	3. Accident Reporting and Investigation
	2	4. Confined Space Awareness
6. Plan and manage the Section Budget and ensure effective administration in order to be cost-effective and to meet the strategy / objective of the section.	3	1. Finance for Non-Finance Managers

NO	DETAILS		
2	Area : Sewerage Network		
	Job Title : Manager		Level : 6
	Job Description :		
	A Manager is responsible to plan, coordinate, implement, monitor and control the operation & maintenance of public sewer networks and to carry out responsive services for private sewer network, to meet the required performance standards and targeted level of service.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Able to work as part of a team	3	1. Team building
	2. Communicate with other team members/supervisor	3	1. Effective Communication 2. Motivation and 3. Self-Empowerment Skills 4. Counseling Skills 5. Managing Disciplinary Workshop
	3. Possess leadership skills, communication skills and documentation skills	3	1. Effective Scientific, Technical Writing, and Communication 2. Delivering High-Impact Presentation Skills 3. Leadership Training for Managers
	4. Possess management skills	3	1. Managerial Development Program 2. Critical Thinking, Strategic Problem Solving and Decision Making
	Technical Skills	Required Competency Level	Recommended Training
1. Plan, implement and manage CCTV inspection program for sewer preventive maintenance.	3	1. Sewer Closed-Circuit Television (CCTV) Condition Classification - under WRC	
	3	2. Sewer Network Maintenance - Introduction to Trenchless Technology In Sewer Maintenance	

Technical Skills	Required Competency Level	Recommended Training
2. Plan and manage the operation & maintenance program for public network system to minimize blockages and overflows also efficient responsive private sewer network services, to ensure targeted level of service is achieved.	3	1. Sewer Network Maintenance
	2	2. Sewer Rehabilitation and Property Connection
	1	3. Sewer Network Maintenance - SCV/Jetter Work
	1	4. Sewer Network Maintenance - Rodding Work
	3	5. Construction of Sewers
	3	6. Asset Management System
3. Manage all network contract works efficiently so as to ensure compliance with the specification requirements, agreed quality standards, contract obligations and timely submission of claims.	3	1. Sewerage Policies and Procedures
	3	2. Testing and Commission of Sewerage Systems
	2	3. MSIG Workshop for Planning, Design and Construction for Sewerage System Sewerage Construction Manager (SCM) : Construction Industry Development Board (CIDB) Module A & D
	2	4. Sewerage Construction Manager (SCM) : Construction Industry Development Board (CIDB) Module A & D
4. Liaise and coordinate with all relevant parties (internal and external) in carrying out activities relating to sewers to ensure smooth implementation, including preparing accurate and timely reporting.	3	1. Network Maintenance Record using GIS 2. Microsoft Office Programmes

Technical Skills	Required Competency Level	Recommended Training
5. Ensure the employees are equipped with necessary skills and experience through regular training to meet quality service and Health & Safety standard set by the Company, and ensure they are being followed rigorously, in order to prevent accidents.	4	1. Health and Safety Awareness for Managers
	3	2. Hazard Identification Risk Assessment & Risk Control & Workplace Inspection (HIRARC-WI)
	3	3. Accident Reporting and Investigation
	2	4. Confined Space Awareness
6. Plan and manage the Section Budget and ensure effective administration in order to be cost-effective and to meet the strategy / objective of the section.	3	1. Finance for Non-Finance Managers

NO	DETAILS		
3	Area : Sewerage Network		
	Job Title : Engineer / Executive		Level : 5
	Job Description :		
	An Engineer / Executive is responsible to supervise teams and execute the implementation of the program for operation & maintenance of public sewer networks, and to carry out responsive services for private sewer network to meet the required performance standards and targeted level of service. To ensure contractors perform according to obligations in the contract agreement.		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	3	1. Team-building
	2. To communicate with other team members	3	1. Effective Communication 2. Motivation and Self-Empowerment Skills 3. Counseling Skills
	3. Possess leadership skills, communication skills and documentation skills	3	1. Effective Scientific, Technical Writing, and Communication 2. Leadership Training for Supervisors
	4. Supervisory skills	3	1. Critical Thinking and Strategic Problem Solving 2. Effective Time Management Skills 3. Supervisory Development Program Modules (roles & responsibilities, staff disciplines and performance management)
	Technical Skills	Required Competency Level	Recommended Training
1. To prepare regular reports on work done and investigations carried out, in order that overall performance is well-monitored.	3	1. Network Maintenance Record using GIS	
	2	2. Microsoft Office programmes	

Technical Skills	Required Competency Level	Recommended Training
2. To implement effective operation & maintenance for public network system to minimize blockages and overflows also efficient responsive private sewer network services, to ensure targeted level of service is achieved and customer satisfaction.	3	1. Sewer Network Maintenance
	3	2. Sewer Rehabilitation and Property Connection
	3	3. Sewer Network Maintenance - SCV/Jetter Work
	3	4. Sewer Network Maintenance - Rodding Work
	3	5. Construction of Sewers
	2	6. Asset Management System
3. To ensure proper supervision and verification of contracted works for sewer repairs that meet the contract specifications, including timely submission of payment claims.	2	1. Sewerage Policies and Procedures
	3	2. Testing and Commission Of Sewerage Systems
	2	3. MSIG Workshop for Planning, Design and Construction for Sewerage System Sewerage Construction Manager (SCM) : Construction Industry Development Board (CIDB) Module A & D
4. To ensure compliance to relevant Standard Operation Procedure, Safe Working Procedures and Job Safety Analysis to maintain optimum performance and standard of health & safety.	4	1. Health and Safety Awareness for Engineer / Executive
	2	2. Hazard Identification Risk Assessment & Risk Control & Workplace Inspection (HIRARC-WI)
	1	3. Accident Reporting and Investigation
	2	4. Confined Space Awareness
	2	5. NIOSH Authorised Entry/Stand-By Person (AE/SP)
	2	6. NIOSH Authorized Gas Tester II (AGT II)

Technical Skills	Required Competency Level	Recommended Training
5. Plan, implement and manage CCTV inspection program for sewer preventive maintenance.	3	1. Sewer Closed-Circuit Television (CCTV) Condition Classification - under WRC
	3	2. Sewer Network Maintenance - Introduction to Trenchless Technology in Sewer Maintenance

NO	DETAILS		
4	Area : Sewerage Network		
	Job Title : Supervisor		Level : 4
	Job Description :		
	A Supervisor is responsible to supervise teams and execute the implementation of the program for operation & maintenance of public sewer networks, and to carry out responsive services for private sewer network to meet the required performance standards and targeted level of service. To ensure contractors perform according to obligations in the contract agreement.		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	3	1. Team-Building
	2. Communicate with other team members	3	1. Effective Communication 2. Motivation and Self-Empowerment Skills 3. Counseling Skills
	3. Possess leadership skills, communication skills and documentation skills	3	1. Effective Scientific, Technical Writing, and Communication 2. Leadership Training for Supervisors
	4. Possess supervisory skills	3	1. Critical Thinking and Strategic Problem Solving 2. Effective Time Management Skills 3. Supervisory Development Program Modules (roles & responsibilities, staff disciplines and performance management)
	Technical Skills	Required Competency Level	Recommended Training
1. Ensure proper supervision and verification of contracted works for sewer repairs that meet the contract specifications, including timely submission of payment claims	3	1. Sewer Rehabilitation and Property Connection	
	3	2. Construction of Sewers	
	2	3. Asset Management System	
	3	4. Testing And Commission of Sewerage System	

Technical Skills	Required Competency Level	Recommended Training
2. Implement effective operation & maintenance for public network system to minimize blockages and overflows also efficient responsive private sewer network services, to ensure targeted level of service is achieved and customer satisfaction.	3	1. Sewer Network Maintenance
	3	2. Sewer Network Maintenance - SCV/Jetter Work
	3	3. Sewer Network Maintenance - Rodding Work
3. Plan, implement and manage CCTV inspection program for sewer preventive maintenance.	2	1. Sewer Closed-Circuit Television (CCTV) Condition Classification - under WRC
	3	2. Sewer Network Maintenance - Introduction to Trenchless Technology in Sewer Maintenance
4. Prepare regular reports on work done and investigations carried out, in order that overall performance is well-monitored.	3	1. Network Maintenance Record using GIS
	3	2. Microsoft Office Programmes
5. Ensure compliance to relevant Standard Operation Procedure, Safe Working Procedures and Job Safety Analysis to maintain optimum performance and standard of health & safety.	4	1. Health and Safety Awareness for Supervisors
	2	2. Hazard Identification Risk Assessment & Risk Control & Workplace Inspection (HIRARC-WI)
	1	3. Accident Reporting and Investigation
	2	4. NIOSH Authorised Entry/ Stand-By Person (AE/SP)
	2	5. NIOSH Authorized Gas Tester II (AGT II)

NO	DETAILS		
5	Area : Sewerage Network		
	Job Title : Technician	Level : 3	
	Job Description :		
	A Technician is responsible to conduct, monitor and report operation & maintenance of public sewer networks, and to carry out responsive services for private sewer network to meet the required performance standards and targeted level of service.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Able to work as part of a team	3	1. Team building
	2. Communicate with other team members	3	1. Effective Communication 2. Motivation and Self-Empowerment Skills
	3. Possess communication skills and documentation skills	3	1. Effective Scientific, Technical Writing, and Communication
	Technical Skills	Required Competency Level	Recommended Training
	1. Carry out operation & maintenance for public network system to minimize blockages and overflows also efficient responsive private sewer network services, to ensure targeted level of service is achieved and customer satisfaction.	3	1. Sewer Network Maintenance
		2	2. Sewer Network Maintenance - SCV/Jetter Work
		2	3. Sewer Network Maintenance - Rodding Work
2. Ensure proper supervision and verification of contracted works for sewer repairs that meet the contract specifications, including timely submission of payment claims.	2	1. Sewer Rehabilitation and Property Connection	
	2	2. Construction of Sewers	
	1	3. Asset Management System	
	1	4. Testing and Commission of Sewerage Systems	

Technical Skills	Required Competency Level	Recommended Training
3. Plan, implement and manage CCTV inspection program for sewer preventive maintenance.	2	1. Sewer Closed-Circuit Television (CCTV) Condition Classification - under WRC
	1	2. Sewer Network Maintenance -Introduction to Trenchless Technology in Sewer Maintenance
4. Prepare regular reports on work done and investigations carried out, in order that overall performance is well-monitored.	2	1. Network Maintenance Record using GIS
	1	2. Microsoft Office Programmes
5. Ensure compliance to relevant SOP's, Safe Working Procedures and Job Safety Analysis to maintain optimum performance and standard of health & safety.	3	1. Health and Safety Awareness for Technicians
	1	2. Hazard Identification Risk Assessment & Risk Control & Workplace Inspection (HIRARC-WI)

NO	DETAILS		
6	Area : Sewerage Network		
	Job Title : Operator (SCV Driver, Jettor Driver, Leading Hand, Operator Driver, Operator)	Level : 2	
	Job Description :		
	An Operator (SCV Driver/Jettor Driver/Leading Hand/Operator Driver/Operator) is responsible to carry out the operation & maintenance of public sewer networks and to carry out responsive services for private sewer network, to meet the required performance standards and targeted level of service.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Able to work as part of a team	2	1. Team Building
	2. Communicate with other team members	2	1. Effective Communication 2. Motivation and Self-Empowerment Skills
	3. Possess communication skills and documentation skills	2	1. Effective Basic Report Writing and Communication 2. Dealing with Difficult Customers
	4. Possess work ethics	2	1. Self Transformation to Achieve Results
	Technical Skills	Required Competency Level	Recommended Training
	1. Carry out efficient operation and maintenance of public sewer networks and responsive blockage clearing of private sewerage systems as requested to meet the required performance standards and targeted level service.	2	1. Sewer Network Maintenance
3		2. Sewer Network Maintenance - SCV/Jettor Work	
3		3. Sewer Network Maintenance - Rodding Work	
2. Ensure the relevant documents are filled completely and accurately, and submitted on time as in the existing procedures.	1	1. Network Maintenance Record using GIS	

Technical Skills	Required Competency Level	Recommended Training
3. Ensure compliance to relevant SOP's, Safe Working Procedures and Job Safety Analysis to maintain optimum performance and standard of health & safety.	3	1. Health and Safety Awareness For Operator (SCV Driver, Jettor Driver, Leading Hand, Operator Driver, Operator)
	2	2. Confined Space Awareness Training
	3	3. Defensive Driving Course

NO	DETAILS		
1	Area : Sewage Treatment		
	Job Title : Senior Manager	Level : 7	
	Job Description :		
	A Senior Manager is responsible to develop, plan, strategize, monitor and improve the implementation of policies, procedures on treatment operations and maintenance that will ensure efficient performance, and compliance with regulatory standard by Regulators.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Conduct presentation to employee, employer and stakeholder	3	1. Delivering High-Impact Presentation Skills
	2. Ability to communicate effectively	3	1. Effective Communication Training 2. Effective Scientific, Technical Writing, and Communication
	3. Posses good leadership	3	1. Leadership Training for Manager 2. Managerial Development Program 3. Motivation and Self-Empowerment Skills
4. Team coordination /Team building	3	1. Team Building Training 2. Effective Time Management Skills Training 3. Managing Disciplinary Workshop 4. Counseling Skill Training	
5. Demonstrate strong value of integrity	3	1. Integrity Training	
6. Ability to make sustainable decision and problem solving	3	1. Critical Thinking, Strategic 2. Problem Solving and Decision Making	

Technical Skills	Required Competency Level	Recommended Training
1. Develop, plan, strategize, monitor and improve operations and maintenance of sewage treatment plant (STP), network pumping station (NPS) and Sludge Treatment Facilities (STF).	4	1. Operations and Maintenance of Sewage Treatment Plant 2. Operations and Maintenance of Sludge Treatment Systems
2. Plan, strategize and monitor management of operations, budget and expenses.	3	1. Budget and Financial Management Training 2. Organizational Policies and Procedures
3. Advise on technical matters and troubleshooting of sewage treatment process.	3	1. Troubleshooting Skills 2. Advance Treatment Plant Operations 3. Mechanical and Electrical Components of Sewage Treatment Plant.
4. Interpret process control data to develop operations and maintenance strategy.	3	1. Analytical Skills Training Course 2. Prediction of Normal and Abnormal Operations 3. Process Monitoring and Troubleshooting 4. Schedule Waste Management
5. Plan, strategize and monitor regulatory requirement compliance for sewage discharge and sludge disposal site.	3	1. Environmental Quality Act (EQSR 2009) 2. Waste Disposal 3. Sewage Sampling Technique and Report
6. Plan, strategize and monitor operations and maintenance based on sewerage policies and procedure.	3	1. Sewerage Policy and Procedure 2. Renewable Energy 3. Waste Minimization
7. Conduct assessment to staff competency and knowledge skills	3	1. Employee Appraisal Training 2. KPI Development Training

Technical Skills	Required Competency Level	Recommended Training
8. Monitor implementation safety and health requirement includes Hazard Identification Risk Assessment & Risk Control (HIRARC), Hazard and Operability Study (HAZOP) and monitor accident reporting and investigation	4	1. NIOSH Advance Training 2. HIRARC Training 3. HAZOP Training 4. Chemical Safety Management
9. Develop and propose for operations and maintenance policy to strive best operations management.	3	1. Policy Making Training
10. Use Information Technology (IT) tools for managing treatment operations.	2	1. Enterprise Asset Management Training (EAM)
11. Perform sewage treatment facilities auditing and reporting.	3	1. Internal Auditor Training
12. Oversee treatment operations implementation through asset management system.	3	1. Asset Management System 2. ISO/Enterprise Management System
13. Develop, plan, strategize and monitor treatment operations through risk management.	2	1. Risk Management and Awareness
14. Oversee management of sewage treatment facilities under construction	2	1. Construction of Sewage Treatment Plant 2. Testing and Commissioning of Sewage Treatment Plant
15. Develop, plan, strategize and monitor energy utilization.	2	1. Energy management
16. Initiate and monitor treatment improvement project to increase operations efficiency and productivity.	3	1. Finance for Non-Finance 2. Business Administration for Project

NO	DETAILS		
2	Area : Sewage Treatment		
	Job Title : Manager	Level : 6	
	Job Description :		
	A Manager is responsible to lead, plan, manage and execute the operations and maintenance of Sewage Treatment Plants (STP) and Network Pumping Stations (NPS) within designated operating areas to achieve optimum performance standards and meet the targeted levels of service.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Conduct presentation to employee, employer and stakeholder	3	1. Delivering High-Impact Presentation Skills
	2. Ability to communicate effectively	3	1. Effective Communication Training 2. Effective Scientific, Technical Writing, and Communication
	3. Posses good leadership	3	1. Leadership Training for Manager 2. Managerial Development Program 3. Motivation and Self-Empowerment Skills
4) Team coordination /Team building	3	1. Team Building Training 2. Counseling Skill Training 3. Managing Disciplinary Workshop 4. Effective Time Management Skills	
5. Demonstrate strong value of integrity	3	1. Integrity Training	
6. Ability to make sustainable decision and problem solving	3	1. Critical Thinking, Strategic Problem Solving and Decision Making	

Technical Skills	Required Competency Level	Recommended Training
1. Lead, plan, manage and execute operations and maintenance of Sewage Treatment Plants (STP), Network Pumping Stations (NPS) and Sludge Treatment Facilities (STF).	4	1. Operations and Maintenance of Sewage Treatment Plant 2. Operations and Maintenance of Sludge Treatment Systems
2. Plan and manage operations and maintenance budget.	3	1. Budget and Financial Management Training 2. Organizational Policies and Procedures
3. Decide actions and improvement for unresolved treatment issues related to treatment process.	3	1. Troubleshooting Skills 2. Advance Treatment Plant Operations 3. Mechanical and Electrical Component Sewage Treatment Plant
4. Interpret process control data to plan and manage operations and maintenance sewage treatment facilities.	3	1. Analytical Skills Training Course 2. Prediction of Normal and Abnormal Operations 3. Process Monitoring and Troubleshooting 4. Schedule Waste Management
5. Plan and monitor regulatory requirement compliance for sewage discharge and sludge disposal site.	3	1. Environmental Quality Act (EQSR 2009) 2. Waste Disposal 3. Sewage Sampling Technique and Report
6. Plan and monitor treatment operations according to sewerage regulatory, policies and procedure.	2	1. Energy Management
7. Conduct assessment to staff competency and knowledge skills	3	1. Employee Appraisal Training

Technical Skills	Required Competency Level	Recommended Training
8. Monitor implementation of safety and health requirement includes Hazard Identification Risk Assessment & Risk Control (HIRARC), Hazard and Operability Study (HAZOP) and Accident Reporting and Investigation	3	1. NIOSH Basic Training 2. HIRARC Training 3. HAZOP Training 4. Chemical Safety Management
9. Use Information Technology (IT) tools for managing treatment operations.	2	1. Enterprise Asset Management Training (EAM)
10. Perform sewage treatment facilities auditing and reporting.	3	1. Internal Auditor Training
11. Oversee treatment operations implementation through asset management system.	3	1. Asset Management System 2. ISO/Enterprise Management System
12. Plan and monitor treatment operations through risk management.	3	1. Risk Management and Awareness
13. Oversee management of sewage treatment facilities under construction.	3	1. Construction of Sewage Treatment Plant 2. Testing and Commissioning of Sewage Treatment Plant
14. Plan, manage and monitor energy utilization.	3	1. Energy Management

NO	DETAILS		
3	Area : Sewage Treatment		
	Job Title : Executive / Engineer	Level : 5	
	Job Description :		
	An Executive / Engineer is responsible to plan, coordinate, implement, monitor and control the operations and maintenance of sewage treatment plants (STP) and network pumping stations (NPS) within designated operating areas so as to achieve optimum performance standards and levels of service.		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	4	1. Team Building Training 2. Managing Disciplinary Workshop 3. Effective Time Management Skills
	2. To communicate with other team members/supervisor	4	1. Effective Communication Training
	3. Possess leadership skills, communication skills and documentation skills	3	1. Leadership Training for Manager 2. Motivation and Self-Empowerment Skills
	4. Ability to persuade subordinate and/or team to execute directives.	3	1. Counseling Skill Training
	5. Demonstrate strong value of integrity	3	1. Integrity Training
6. Ability to make sustainable decision and problem solving	2	1. Critical Thinking, Strategic Problem Solving and Decision Making	
Technical Skills	Required Competency Level	Recommended Training	
1. Plan, organize and lead operation of Sewage Treatment Plants (STP) and Network Pumping Stations (NPS).	4	1. Principle of Sewerage System 2. Principle of Treatment Plant 3. Operations 4. Understanding of Guided Self Regulations (GSR)	

Technical Skills	Required Competency Level	Recommended Training
2. Lead operation and maintenance of sewage treatment plant to meet regulatory requirement for sewage discharge and sludge disposal.	4	1. Principle of Sewerage System 2. Principle of Treatment Plant Operations 3. Understanding of Guided Self Regulations (GSR)
3. Organize, verify and monitor operations team in sewage sampling, sludge sampling and prepare report.	3	1. Sewage Sampling Technique and Records 2. Sampling for Sludge Disposal Site
4. Oversee, understand and comment on sewage treatment facilities under upgrading/construction.	3	1. Internal Auditor Training
5. Plan, implement and monitor treatment process performance and technical troubleshooting.	3	1. Principles to Sewage Treatment O&M Requirements and Process Monitoring and Control 2. STP Design Evaluation and Audit 3. Microscopic Techniques for Activated Sludge Diagnosis & Process
6. Plan, coordinate and monitor compliance to regulatory sludge disposal requirements	3	1. Sludge Management for Manned Plant 2. Operation and Maintenance of Sludge Reception Facility (SRF) and MDU (for staff assigned to sludge SRF/MDU)
7. Plan, coordinate, monitor and implement treatment operation through Asset Management System (AMS).	3	1. Enterprise Asset Management (EAM) training 2. Asset Management System training
8. Identify, plan and resolve treatment operation issue through Risk Management System	3	1. Risk Management (Awareness and Standard)

Technical Skills	Required Competency Level	Recommended Training
9. Adhere to Occupational Health and Safety regulations. Train the personnel in Operational and Safe Working Procedures and ensure that these are followed rigorously in carrying out work.	4	1. Health and Safety Awareness for Executive and above 2. First Aid Certification Program (based on area and required for those who had been appointed by Superior) 3. Confined Space Awareness 4. NIOSH Authorised Entry/Stand-By Person (AE/SP) 5. Authorised Gas Tester training (AGT)
10. Identify, analyse and report potential safety and health risk through Hazard Identification Risk Assessment & Risk Control (HIRARC), and Hazard and Operability Study (HAZOP) and conduct accident reporting and investigation	3	1. HAZOPS for Sewerage Systems 2. Hazard Identification Risk Assessment & Risk Control & Workplace Inspection (HIRARC-WI) 3. Accident Reporting and Investigation 4. Chemical Safety Management
11. Oversee, understand, comment and record testing and commissioning activities for new installation and upgrading of sewage treatment facilities.	3	1. Testing and Commission of Sewerage Systems
12. Plan, conduct and monitor efficiency of energy utilisation.	3	1. Energy Management training
13. Plan, execute and monitor implementation of Guided Self Regulation (GSR) at STP and comply with related regulations.	3	1. CePSTPO Training
14. Conduct assessment to staff competency and knowledge skills	3	1. Employee Appraisal Training 2. KPI Development Training

NO	DETAILS		
4	Area : Sewage Treatment		
	Job Title : Supervisor	Level : 4	
	Job Description :		
	A Supervisor is responsible to supervise teams and execute operations and maintenance of sewage treatment plants (STP) and Network Pumping Stations (NPS) based on guided Standard Operating Procedure (SOP) within designated operating areas so as to achieve optimum performance standards and levels of service.		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	3	1. Team Building Training 2. Supervisory Development Program Modules (roles & responsibilities, staff disciplines and performance management) 3. Effective Time Management Skills Training
	2. To communicate with other team members/supervisor	3	1. Effective Communication Training
	3. To possess analytical skills	2	1. Critical Thinking and Strategic Problem Solving
	4. Demonstrate strong value of integrity	3	1. Integrity Training 2. Motivation and Self-Empowerment Skills 3. Self Transformation to Achieve Results
Technical Skills	Required Competency Level	Recommended Training	
1. Operate, perform, schedule, guide and supervise daily operations and maintenance of sewage treatment plants and pumping stations.	3	1. Introduction to Treatment Plant Operation 2. Standard Operating Procedure Training 3. Organizational Rules and Regulations 4. Basic Regulatory Requirement	

Technical Skills	Required Competency Level	Recommended Training
2. Check, analyse, identify, troubleshoot and rectify plant process malfunction, monitor effluent results and propose mitigation/remedial measures of sewage treatment plant.	3	1. Treatment Process Module - Introduction to Sewage Treatment Operation & Maintenance Requirement and Process Monitoring and Control 2. Treatment Module - Microscopic Technique for Activated Sludge Diagnosis & Process
3. Check, analyse, identify, troubleshoot and rectify upset condition of sludge treatment facilities.	3	1. Operation and Maintenance Sludge Reception Facilities and Mechanised Dewatering Unit
4. Supervise, schedule and monitor sampling procedure and record sampling activity.	3	1. Sewage Sampling Technique and Record 2. Sampling for Sludge Disposal Site
5. Implement works activity in compliance with the approved Job Safety Analysis (JSA) procedures, adherence to PPE requirement and safe working practices.	2	1. Authorised Gas Tester II (AGT) 2. NIOSH Confined Space Training 3. Confined Space training 4. First Aid Training 5. Defensive Driving Training
6. Support the implementation of Asset Management System	2	1. Asset Management System Training
7. Monitor equipment operations, carry out minor services and coordinate major servicing of equipment for optimum plant operations and performance.	3	1. Mechanical and Electrical First Line Maintenance Module 2. Mechanical and Electrical Flexi-Skill Module

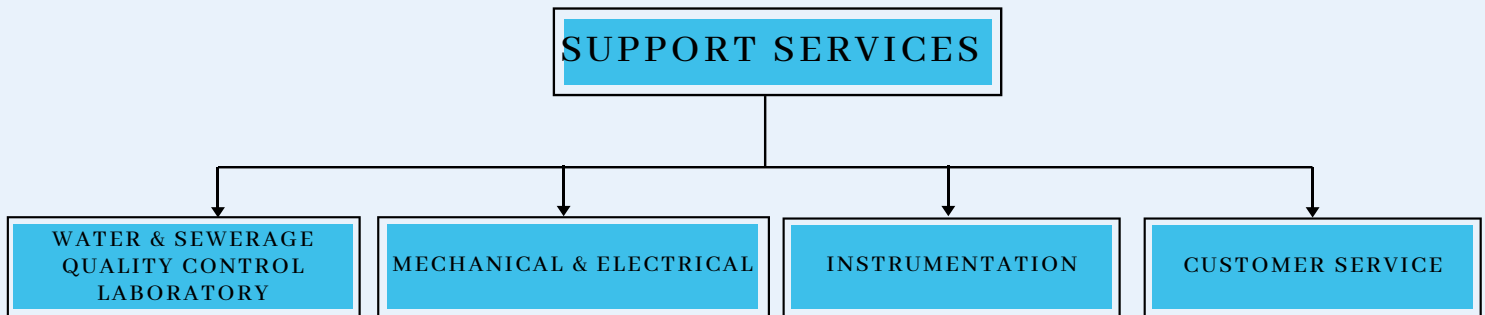
NO	DETAILS		
5	Area : Sewage Treatment		
	Job Title : Technician	Level : 3	
	Job Description :		
	A Technician is responsible to conduct, monitor and report operations and maintenance of sewage treatment plants (STP) and Network Pumping Stations (NPS) based on guided Standard Operating Procedure (SOP) within designated operating areas so as to achieve optimum performance standards and levels of service.		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	2	1. Team Building Training
	2. To communicate with other team members/supervisor	2	1. Effective Communication Training
	3. Demonstrate strong value of integrity	3	1. Integrity Training 2. Motivation and Self Empowerment Skills 3. Self Transformation to Achieve Results
	Technical Skills	Required Competency Level	Recommended Training
	1. Conduct, monitor and report on operation and maintenance of various sewage treatment works.	3	1. Introduction to Treatment Plants Operations. 2. Introduction to Sewage Treatment Operation & Maintenance Requirements and Process Monitoring and Control. 3. Microscopic Techniques for Activated Sludge Diagnosis & Process. 4. Sewage Sampling Technique and Records.
2. Conduct, monitor and report on operations and maintenance of various type of sewage treatment process unit.	3	1. Introduction to Sewage Treatment Operation & Maintenance Requirements and Process Monitoring and Control.	

Technical Skills	Required Competency Level	Recommended Training
3. Conduct, monitor and report on operations and and maintenance of sludge treatment facility.	3	1. Training on Sludge Management. 2. Microscopic Techniques for Activated Sludge Diagnosis & Process. 3. Operation and Maintenance of Sludge Reception Facility (SRF) and MDU.
4. Operate, monitor and report on maintenance of electrical and mechanical equipments.	3	1. Flexi Skill on Electrical and Mechanical. 2. First Line Maintenance on Electrical and Mechanical.
5. Implement, monitor and report on Occupational Health and Safety regulations and prepare record of activities.	3	1. NIOSH Authorised Entry/Stand-By Person (AE/SP). 2. First Aid Certification Program. 3. Chemical Safety Management. 4. Defensive Driving Training

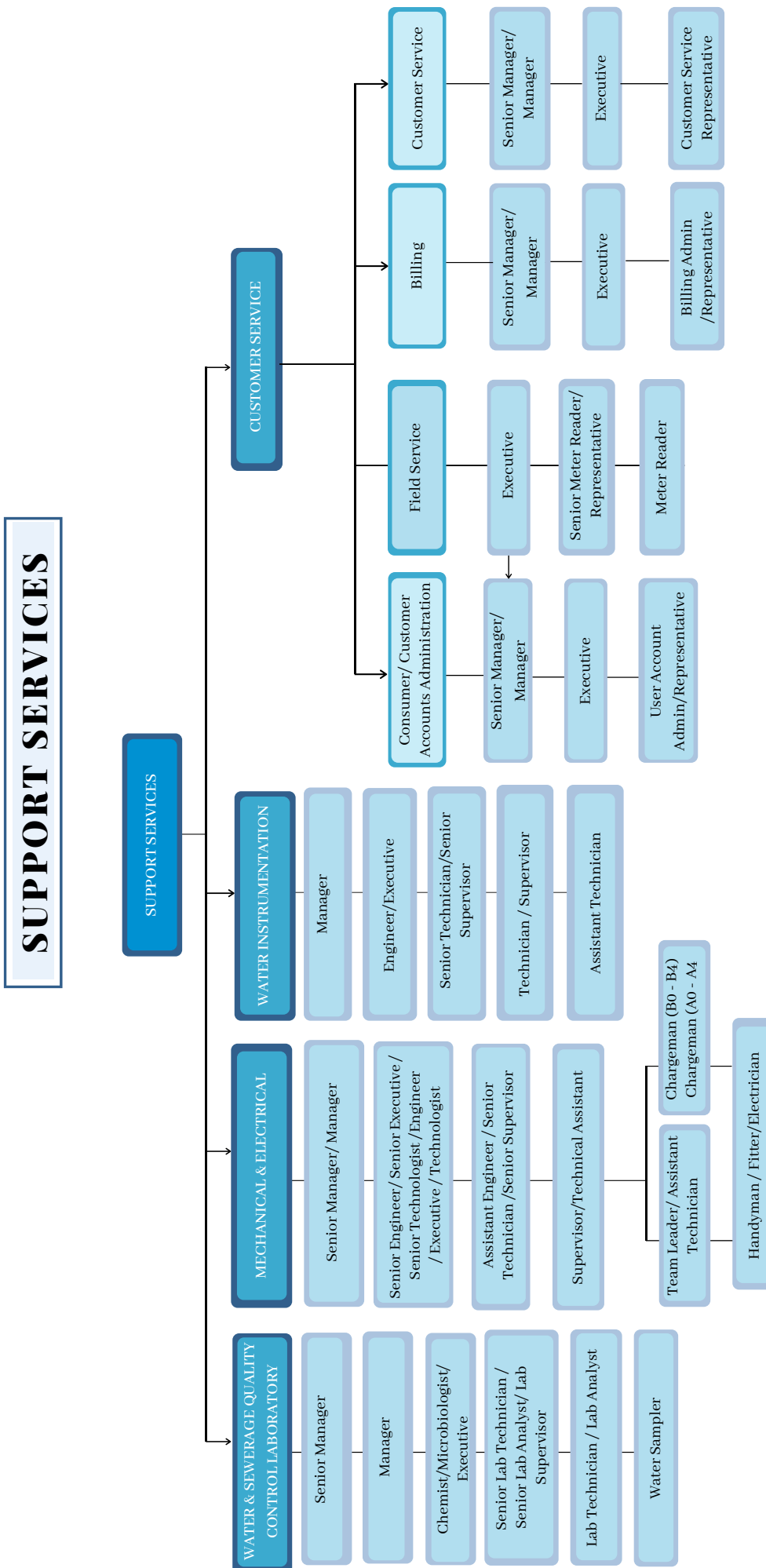
NO	DETAILS		
6	Area : Sewage Treatment		
	Job Title : Operator	Level : 2	
	Job Description :		
	An Operator is responsible to carry out operations and maintenance of sewage treatment plants (STP) and Network Pumping Stations (NPS) based on guided Standard Operating Procedure (SOP) within designated operating areas so as to achieve optimum performance standards and levels of service.		
	Soft Skills	Required Competency Level	Recommended Training
	1. The ability to work as part of a team	2	1. Team Building Training
	2. To communicate with other team members/supervisor	2	1. Effective Communication Training
	3. Demonstrate strong value of integrity	3	1. Integrity Training 2. Motivation and Self Empowerment Skills 3. Self Transformation to Achieve Results
	Technical Skills	Required Competency Level	Recommended Training
	1. Carry out operation and maintenance of various sewage treatment works.	2	1. Introduction to Treatment Plants Operations. 2. Introduction to Sewage Treatment Operation & Maintenance Requirements and Process Monitoring and Control. 3. Microscopic Techniques for Activated Sludge Diagnosis & Process. 4. Sewage Sampling Technique and Records.
2. Carry out operations and maintenance of sludge treatment facility.	2	1. Training on Sludge Management. 2. Operation & Maintenance of Sludge Reception Facility (SRF) and MDU.	

Technical Skills	Required Competency Level	Recommended Training
3. Carry out operations and maintenance of various type of sewage treatment process unit.	3	1. First Line Maintenance on Electrical and Mechanical. 2. Introduction to Sewage Treatment Operation & Maintenance Requirements and Process Monitoring and Control.
4. Operate and carry out maintenance of electrical and mechanical equipments.	3	1. First Line Maintenance on Electrical and Mechanical.
5. Carry out implementation of Occupational Health and Safety regulations.	3	1. NIOSH Authorised Entry/Stand-By Person (AE/SP). 2. First Aid Certification Program. 3. Chemical Safety Management.

FOCUS AREA III : SUPPORT SERVICES
WATER & SEWERAGE QUALITY CONTROL LABORATORY
MECHANICAL & ELECTRICAL
INSTRUMENTATION
CUSTOMER SERVICE



CONTENT :
● CAREER PATHWAYS
● JOB DESCRIPTIONS
● SKILLS COMPETENCIES
● REQUIRED COMPETENCIES LEVEL
● RECOMMENDED TRAINING PROGRAMMES



NO	DETAILS		
1	Area : Water and Sewerage Quality Control Laboratory		
	Job Title : Water Quality & Laboratory Senior Manager	Level : 7	
	Job Description :		
	<p>A Water Quality Senior Manager responsible to develop and validate new and improved test methods and establish improved analytical techniques for the purpose of product testing and quality control. He/She liaises with government agencies, testing laboratories and external suppliers on matters relating to regulatory requirements, international standards and product specifications. He supports laboratory operations by validating the technical specifications of new laboratory equipment and providing guidance for the conduct of laboratory special projects. The Senior Laboratory Chemist ensures the compliance of laboratory activities with Workplace Safety and Health (WSH) and Environmental Management System (EMS) requirements, by reviewing laboratory safe work practices and Standard Operating Procedures (SOPs). He manages non-conformance by highlighting standard deviation and product failure data to the quality assurance team. He validates continuous improvement initiatives and activities for the laboratory, and provides coaching and mentoring to the laboratory team. The Senior Laboratory Chemist leads a team of chemists in the laboratory. He is able to multi-task, and possesses excellent analytical, communication and interpersonal skills.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Problem Solving	4	1. Integrity Training
	2. Sense Making Decision / Bullet Proof	4	1. Leadership and Managerial Training/Bullet Proof Manager Training
	3. Communication	4	1. Communication Skills Training / Train the Trainer (TTT)
	4. Decision Making	4	1. Problem Solving and Decision Making Training
5. Time Management	4	1. Time Management Training	
6. Knowledge on IoT and IR4.0	4	1. Training on IR4.0 and IOT related	
7. Strategic Planning and Critical Thinking	4	1. Strategic Planning and Critical Thinking Training	

Technical Skills	Required Competency Level	Recommended Training
1. Prepare yearly budget	4	1. Budget & KPI Training
2. Apply Analytical Method Validation in the Lab Operation	2	1. Analytical Method Validation
3. Apply Measurement Uncertainty	2	1. Measurement Uncertainty Training
4. Maintain Professional Development Management	3	1. Professional CPD Hour Training
5. Apply Data and Statistical Analytics	3	1. Data and Statistical Analytics Training
6. Comply Environmental Management System Framework Development and Implementation	3	1. Environmental Management System Training-EQA, ISO14000
7. Manage Incident Investigation	3	1. ERP-Emergency Response Plan Training / Early Warning Systems (EWS)
8. Utilize Laboratory Data Reporting and Analysis Management / Laboratory Information Management System (LIMS)	2	1. Laboratory Information Management System (LIMS) Training
9. Adopt Laboratory Equipment Maintenance and Calibration Management	2	1. Laboratory Equipment Maintenance and Calibration Management Training
10. Adopt Laboratory Operations Management according to ISO/IEC 17025	3	1. Awareness of Lab Management System ISO/IEC 17025 Training
11. Identify Non-Conformance in the Lab Operation	2	1. Awareness of Lab Management System ISO/IEC 17025 Training
12. Manage Procurement efficiently	3	1. Procurement Management Training
13. Ensure Product Testing is carried out properly	2	1. Product Testing Training/ Drinking Water Quality Standard

Technical Skills	Required Competency Level	Recommended Training
14. Execute Project Management as per plan or according to the schedule	3	1. Project Management Training
15. Manage and Monitor Quality Assurance / Quality Control as per SOP	3	1. Advanced Water Quality Control/Assurance Training
16. Manage Sample as per Sampling Protocol	3	1. Water Quality Sampling Protocol Training
17. Prepare Technical Report Writing and Presentation	3	1. Technical Report Writing and Presentation Training
18. Conduct Technical Training, Coaching and Assessment Management	3	1. Technical Training, Coaching and Assessment Management Training
19. Ensure Implementation of Safety and Health Framework Development at Workplace	3	1. Safety Health and Environment (SHE) Regulations Training
20. Identify and Register Safety and Health Hazard Identification and Risk Control Management	3	1. Risk Management Training/ Early Warning Systems (EWS) Training
21. Approve Test Analysis Report	3	1. Awareness of Lab Management System ISO/IEC 17025 Training
22. Monitor Water Treatment Plant Process efficiency	3	1. Water Treatment Plant Proses-WTP Training
23. Manage and Implement Water Safety Plan	3	1. Water Safety Plan-WSP Training
24. Monitor and Implement Drinking Water Quality Standard	3	1. Drinking Water Quality Monitoring System Training
25. Develop and Monitor Water Quality at Network Distribution System	3	1. Network Distribution System Training
26. Troubleshoot and Improve of Water Quality in Treatment Plant	4	1. Advanced Water Treatment Plant Proses-WTP Training

NO	DETAILS		
2	Area : Water and Sewerage Quality Control Laboratory		
	Job Title : Water Quality & Laboratory Manager	Level : 6	
	Job Description :		
	<p>A Lab and Water Quality Manager responsible to apply existing test methods and analytical techniques for product testing and quality control, and recommends improvements in accordance with international best practice standards and procedures. He/She manages laboratory operation activities to meet customers' needs within schedule, and in accordance with the organisation's quality objectives. He develops and maintains laboratory Standard Operating Procedures (SOPs) and carries out laboratory special projects. The Laboratory Chemist is responsible for maintaining the compliance of laboratory activities with Workplace Safety and Health (WSH) and Environmental Management System (EMS) requirements, which includes implementing the Management of Hazardous Chemicals Programme (MHCP) in the laboratory. He manages non-conformance by identifying standard deviation and product failure data from the laboratory information management system (LIMS). In addition, he implements continuous improvement initiatives and activities for the laboratory. The Laboratory Chemist works in a team in the laboratory.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Problem Solving	4	1. Integrity Training
	2. Sense Making Decision / Bullet Proof	4	1. Leadership and Managerial Training / Bullet Proof Manager Training
	3. Communication	4	1. Communication Skills Training / Train the Trainer (TTT)
	4. Decision Making	4	1. Problem Solving and Decision Making Training
5. Time Management	4	1. Time Management Training	
6. Knowledge on IoT and IR4.0	4	1. Training on IR4.0 and IOT related	
7. Strategic Planning and Critical Thinking	4	1. Strategic Planning and Critical Thinking	

Technical Skills	Required Competency Level	Recommended Training
1. Prepare yearly budget	4	1. Budget & KPI Training
2. Apply Analytical Method Validation in the Lab Operation	4	1. Analytical Method Validation
3. Apply Measurement Uncertainty	3	1. Measurement Uncertainty Training
4. Maintain Professional Development Management	3	1. Professional CPD Hour Training
5. Apply Data and Statistical Analytics	3	1. Data and Statistical Analytics Training
6. Comply Environmental Management System Framework Development and Implementation	3	1. Environmental Management System Training-EQA, ISO14000
7. Manage Incident Investigation	4	1. ERP-Emergency Response Plan Training /Early Warning Systems (EWS)
8. Utilize Laboratory Data Reporting and Analysis Management / Laboratory Information Management System (LIMS)	4	1. Laboratory Information Management System (LIMS) Training
9. Adopt Laboratory Equipment Maintenance and Calibration Management	3	1. Laboratory Equipment Maintenance and Calibration Management Training
10. Adopt Laboratory Operations Management according to ISO/IEC 17025	4	1. Awareness of Lab Management System ISO/IEC 17025 Training
11. Identify Non-Conformance in the Lab Operation	4	1. Awareness Training of Lab Management System ISO/IEC 17025 Training
12. Manage Procurement efficiently	2	1. Procurement Management Training
13. Ensure Product Testing is carried out properly	3	1. Product Testing Training/Drinking Water Quality Standard

Technical Skills	Required Competency Level	Recommended Training
14. Execute Project Management as per plan or according to the schedule	4	1. Project Management Training
15. Manage and Monitor Quality Assurance / Quality Control as per SOP	4	1. Advanced Water Quality Control/Assurance Training
16. Manage Sample as per Sampling Protocol	3	1. Water Quality Sampling Protocol Training
17. Prepare Technical Report Writing and Presentation	4	1. Technical Report Writing and Presentation Training
18. Conduct Technical Training, Coaching and Assessment Management	3	1. Technical Training, Coaching and Assessment Management Training
19. Ensure Implementation of Workplace Safety and Health Framework Development at Workplace	3	1. Safety Health and Environment (SHE) Regulations Training
20. Identify and Register Workplace Safety and Health Hazard Identification and Risk Control Management	3	1. Risk Management Training / Early Warning Systems (EWS) Training
21. Monitor Water Treatment Plant Process efficiency	4	1. Water Treatment Plant Proses-WTP Training
22. Manage and Implement Water Safety Plan	4	1. Water Safety Plan-WSP Training
23. Monitor and Implement Drinking Water Quality Standard	4	1. Drinking Water Quality Monitoring System Training
24. Develop and Monitor Water quality at Network Distribution System	3	1. Network Distribution System Training
25. Troubleshoot and Improve of Water Quality in Treatment Plant	4	1. Advanced Water Treatment Plant Proses-WTP Training

NO	DETAILS		
3	Area : Water and Sewerage Quality Control Laboratory		
	Job Title : Chemist / Microbiologist / Executive	Level : 5	
	Job Description :		
	<p>A Chemist / Microbiologist / Executive responsible to apply existing test methods and analytical techniques for product testing and quality control, and recommends improvements in accordance with international best practice standards and procedures. He/She manages laboratory operation activities to meet customers' needs within schedule, and in accordance with the organisation's quality objectives. He develops and maintains laboratory Standard Operating Procedures (SOPs) and carries out laboratory special projects. The Laboratory Chemist is responsible for maintaining the compliance of laboratory activities with Workplace Safety and Health (WSH) and Environmental Management System (EMS) requirements, which includes implementing the Management of Hazardous Chemicals Programme (MHCP) in the laboratory. He manages non-conformance by identifying standard deviation and product failure data from the laboratory information management system (LIMS). In addition, he implements continuous improvement initiatives and activities for the laboratory. The Laboratory Chemist works in a team in the laboratory.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Problem Solving	3	1. Integrity Training
	2. Sense Making Decision / Bullet Proof	3	1. Executive Training Programme
	3. Communication	3	1. Communication Skills Training / Train the Trainer (TTT)
	4. Time Management	3	1. Time Management Training
	5. Developing People	3	1. Teamwork Training
6. Report Writing	3	1. Report Writing Training	
Technical Skills	Required Competency Level	Recommended Training	
1. Up to date on Pandemic Pollution	4	1. Waterborne Training	
2. Up to date on Latest Instrumentation / Method for Water Quality Testing	4	1. WQ Monitoring and Instrumentation	

Technical Skills	Required Competency Level	Recommended Training
3. Utilize Laboratory Information Management System (LIMS)	4	1. Awareness of Lab Management System ISO/IEC 17025 Training
4. Prepare yearly budget	3	1. Budget & KPI Training
5. Apply Analytical Method Validation in the Lab Operation	3	1. Analytical Method Validation
6. Apply Measurement Uncertainty	3	1. Measurement Uncertainty Training
7. Maintain Professional Development Management	3	1. Professional CPD Hour Training
8. To apply Data and Statistical Analytics	3	1. Data and Statistical Analytics Training
9. To comply Environmental Management System Framework Development and Implementation	3	1. Environmental Management System Training-EQA, ISO14000
10. To manage Incident Investigation	3	1. ERP-Emergency Response Plan Training /Early Warning Systems (EWS)
11. To utilize Laboratory Data Reporting and Analysis Management / Laboratory Information Management System (LIMS)	3	1. Laboratory Information Management System (LIMS) Training
12. To adopt Laboratory Equipment Maintenance and Calibration Management	3	1. Laboratory Equipment Maintenance and Calibration Management Training
13. To adopt Laboratory Operations Management according to ISO/IEC 17025	3	1. Awareness of Lab Management System ISO/IEC 17025 Training
14. To identify Non-Conformance in the Lab Operation	3	1. Awareness of Lab Management System ISO/IEC 17025 Training
15. To ensure Product Testing is carried out properly	3	1. Product Testing Training/ Drinking Water Quality Standard

Technical Skills	Required Competency Level	Recommended Training
16. To execute Project Management as per plan or according to the schedule	3	1. Project Management Training
17. To manage and Monitor Quality Assurance / Quality Control as per SOP	3	1. Quality Control Training /Quality Assurance Training
18. To manage Sample as per Sampling Protocol	3	1. Water Quality Sampling Protocol Training
19. To prepare Technical Report Writing and Presentation	3	1. Technical Report Writing and Presentation Training
20. To conduct Technical Training, Coaching and Assessment Management	3	1. Technical Training, Coaching and Assessment Management Training
21. To ensure Implementation of Workplace Safety and Health Framework Development at Workplace	3	1. Safety Health and Environment (SHE) Regulations
22. To identify and Register Workplace Safety and Health Hazard Identification and Risk Control Management	3	1. Risk Management Training / Early Warning Systems (EWS) Training
23. To approve Test Analysis Report	3	1. Awareness of Lab Management System ISO/IEC 17025 Training
24. To troubleshoot and Improve of Water Quality in Treatment Plant	3	1. Water Treatment Plant Proses-WTP Training
25. To manage and Implement Water Safety Plan	3	1. Water Safety Plan-WSP Training

NO	DETAILS																							
4	Area : Water and Sewerage Quality Control Laboratory																							
	Job Title : Senior Lab Technician / Senior Lab Analyst / Lab Supervisor	Level : 4																						
	Job Description :																							
	<p>A Water Quality Senior Lab Technician / Senior Lab Analyst / Lab Supervisor are responsible to coordinates work activities among team members in the laboratory, such as the preparation of stock solutions and reagents, laboratory consumable inventory checks, and purchase and qualification of new laboratory equipment and consumables. He/She ensures that team members comply with Workplace Safety and Health (WSH) and Environmental Management System (EMS) requirements, and adhere to good housekeeping practices. The Senior Laboratory Technician /Technologist performs trending and analyses on sample testing results to ensure conformance with product quality, and initiates corrective actions for non-conformance issues. He also contributes to staff and organisational development by identifying opportunities for continuous improvement and providing guidance to junior staff. The Senior Laboratory Technician/Technologist usually works in a team, on either a day or rotating shift, in the laboratory. He is organised and meticulous, possesses good communication skills, and is able to work independently with minimal supervision as well as interact effectively with others.</p>																							
	<table border="1"> <thead> <tr> <th data-bbox="188 1153 667 1254">Soft Skills</th> <th data-bbox="667 1153 1034 1254">Required Competency Level</th> <th data-bbox="1034 1153 1479 1254">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1254 667 1305">1. Problem Solving</td> <td data-bbox="667 1254 1034 1305">3</td> <td data-bbox="1034 1254 1479 1305">1. Integrity Training</td> </tr> <tr> <td data-bbox="188 1305 667 1397">2. Communication</td> <td data-bbox="667 1305 1034 1397">3</td> <td data-bbox="1034 1305 1479 1397">1. Communication Skills Training</td> </tr> <tr> <td data-bbox="188 1397 667 1449">3. Teamwork</td> <td data-bbox="667 1397 1034 1449">4</td> <td data-bbox="1034 1397 1479 1449">1. Teamwork Training</td> </tr> <tr> <td data-bbox="188 1449 667 1500">4. Supervisory</td> <td data-bbox="667 1449 1034 1500">3</td> <td data-bbox="1034 1449 1479 1500">1. Supervisory Training</td> </tr> <tr> <td data-bbox="188 1500 667 1592">5. Time Management</td> <td data-bbox="667 1500 1034 1592">3</td> <td data-bbox="1034 1500 1479 1592">1. Time Management Training</td> </tr> <tr> <td data-bbox="188 1592 667 1731">6. Report Writing</td> <td data-bbox="667 1592 1034 1731">3</td> <td data-bbox="1034 1592 1479 1731">1. Report Writing Training</td> </tr> </tbody> </table>			Soft Skills	Required Competency Level	Recommended Training	1. Problem Solving	3	1. Integrity Training	2. Communication	3	1. Communication Skills Training	3. Teamwork	4	1. Teamwork Training	4. Supervisory	3	1. Supervisory Training	5. Time Management	3	1. Time Management Training	6. Report Writing	3	1. Report Writing Training
	Soft Skills	Required Competency Level	Recommended Training																					
	1. Problem Solving	3	1. Integrity Training																					
	2. Communication	3	1. Communication Skills Training																					
	3. Teamwork	4	1. Teamwork Training																					
	4. Supervisory	3	1. Supervisory Training																					
	5. Time Management	3	1. Time Management Training																					
	6. Report Writing	3	1. Report Writing Training																					
	<table border="1"> <thead> <tr> <th data-bbox="188 1731 667 1832">Technical Skills</th> <th data-bbox="667 1731 1034 1832">Required Competency Level</th> <th data-bbox="1034 1731 1479 1832">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1832 667 1971">1. To up to date on Pandemic Pollution</td> <td data-bbox="667 1832 1034 1971">4</td> <td data-bbox="1034 1832 1479 1971">1. Waterborne Training WQ Monitoring and Instrumentation</td> </tr> <tr> <td data-bbox="188 1971 667 2157">2. To prepare yearly budget</td> <td data-bbox="667 1971 1034 2157">3</td> <td data-bbox="1034 1971 1479 2157">1. Budget Training</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	1. To up to date on Pandemic Pollution	4	1. Waterborne Training WQ Monitoring and Instrumentation	2. To prepare yearly budget	3	1. Budget Training												
Technical Skills	Required Competency Level	Recommended Training																						
1. To up to date on Pandemic Pollution	4	1. Waterborne Training WQ Monitoring and Instrumentation																						
2. To prepare yearly budget	3	1. Budget Training																						
<table border="1"> <thead> <tr> <th data-bbox="188 1832 667 1971">Technical Skills</th> <th data-bbox="667 1832 1034 1971">Required Competency Level</th> <th data-bbox="1034 1832 1479 1971">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1832 667 1971">1. To up to date on Pandemic Pollution</td> <td data-bbox="667 1832 1034 1971">4</td> <td data-bbox="1034 1832 1479 1971">1. Waterborne Training WQ Monitoring and Instrumentation</td> </tr> <tr> <td data-bbox="188 1971 667 2157">2. To prepare yearly budget</td> <td data-bbox="667 1971 1034 2157">3</td> <td data-bbox="1034 1971 1479 2157">1. Budget Training</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	1. To up to date on Pandemic Pollution	4	1. Waterborne Training WQ Monitoring and Instrumentation	2. To prepare yearly budget	3	1. Budget Training													
Technical Skills	Required Competency Level	Recommended Training																						
1. To up to date on Pandemic Pollution	4	1. Waterborne Training WQ Monitoring and Instrumentation																						
2. To prepare yearly budget	3	1. Budget Training																						
<table border="1"> <thead> <tr> <th data-bbox="188 1971 667 2157">Technical Skills</th> <th data-bbox="667 1971 1034 2157">Required Competency Level</th> <th data-bbox="1034 1971 1479 2157">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1971 667 2157">2. To prepare yearly budget</td> <td data-bbox="667 1971 1034 2157">3</td> <td data-bbox="1034 1971 1479 2157">1. Budget Training</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	2. To prepare yearly budget	3	1. Budget Training																
Technical Skills	Required Competency Level	Recommended Training																						
2. To prepare yearly budget	3	1. Budget Training																						

Technical Skills	Required Competency Level	Recommended Training
3. To up to date on Pandemic Pollution	4	1. Waterborne Training WQ Monitoring and Instrumentation
4. To prepare yearly budget	3	1. Budget Training
5. To produce data for Lab Report	3	1. Lab Report Organizing Training
6. To handle Chemical Waste and Hazardous	3	1. Chemical Waste and Hazardous Handling Training
7. To apply Data and Statistical Analytics	3	1. Data and Statistical Analytics Training
8. To apply Measurement Uncertainty	4	1. Measurement Uncertainty Training
9. To handle, maintain, troubleshoot and calibrate of Water Quality Testing Instrument	4	1. Handling of Water Quality Testing Instrument Training
10. To utilize Laboratory Information Management System (LIMS)	3	1. Laboratory Information Management System (LIMS) Training
11. To troubleshoot Lab Equipment	3	1. Troubleshooting of Lab Equipment Training
12. To apply Analytical Method Validation in the Lab Operation	2	1. Analytical Method Validation
13. To comply Environmental Management System Framework Development and Implementation	2	1. Environmental Management System Training-EQA, ISO14000
14. To manage Incident Investigation	3	1. ERP-Emergency Response Plan Training /Early Warning Systems (EWS)
15. To utilize Laboratory Data Reporting and Analysis Management / Laboratory Information Management System (LIMS)	3	1. Laboratory Information Management System (LIMS) Training
16. To identify Materials Qualification	3	1. Materials Qualification Training

Technical Skills	Required Competency Level	Recommended Training
17. To adopt Laboratory Equipment Maintenance and Calibration Management	3	1. Awareness of Lab Management System ISO/IEC 17025 Training
18. To identify Non-Conformance in the Lab Operation	3	1. Awareness of Lab Management System ISO/IEC 17025 Training
19. To manage Procurement efficiently	3	1. Procurement Management Training
20. To ensure Product Testing is carried out properly	3	1. Product Testing Training/Drinking Water Quality Standard
21. To execute Project Management as per plan or according to the schedule	3	1. Project Management Training
22. To manage and Monitor Quality Assurance / Quality Control as per SOP	3	1. Quality Control Training /Quality Assurance Training
23. To manage Sample as per Sampling Protocol	3	1. Water Quality Sampling Protocol Training
24. To prepare Technical Report Writing	3	1. Technical Report Writing and Presentation Training
25. To conduct Technical Training, Coaching and Assessment Management	2	1. Technical Training, Coaching and Assessment Management Training
26. To ensure Implementation of Safety and Health Framework Development at Workplace	3	1. Safety Health and Environment (SHE) Regulations
27. To identify and register Safety and Health Hazard Identification and Risk Control Management	3	1. Risk Management Training / Early Warning Systems (EWS) Training
28. To troubleshoot and Improve of Water Quality in Treatment Plant	3	1. Water Treatment Plant Proses-WTP Training

Technical Skills	Required Competency Level	Recommended Training
29. To manage and Implement Water Safety Plan	3	1. Water Safety Plan-WSP Training

NO	DETAILS																				
5	Area : Water and Sewerage Quality Control Laboratory																				
	Job Title : Lab Technician / Lab Analyst	Level : 3																			
	Job Description :																				
	<p>A Water Quality Lab Technician / Lab Analyst is responsible to executes day-to-day laboratory operations, such as performing basic calibration and simple troubleshooting on a range of laboratory equipment and/or on-line analysing devices, as well as laboratory consumable inventory checks. He/She handles, stores and transports hazardous substances and dangerous goods in accordance with Workplace Safety and Health (WSH) and Environmental Management System (EMS) requirements, and helps to respond to chemical spillages and emergencies. The Laboratory Technician/Technologist performs routine and non-routine product and in-process analyses, in accordance with documented test methods, to ensure that product quality is as per specifications. He records and maintains up-to-date sample testing results in the laboratory information management system (LIMS). He also contributes to organisational development by supporting continuous improvement projects. The Laboratory Technician/Technologist usually works in a team, on either a day or rotating shift, in the laboratory. He is meticulous, and is able to work independently as well as interact effectively with others.</p>																				
	<table border="1"> <thead> <tr> <th data-bbox="188 1153 663 1249">Soft Skills</th> <th data-bbox="663 1153 1031 1249">Required Competency Level</th> <th data-bbox="1031 1153 1476 1249">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1249 663 1305">1. Teamwork</td> <td data-bbox="663 1249 1031 1305">2</td> <td data-bbox="1031 1249 1476 1305">1. Teamwork Training</td> </tr> <tr> <td data-bbox="188 1305 663 1361">2. Problem Solving</td> <td data-bbox="663 1305 1031 1361">2</td> <td data-bbox="1031 1305 1476 1361">1. Integrity Training</td> </tr> <tr> <td data-bbox="188 1361 663 1417">3. Supervisory</td> <td data-bbox="663 1361 1031 1417">2</td> <td data-bbox="1031 1361 1476 1417">1. Supervisory Training</td> </tr> <tr> <td data-bbox="188 1417 663 1503">4. Communication</td> <td data-bbox="663 1417 1031 1503">2</td> <td data-bbox="1031 1417 1476 1503">1. Communication Skills Training</td> </tr> <tr> <td data-bbox="188 1503 663 1588">5. Time Management</td> <td data-bbox="663 1503 1031 1588">2</td> <td data-bbox="1031 1503 1476 1588">1. Time Management Training</td> </tr> </tbody> </table>			Soft Skills	Required Competency Level	Recommended Training	1. Teamwork	2	1. Teamwork Training	2. Problem Solving	2	1. Integrity Training	3. Supervisory	2	1. Supervisory Training	4. Communication	2	1. Communication Skills Training	5. Time Management	2	1. Time Management Training
	Soft Skills	Required Competency Level	Recommended Training																		
	1. Teamwork	2	1. Teamwork Training																		
	2. Problem Solving	2	1. Integrity Training																		
	3. Supervisory	2	1. Supervisory Training																		
	4. Communication	2	1. Communication Skills Training																		
	5. Time Management	2	1. Time Management Training																		
	<table border="1"> <thead> <tr> <th data-bbox="188 1588 663 1684">Technical Skills</th> <th data-bbox="663 1588 1031 1684">Required Competency Level</th> <th data-bbox="1031 1588 1476 1684">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1684 663 1818">1. To up to date on Pandemic Pollution</td> <td data-bbox="663 1684 1031 1818">2</td> <td data-bbox="1031 1684 1476 1818">1. Waterborne Training WQ Monitoring and Instrumentation</td> </tr> <tr> <td data-bbox="188 1818 663 1874">2. To prepare yearly budget</td> <td data-bbox="663 1818 1031 1874">2</td> <td data-bbox="1031 1818 1476 1874">1. Budget Training</td> </tr> <tr> <td data-bbox="188 1874 663 1960">3. To handle Water Testing Instrumentation</td> <td data-bbox="663 1874 1031 1960">3</td> <td data-bbox="1031 1874 1476 1960">1. Handling of Water Quality Testing Instrument Training</td> </tr> <tr> <td data-bbox="188 1960 663 2157">4. To troubleshoot and Improve of Water Quality in Treatment Plant</td> <td data-bbox="663 1960 1031 2157">2</td> <td data-bbox="1031 1960 1476 2157">1. To troubleshoot and Improve of Water Quality in Treatment Plant</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	1. To up to date on Pandemic Pollution	2	1. Waterborne Training WQ Monitoring and Instrumentation	2. To prepare yearly budget	2	1. Budget Training	3. To handle Water Testing Instrumentation	3	1. Handling of Water Quality Testing Instrument Training	4. To troubleshoot and Improve of Water Quality in Treatment Plant	2	1. To troubleshoot and Improve of Water Quality in Treatment Plant			
	Technical Skills	Required Competency Level	Recommended Training																		
	1. To up to date on Pandemic Pollution	2	1. Waterborne Training WQ Monitoring and Instrumentation																		
2. To prepare yearly budget	2	1. Budget Training																			
3. To handle Water Testing Instrumentation	3	1. Handling of Water Quality Testing Instrument Training																			
4. To troubleshoot and Improve of Water Quality in Treatment Plant	2	1. To troubleshoot and Improve of Water Quality in Treatment Plant																			
<table border="1"> <thead> <tr> <th data-bbox="188 1684 663 1818">Technical Skills</th> <th data-bbox="663 1684 1031 1818">Required Competency Level</th> <th data-bbox="1031 1684 1476 1818">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1684 663 1818">1. To up to date on Pandemic Pollution</td> <td data-bbox="663 1684 1031 1818">2</td> <td data-bbox="1031 1684 1476 1818">1. Waterborne Training WQ Monitoring and Instrumentation</td> </tr> <tr> <td data-bbox="188 1818 663 1874">2. To prepare yearly budget</td> <td data-bbox="663 1818 1031 1874">2</td> <td data-bbox="1031 1818 1476 1874">1. Budget Training</td> </tr> <tr> <td data-bbox="188 1874 663 1960">3. To handle Water Testing Instrumentation</td> <td data-bbox="663 1874 1031 1960">3</td> <td data-bbox="1031 1874 1476 1960">1. Handling of Water Quality Testing Instrument Training</td> </tr> <tr> <td data-bbox="188 1960 663 2157">4. To troubleshoot and Improve of Water Quality in Treatment Plant</td> <td data-bbox="663 1960 1031 2157">2</td> <td data-bbox="1031 1960 1476 2157">1. To troubleshoot and Improve of Water Quality in Treatment Plant</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	1. To up to date on Pandemic Pollution	2	1. Waterborne Training WQ Monitoring and Instrumentation	2. To prepare yearly budget	2	1. Budget Training	3. To handle Water Testing Instrumentation	3	1. Handling of Water Quality Testing Instrument Training	4. To troubleshoot and Improve of Water Quality in Treatment Plant	2	1. To troubleshoot and Improve of Water Quality in Treatment Plant				
Technical Skills	Required Competency Level	Recommended Training																			
1. To up to date on Pandemic Pollution	2	1. Waterborne Training WQ Monitoring and Instrumentation																			
2. To prepare yearly budget	2	1. Budget Training																			
3. To handle Water Testing Instrumentation	3	1. Handling of Water Quality Testing Instrument Training																			
4. To troubleshoot and Improve of Water Quality in Treatment Plant	2	1. To troubleshoot and Improve of Water Quality in Treatment Plant																			
<table border="1"> <thead> <tr> <th data-bbox="188 1818 663 1874">Technical Skills</th> <th data-bbox="663 1818 1031 1874">Required Competency Level</th> <th data-bbox="1031 1818 1476 1874">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1818 663 1874">2. To prepare yearly budget</td> <td data-bbox="663 1818 1031 1874">2</td> <td data-bbox="1031 1818 1476 1874">1. Budget Training</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	2. To prepare yearly budget	2	1. Budget Training													
Technical Skills	Required Competency Level	Recommended Training																			
2. To prepare yearly budget	2	1. Budget Training																			
<table border="1"> <thead> <tr> <th data-bbox="188 1874 663 1960">Technical Skills</th> <th data-bbox="663 1874 1031 1960">Required Competency Level</th> <th data-bbox="1031 1874 1476 1960">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1874 663 1960">3. To handle Water Testing Instrumentation</td> <td data-bbox="663 1874 1031 1960">3</td> <td data-bbox="1031 1874 1476 1960">1. Handling of Water Quality Testing Instrument Training</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	3. To handle Water Testing Instrumentation	3	1. Handling of Water Quality Testing Instrument Training													
Technical Skills	Required Competency Level	Recommended Training																			
3. To handle Water Testing Instrumentation	3	1. Handling of Water Quality Testing Instrument Training																			
<table border="1"> <thead> <tr> <th data-bbox="188 1960 663 2157">Technical Skills</th> <th data-bbox="663 1960 1031 2157">Required Competency Level</th> <th data-bbox="1031 1960 1476 2157">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1960 663 2157">4. To troubleshoot and Improve of Water Quality in Treatment Plant</td> <td data-bbox="663 1960 1031 2157">2</td> <td data-bbox="1031 1960 1476 2157">1. To troubleshoot and Improve of Water Quality in Treatment Plant</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	4. To troubleshoot and Improve of Water Quality in Treatment Plant	2	1. To troubleshoot and Improve of Water Quality in Treatment Plant													
Technical Skills	Required Competency Level	Recommended Training																			
4. To troubleshoot and Improve of Water Quality in Treatment Plant	2	1. To troubleshoot and Improve of Water Quality in Treatment Plant																			

Technical Skills	Required Competency Level	Recommended Training
5. To adopt Laboratory Equipment Maintenance and Calibration Management	3	1. Laboratory Equipment Maintenance and Calibration Management Training
6. To apply Analytical Method Validation in the Lab Operation	2	1. Analytical Method Validation
7. To apply Measurement Uncertainty	2	1. Measurement Uncertainty Training
8. To apply Data and Statistical Analytics	2	1. To apply Data and Statistical Analytics
9. To comply Environmental Management System Framework Development and Implementation	2	1. Environmental Management System Training-EQA, ISO14000
9. To manage Incident Investigation	2	1. ERP-Emergency Response Plan Training /Early Warning Systems (EWS)
10. To utilize Laboratory Data Reporting and Analysis Management / Laboratory Information Management System (LIMS)	2	1. Laboratory Information Management System (LIMS) Training
11. To adopt Laboratory Equipment Maintenance and Calibration Management	2	1. Laboratory Equipment Maintenance and Calibration Management Training
12. To adopt Laboratory Operations Management according to ISO/IEC 17025	2	1. Awareness of Lab Management System ISO/IEC 17025 Training
13. To identify Materials Qualification	2	1. Materials Qualification Training
14. To identify Non-Conformance in the Lab Operation	2	1. Awareness of Lab Management System ISO/IEC 17025 Training
15. To manage Procurement efficiently	2	1. Procurement Management Training
16. To manage and Implement Water Safety Plan	2	1. Water Safety Plan (WSP)

Technical Skills	Required Competency Level	Recommended Training
17. To ensure Product Testing carried out properly	2	1. Product Testing Training/ Drinking Water Quality Standard
18. To execute Project Management as per plan/ according to the schedule	2	1. Project Management Training
19. To manage and Monitor Quality Assurance / Quality Control as per SOP	2	1. Quality Control Training /Quality Assurance Training
20. To manage Sample as per Sampling Protocol	2	1. Water Quality Sampling Protocol Training
21. To manage Staff Management	2	1. Supervisory Training
22. To prepare Technical Report Writing	2	1. Technical Report Writing and Presentation Training
23. To conduct Technical Training, Coaching and Assessment Management	2	1. Technical Training, Coaching and Assessment Management Training
24. To ensure Implementation of Safety and Health Framework Development at Workplace	2	1. Safety Health and Environment (SHE) Regulations
25. To comply Environmental Management System Framework Development and Implementation	2	1. Environmental Management System Training-EQA, ISO14000
26. To identify and register Safety and Health Hazard Identification and Risk Control Management	2	1. Risk Management Training / Early Warning Systems (EWS) Training

NO	DETAILS																	
6	Area : Water and Sewerage Quality Control Laboratory																	
	Job Title : Water Sampler	Level : 2																
	Job Description :																	
	<p>A Water Sampler need to support work sampling water from rivers, reservoirs, pipelines, drinking water, wastewater and sludge for biological, chemical and physical analyses, receiving, logging in and distributing samples to laboratories for analyses or employees in the field assignment perform basic field analyses using portable, computerized analytical instruments. Employees are required to drive to and from sampling sites. Work includes preparing sample bottles for field work, including specialized cleaning, adding required chemical preservatives, labeling and organizing into coolers and other transport mechanisms. Ensuring that samples are valid and representative, based upon departmental sampling program and federal, state, and local guidelines is a significant aspect of the work. Employees are required to drive to and from sampling sites. Work is performed under the supervision of a scientific or technical supervisor.</p>																	
	<table border="1"> <thead> <tr> <th data-bbox="188 987 665 1084">Soft Skills</th> <th data-bbox="665 987 1032 1084">Required Competency Level</th> <th data-bbox="1032 987 1476 1084">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1084 665 1146">1. Teamwork</td> <td data-bbox="665 1084 1032 1146">2</td> <td data-bbox="1032 1084 1476 1146">1. Teamwork Training</td> </tr> <tr> <td data-bbox="188 1146 665 1243">2. Problem Solving</td> <td data-bbox="665 1146 1032 1243">2</td> <td data-bbox="1032 1146 1476 1243">1. Creative Problem Solving Training Effective</td> </tr> <tr> <td data-bbox="188 1243 665 1379">3. Interpersonal</td> <td data-bbox="665 1243 1032 1379">2</td> <td data-bbox="1032 1243 1476 1379">1. Communication and Interpersonal Skills Training</td> </tr> <tr> <td data-bbox="188 1379 665 1487">4. Time Management</td> <td data-bbox="665 1379 1032 1487">2</td> <td data-bbox="1032 1379 1476 1487">1. Time Management Training</td> </tr> </tbody> </table>			Soft Skills	Required Competency Level	Recommended Training	1. Teamwork	2	1. Teamwork Training	2. Problem Solving	2	1. Creative Problem Solving Training Effective	3. Interpersonal	2	1. Communication and Interpersonal Skills Training	4. Time Management	2	1. Time Management Training
	Soft Skills	Required Competency Level	Recommended Training															
	1. Teamwork	2	1. Teamwork Training															
	2. Problem Solving	2	1. Creative Problem Solving Training Effective															
	3. Interpersonal	2	1. Communication and Interpersonal Skills Training															
	4. Time Management	2	1. Time Management Training															
	<table border="1"> <thead> <tr> <th data-bbox="188 1487 665 1583">Technical Skills</th> <th data-bbox="665 1487 1032 1583">Required Competency Level</th> <th data-bbox="1032 1487 1476 1583">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1583 665 1697">1. To produce data for Lab Report</td> <td data-bbox="665 1583 1032 1697">2</td> <td data-bbox="1032 1583 1476 1697">1. Lab Report Organizing Training</td> </tr> <tr> <td data-bbox="188 1697 665 1839">2. To handle Chemical Waste and Hazardous</td> <td data-bbox="665 1697 1032 1839">2</td> <td data-bbox="1032 1697 1476 1839">1. Chemical Waste and Hazardous Handling Training</td> </tr> <tr> <td data-bbox="188 1839 665 2029">3. To adopt Laboratory Equipment Maintenance and Calibration Management</td> <td data-bbox="665 1839 1032 2029">2</td> <td data-bbox="1032 1839 1476 2029">1. Laboratory Equipment Maintenance and Calibration Management Training</td> </tr> <tr> <td data-bbox="188 2029 665 2157">4. Lab Safety</td> <td data-bbox="665 2029 1032 2157">2</td> <td data-bbox="1032 2029 1476 2157">1. Lab Safety</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	1. To produce data for Lab Report	2	1. Lab Report Organizing Training	2. To handle Chemical Waste and Hazardous	2	1. Chemical Waste and Hazardous Handling Training	3. To adopt Laboratory Equipment Maintenance and Calibration Management	2	1. Laboratory Equipment Maintenance and Calibration Management Training	4. Lab Safety	2	1. Lab Safety
	Technical Skills	Required Competency Level	Recommended Training															
	1. To produce data for Lab Report	2	1. Lab Report Organizing Training															
	2. To handle Chemical Waste and Hazardous	2	1. Chemical Waste and Hazardous Handling Training															
3. To adopt Laboratory Equipment Maintenance and Calibration Management	2	1. Laboratory Equipment Maintenance and Calibration Management Training																
4. Lab Safety	2	1. Lab Safety																
1. To produce data for Lab Report	2	1. Lab Report Organizing Training																
2. To handle Chemical Waste and Hazardous	2	1. Chemical Waste and Hazardous Handling Training																
3. To adopt Laboratory Equipment Maintenance and Calibration Management	2	1. Laboratory Equipment Maintenance and Calibration Management Training																
4. Lab Safety	2	1. Lab Safety																

Technical Skills	Required Competency Level	Recommended Training
6. To handle Water Testing Instrumentation	2	1. Handling of Water Quality Testing Instrument Training
7. To apply Analytical Method Validation in the Lab Operation	2	1. Analytical Method Validation
8. To comply Environmental Management System Framework Development and Implementation	2	1. Environmental Management System Training-EQA, ISO14000
9. To manage Incident Investigation	2	1. ERP-Emergency Response Plan Training / Early Warning Systems (EWS)
10. To utilize Laboratory Data Reporting and Analysis Management / Laboratory Information Management System (LIMS)	2	1. Laboratory Information Management System (LIMS) Training
11. To adopt Laboratory Equipment Maintenance and Calibration Management	2	1. Laboratory Equipment Maintenance and Calibration Management Training
12. To troubleshoot Lab Equipment	2	1. Troubleshooting of Lab Equipment Training
13. To adopt Laboratory Operations Management according to ISO/IEC 17025	2	1. Awareness of Lab Management System ISO/IEC 17025 Training
14. To identify Materials Qualification	2	1. Materials Qualification Training
15. To identify Non-Conformance in the Lab Operation	2	1. Awareness of Lab Management System ISO/IEC 17025 Training
16. To ensure Product Testing is carried out properly	2	1. Product Testing Training / Drinking Water Quality Standard
17. To manage and Monitor Quality Assurance / Quality Control as per SOP	2	1. Quality Control / Quality Assurance Training

Technical Skills	Required Competency Level	Recommended Training
18. To manage Sample as per Sampling Protocol	2	1. Water Quality Sampling Protocol Training
19. To ensure Implementation of Safety and Health Framework Development at Workplace	2	1. Safety Health and Environment (SHE) Regulations Training
20. To identify and register Safety and Health Hazard Identification and Risk Control Management	2	1. Risk Management Training / Early Warning Systems (EWS) Training
21. To manage and Implement Water Safety Plan	2	1. Water Safety Plan-WSP Training

NO	DETAILS		
1	Area : Mechanical & Electrical		
	Job Title : Senior Manager/Manager (Head of Department)	Level : 7	
	Job Description :		
	<p>A Mechanical & Electrical Senior Manager / Manager is responsible to produce specifications for; design, develop, manufacture and install new or modified mechanical / electrical components or systems. He/she is also responsible to assess project requirements, approve budgets, timescales and specifications with clients and managers, liaise with suppliers, inter-related department and local authorities, undertake relevant research, produce and implement designs and test procedures, measure performance of mechanical components, devices and engines, test, evaluate, modify and re-test products, write reports and documentation, provide technical advice, analyse and interpret data and lead the team member under his/her supervision.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Responsible and ensure effective communication and business presentation delivery	4	1. Effective Presentation, Communciation & Writing Skills 2. Business Delivery Training 3. Emotional Intelligence i.e. ESQ
	2. In charge of developing and maintaining a good teamwork	4	1. Team Building 2. Change Management i.e. Super Leadership
	3. Lead a problem solving	4	1. Problem Solving Skills Training 2. Coaching & Mentoring Training
4. Fully responsible in decision making	4	1. Strategic Thinking i.e. Critical & Creative 2. Design Thinking	
5. Continuously implement an improvement management and system integration	4	1. Continuous Improvement Program	
6. Manage Interpersonal skills	4	1. Interpersonal Skills i.e. Interpersonal conflict, relationship repair	

Technical Skills	Required Competency Level	Recommended Training
1. Evaluate and Approve Technical Software	4	1. 3D Modelling Training 2. Artificial Intelligence Application Training 3. Building Information Modelling Application Training
2. Review, decide policies and directions for Financial Planning	4	1. Cost Management & Budget Planning i.e. Fundamental, Finance for non-finance 2. P&L (profit & loss) 3. Best Practices in Procurement Management
3. Review, decide policies and directions for Business Performance Management	4	1. Performance Management & Improvement 2. KPI Setting and Implementation
4. Review and validate Data and Statistical Analytics	4	1. Dashboard Reporting 2. Data Analysis Using Business Application Software
5. Review and approve Engineering Design	4	1. Engineering Drawing Interpretation and Management 2. Standards, Codes of Practice, Rules and Regulations 3. Instrumentation and Control Design Engineering Management 4. Electrical System Design 5. Mechanical System Design
6. Review and approve Environmental Management System	4	1. Environmental Management System Framework Development and Implementation 2. Industrial Effluent Treatment System & Scheduled Waste Management
7. Review, decide policies & directions for Quality System Management	4	1. Quality Management System i.e. ISO, Controlling Documented Information

Technical Skills	Required Competency Level	Recommended Training
8. Review and approve Human Resource and Planning	4	1. Organizational Practices and Its Relevancy to staff Members 2. Learning and Development i.e. Competency Matrix etc. 3. Organizational Practices and Its Relevancy to staff Members i.e. Manpower Planning
9. Operation and Maintenance Management	4	1. Operation Management Training 2. Total Productive Maintenance (TPM) 3. Process Control 4. Power Transformer
10. Review and approve Organisational Risk Management	4	1. Risk Management i.e. Balanced scorecard, Quality System & Process, Emergency Action Plan (EAP)
11. Review, decide policies & directions for Sustainable Energy Management	4	1. Sustainable Energy Management 2. Renewable Energy Training & Green Technology
12. Review, decide policies & directions for Technology Application	4	1. IT Training (Microsoft Excel, Microsoft Words, Microsoft PowerPoint) 2. Automation Technology Application 3. Enterprise Resource Planning (ERP)
13. Review, decide policies & directions for Health, Safety and Environment Management	4	1. Workplace Safety and Health Framework Development and Implementation 2. HiRADC (Hazard Identification Risk Assessment and Determination Control)

Technical Skills	Required Competency Level	Recommended Training
14. Review and approve Testing and Commissioning - (Equipment and systems testing, Technical Inspection)	4	1. Equipment and Systems T&C 2. Operation Fundamental & Troubleshooting 3. Mechanical & Electrical System Commissioning

NO	DETAILS		
2	Area : Mechanical & Electrical		
	Job Title : Senior Engineer, Engineer, Senior Executive, Executive, Senior Technologist, Technologist	Level : 6	
	Job Description :		
	<p>A Mechanical & Electrical Senior Engineer / Engineer / Senior Executive / Executive / Senior Technologist / Technologist is responsible to work closely with consultants and other staff to coordinate project design and development, perform design and provide quality assurance monitoring on related projects, create and hand out schedules for construction staff working in the field, perform field quality control observations and assessments, inspect and assess the quality of materials being used for construction projects, calculate, verify and approve invoices/quantity of material, supplies and equipment needed and purchases for each individual project, oversee the work of field staff to ensure efficacy of work procedures, ensure that all construction activities are being carried out according to compliance, safety rules and standard operating procedure, ensure availability of resources and materials at all times, provide recommendations for repair work and make sure that deadlines are compiled, perform continuous evaluation on trends and ensure that preventative maintenance is managed at each stage of the project, determine project feasibility and direct all resources to the site in a time efficient manner, provide technical advice to field staff in order to ensure that construction procedures are being carried out properly, identify construction constraints and plan and carry out measures to counter them and prepare period reports and assessments for each project phase.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Actively involve in problem solving - Conflict resolution	3	1. Problem Solving Skills Training
	2. Ensure effective communication - Business presentation delivery	3	1. Effective Presentation & Communication - Communication Skills, Presentation 2. Emotional Intelligence i.e. ESQ
3. Actively participate and play main role in developing teamwork i.e. Change management & Interpersonal	3	1. Team Building 2. Change Management 3. Interpersonal Conflict	
4. Continuously apply analyse creative thinking	3	1. Creative & Critical Thinking	
5. Continuous Improvement Management - Systems Integration	3	1. Continuous Improvement i.e. 6 SIGMA, Kaizen, SWOT Analysis, TOWS Matrix etc.	

Technical Skills	Required Competency Level	Recommended Training
1. Identify, evaluate and propose Technical Software	4	1. Artificial Intelligence Application Training 2. Building Information Modelling Application Training 3. 3D Modelling Training - CAD, Solidwork, Hydraulic Modelling
2. Ensure implementation on Analyse Data and develop Statistical Analytics	4	1. Dashboard Reporting 2. Data Analysis Using Business Application Software
3. Understanding in Engineering Design	4	1. Engineering Drawing Interpretation and Management 2. Standards, Codes of Practice, Rules and Regulations 3. Instrumentation and Control Design Engineering Management 4. Electrical System Design i.e. Control Panel System, VSD/VFD/Soft Starter
4. Monitor and adhere to the Environmental Management System	3	1. Environmental Management System Framework Development and Implementation 2. Industrial Effluent Treatment System & Scheduled Waste Management
5. Responsible in Testing & Commissioning - (Equipment and systems testing, Technical Inspection)	4	1. Equipment and Systems T&C 2. Operation Fundamental & Troubleshooting 3. Mechanical & Electrical System Commissioning

Technical Skills	Required Competency Level	Recommended Training
6. Responsible and lead Operation and Maintenance Management	4	<ol style="list-style-type: none"> 1. Operations & Maintenance Management - Pumps Installation, Balancing & Alignment of Pumpset, Infrared Thermography 2. Total Productive Maintenance (TPM)- Troubleshooting & Maintenance, Basic Vibration Analysis 3. Process Control: Instrumentation, Troubleshooting and Problem Solving - Calibration of Measuring Equipment 4. Power Transformer : Earthing & Electrical Protection System, Switchgear Operation and Maintenance, Power Quality and Mitigation Solution
7. Identify, evaluate and apply Technology Application	4	<ol style="list-style-type: none"> 1. IT Training (Microsoft Excel, Microsoft Words, Microsoft Powerpoint) 2. Automation Technology Application (PLC, SCADA, IOT, IR4.0) 3. Enterprise Resource Planning (ERP) - SAP, ORACLE, MAXIMO
8. Lead and adhere to Health, Safety and Environment Management	3	<ol style="list-style-type: none"> 1. Workplace Safety and Health Framework Development and Implementation 2. HiRADC (Hazard Identification Risk Assesment and Determination Control) 3. Accident Reporting & Investigation

Technical Skills	Required Competency Level	Recommended Training
9. Actively participate in Organisational Risk Management	3	1. Risk Management i.e. Balanced Scorecard, Quality System & Process, Emergency Action Plan (EAP)
10. Develop, monitor implementations for Quality System Management	3	1. Quality Management System i.e. ISO, Controlling Documented Information
11. Initiate and continuously monitor a Sustainable Energy Management	4	1. Sustainable Energy Management i.e. Renewable Energy, Green Technology, Energy Audit

NO	DETAILS		
3	Area : Mechanical & Electrical		
	Job Title : Assistant Engineer / Senior Technician /Senior Supervisor	Level : 5	
	Job Description :		
	<p>A Mechanical & Electrical Assistant Engineer / Senior Technician / Senior Supervisor is responsible to work closely with consultants and other staff to coordinate project design and development, perform design and provide quality assurance monitoring on related projects, create and hand out schedules for construction staff working in the field, perform field quality control observations and assessments, inspect and assess the quality of materials being used for construction projects, calculate, verify and approve invoices/quantity of material, supplies and equipment needed and purchases for each individual project, oversee the work of field staff to ensure efficacy of work procedures, ensure that all construction activities are being carried out according to compliance, safety rules and standard operating procedure, ensure availability of resources and materials at all times, provide recommendations for repair work and make sure that deadlines are compiled, perform continuous evaluation on trends and ensure that preventative maintenance is managed at each stage of the project, determine project feasibility and direct all resources to the site in a time efficient manner, provide technical advice to field staff in order to ensure that construction procedures are being carried out properly, identify construction constraints and plan and carry out measures to counter them and prepare period reports and assessments for each project phase.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Communication	2	1. Communication Skills 2. Presentation Skills
2. Communication - Business presentation delivery	2	1. Teamwork 2. Team Building	
3. Problem solving	2	1. Problem Solving Skills 2. Ptools - Fishbone, SWOT Analysis, TOWS Matrix	
4. Interpersonal skills	2	1. Interpersonal - ESQ 2. Supervisory Development - Managing team	

Technical Skills	Required Competency Level	Recommended Training
1. Review and apply Technical Software	3	1. Artificial Intelligence Application Training 2. Building Information Modelling Application Training 3. 3D Modelling Training - CAD, Solidwork, Hydraulic Modelling
2. Familiar and apply Analyse Data and develop Statistical Analytics	2	1. Dashboard Reporting 2. Data Analysis Using Business Application Software
3. Have a deep knowledge in Engineering Design	3	1. Engineering Drawing Interpretation and Management 2. Standards, Codes of Practice, Rules and Regulations 3. Instrumentation and Control Design Engineering Management 4. Electrical System Design i.e. Control Panel System, VSD/VFD/Soft Starter
4. Monitor and adhere to Environmental Management System	2	1. Environmental Management System Framework Development and Implementation 2. Industrial Effluent Treatment System & Scheduled Waste Management
5. Involve in Testing & Commissioning - (Equipment and systems testing, Technical Inspection)	3	1. Equipment and Systems T&C 2. Operation Fundamental & Troubleshooting 3. Mechanical & Electrical System Commissioning
6. Participate in Organisational Risk Management	2	1. Risk Management i.e. Balanced Scorecard, Quality System & Process, Emergency Action Plan (EAP)

Technical Skills	Required Competency Level	Recommended Training
7. Lead and monitor on Operation and Maintenance Management	3	1. Operations & Maintenance Management - Pumps Installation, Balancing & Alignment of Pumpset, Infrared Thermography 2. Total Productive Maintenance (TPM) - Troubleshooting & Maintenance, Basic Vibration Analysis. 3. Process Control: Instrumentation, Troubleshooting and Problem Solving - Calibration of Measuring Equipment 4. Power Transformer: Earthing & Electrical Protection System, Switchgear Operation and Maintenance, Power Quality and Mitigation Solution
8. Monitor implementations for Quality System Management	2	1. Quality Management System i.e. ISO, Controlling Documented Information
9. Actively participate in Sustainable Energy Management	3	1. Sustainable Energy Management i.e. Renewable Energy, Green Technology, Energy Audit
10. Continuous apply Technology Application	3	1. IT Training (Microsoft Excel, Microsoft Words, Microsoft PowerPoint) 2. Automation Technology Application (PLC, SCADA, IOT, IR4.0) 3. Enterprise Resource Planning (ERP) - SAP, ORACLE, MAXIMO

Technical Skills	Required Competency Level	Recommended Training
11. Adhere to Health, Safety and Environment Management	2	1. Workplace Safety and Health Framework Development and Implementation 2. HiRADC (Hazard Identification Risk Assessment and Determination Control) 3. Accident Reporting & Investigation

NO	DETAILS		
4	Area : Mechanical & Electrical		
	Job Title : Supervisor/Technical Assistant	Level : 4	
	Job Description :		
	<p>A Mechanical & Electrical Supervisor / Technical Assistant is responsible for supporting the planning of corrective, preventive and predictive maintenance activities that ensure equipment and systems are fully functional and in optimal operating condition. He/She follows corporate guidelines and best practices, ensuring work activities are carried out safely and enhancing the organisation's compliance with regulatory and statutory policies, procedures and regulations. He follows emergency response plans and adheres to workplace safety and health (WSH) requirements. He is a good team player and is able to engage and interact with internal and external stakeholders. He possesses good analytical and problem-solving skills. He is also expected to work on-site, on a rotating or day-shift, and/or may be employed on-call basis.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Actively participate in problem solving - Conflict resolution	2	1. Communication skills 2. Presentation Skills
	2. Ensure effective communication - Business presentation delivery	2	1. Teamwork 2. Team Building
	3. Actively participate and play main role in developing teamwork i.e. Change management & Interpersonal	2	1. Problem solving skills 2. Ptools - Fishbone, SWOT Analysis, TOWS Matrix
	4. Manage Interpersonal skills	2	1. Interpersonal - ESQ 2. Supervisory Development - Managing team
	Technical Skills	Required Competency Level	Recommended Training
1. Implement, supervise usage of Technical Software	2	1. 3D Modelling & Artificial Intelligence Application 2. Building Information Modelling Application Training 3. Modelling tools - AutoCAD, Solidwork 4. Hydraulic Modelling Training	

Technical Skills	Required Competency Level	Recommended Training
2. Carry out, adhere implementations for Business Performance Management	2	<ol style="list-style-type: none"> 1. Performance Improvement Plan Training 2. KPI Setting and Implementation
3. Carry out Data and Statistical Analytics	2	<ol style="list-style-type: none"> 1. Dashboard Reporting 2. Data Analysis Using Business Application Software
4. Carry out Engineering Design	2	<ol style="list-style-type: none"> 1. Engineering Drawing Interpretation and Management 2. Installation and Assembly 3. Design - Pumping station, Equipment , M&E system, Instrumentation & Control 4. Electrical System Design Training
5. Carry out, supervise implementations for Environmental Management System	2	<ol style="list-style-type: none"> 1. Scheduled Waste Management 2. Industrial Effluent Treatment System
6. Carry out, supervise Testing & Commissioning - (Equipment and systems testing, Technical Inspection)	2	<ol style="list-style-type: none"> 1. Troubleshooting 2. Operation Fundamental 3. Equipment and Systems T&C 4. Electrical System Commissioning
7. Carry out, supervise implementations for Operation and Maintenance Management	2	<ol style="list-style-type: none"> 1. M&E Maintenance 2. Process System - Water & Wastewater 3. Mechanical Equipment & System 4. Electrical Equipment & System 5. Asset Management System 6. M&E Works Management Calibration of Measuring Equipment

Technical Skills	Required Competency Level	Recommended Training
8. Carry out, supervise implementations for Quality System Management	2	<ol style="list-style-type: none"> 1. ISO 9001:2015 Quality Management System 2. Controlling Documented Information 3. Manufacturing & Quality Management 4. Asset and Inventory Management 5. Other relevant ISO - Energy, Environmental etc.
9. Carry out, supervise implementations for Sustainable Energy Management	2	<ol style="list-style-type: none"> 1. Energy Management 2. Renewable Energy 3. Green Technology
10. Carry out, supervise implementations for Technology Application	2	<ol style="list-style-type: none"> 1. IT Training (Microsoft Excel, Microsoft Words, Microsoft Powerpoint) 2. Automation Technology Application (PLC, SCADA, IOT, IR4.0)
11. Carry out, supervise implementations for Health, Safety and Environment Management	2	<ol style="list-style-type: none"> 1. Workplace Safety and Health Culture Development 2. Accident Reporting & Investigation 3. Engineering Safety Standards Interpretation 4. HiRADC(Hazard Identification Risk Assesment and Determination Control) 5. HIRARC-WI (Hazard Identification Risk Assessment Risk Control & Workplace Inspection)

NO	DETAILS		
5	Area : Mechanical & Electrical		
	Job Title : Team Leader/ Assistant Technician	Level : 3	
	Job Description :		
	<p>A Mechanical & Electrical Team Leader / Assistant Technician is responsible for testing or modifying developmental or operational electrical/mechanical machinery, control equipment and circuitry in industrial or commercial plants or laboratories. Usually work under direction of supervisor/M&E engineers. He is also responsible to carry out and operate test equipment to evaluate performance of developmental parts, assemblies, or systems under simulated operating conditions, and record results. assemble electrical, electronic systems and prototypes according to engineering data and knowledge of electrical principles, using hand tools and measuring instruments under general supervision, provide technical assistance and resolution when electrical/mechanical problem arises, check existing electrical/mechanical engineering criteria to identify necessary revisions, deletions, or amendments to outdated material, to assist the electrical/mechanical engineers or other personnel to identify, define, or solve developmental simple problems, adhere to safety and security procedure, follow Standard Operating Procedure; and to carry out such other duties that may be assigned from time to time.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Apply effective communication	2	1. Effective Communication & Technical Writing skills
	2. Develop and maintain good teamwork	2	1. Team building
	3. Actively participate in problem solving	2	1. Problem solving skills
	4. Maintain Interpersonal skills	2	1. Interpersonal - ESQ
	Technical Skills	Required Competency Level	Recommended Training
1. Perform implementations for Environmental Management System	2	1. Scheduled Waste Management 2. Industrial Effluent Treatment System	
2. Perform Testing & Commissioning - (Equipment and systems testing, Technical Inspection)	2	1. Troubleshooting 2. Fundamental of Operation 3. Process or Systems T&C 4. Mechanical Equipment Testing & Commissioning	

Technical Skills	Required Competency Level	Recommended Training
3. Carry out, perform implementations for Operation and Maintenance Management	2	1. M&E Maintenance 2. Process System - Water & Wastewater 3. Mechanical Equipment & System 4. Instrumentation 5. Engineering Drawing Interpretation 6. Structural Testing 7. Technical Inspection 8. Pumps Installation, Troubleshooting & Maintenance 9. Basic Vibration Analysis 10. Balancing & Alignment of Pumpset 11. Mechanical & Electrical Services for Building 12. Piping Installation, Inspection and Maintenance 13. Industrial Hydraulic - Systems, Operation & Maintenance 14. Infrared Thermography 15. Process Control: Instrumentation & Troubleshooting
4. Perform implementations for Quality System Management	2	1. ISO 9001:2015 Quality Management System 2. Controlling Documented Information 3. Manufacturing & Quality Management 4. Asset and Inventory Management 5. Other relevant ISO - Energy, Environmental etc.
5. Perform implementations for Technology Application	2	1. IT Training (Microsoft Excel, Microsoft Words) 2. Automation Technology Application (PLC, SCADA)

Technical Skills	Required Competency Level	Recommended Training
<p>6. Carry out, adhere to implementations for Health, Safety and Environment Management</p>	<p>2</p>	<ol style="list-style-type: none"> 1. Workplace Safety and Health Culture Development 2. Accident Reporting & Investigation 3. Engineering Safety Standards Interpretation 4. HiRADC(Hazard Identification Risk Assessment and Determination Control) Training 5. HIRARC-WI (Hazard Identification Risk Assessment Risk Control & Workplace Inspection)

NO	DETAILS		
6	Area : Mechanical & Electrical		
	Job Title : Chargeman	Level : 2	
	Job Description :		
	<p>A Chargeman is responsible for handling i.e. troubleshooting, testing or operational live electrical, control equipment and circuitry in industrial or commercial plants or laboratories. Usually work under direction of supervisor/M&E engineers. He is also responsible to carry out and operate live test equipment to evaluate performance of developmental parts, assemblies, or systems under simulated operating conditions, and record results. assemble electrical, electronic systems and prototypes according to engineering data and knowledge of electrical principles, using hand tools and measuring instruments under general supervision, provide technical assistance and resolution when electrical problem arises, check existing electrical engineering criteria to identify necessary revisions, deletions, or amendments to outdated material, to assist the M&E Engineers or other personnel to identify, define, or solve developmental simple problems, adhere to safety and security procedure, follow Standard Operating Procedure; and to carry out such other duties that may be assigned from time to time.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Apply and maintain effective communication	2	1. Effective Communication & Technical Writing skills
	2. Build and maintain good teamwork	1	1. Team building
	3. Actively participate in problem solving	2	1. Problem solving skills
	4. Maintain interpersonal skills	1	1. Interpersonal - ESQ
	Technical Skills	Required Competency Level	Recommended Training
1. Carry out, perform implementations for Operation and Maintenance Management	2	1. M&E Operation & Maintenance 2. Mechanical Equipment & System 3. Electrical Equipment & System 4. Instrumentation Training 5. Electrical Legislation, Codes, Standard of Practice 6. Lightning & Earthing System	

Technical Skills	Required Competency Level	Recommended Training
2. Perform Testing & Commissioning - (Equipment and systems testing, Technical Inspection)	2	<ol style="list-style-type: none"> 1. Troubleshooting 2. Operation Fundamental 3. Equipment and Systems T&C 4. Electrical System Commissioning
3. Perform implementations for Sustainable Energy Management	2	<ol style="list-style-type: none"> 1. Energy Management 2. Renewable Energy 3. Green Technology
4. Perform implementations for Quality System Management	2	<ol style="list-style-type: none"> 1. ISO 9001:2015 Quality Management System 2. Controlling Documented Information 3. Manufacturing & Quality Management 4. Asset and Inventory Management 5. Other relevant ISO - Energy, Environmental etc.
5. Perform implementations for Technology Application	2	<ol style="list-style-type: none"> 1. IT Training (Microsoft Excel, Microsoft Words) 2. Automation Technology Application (PLC, SCADA)
6. Perform, adhere to implementations for Health, Safety and Environment Management	2	<ol style="list-style-type: none"> 1. Workplace Safety and Health Culture Development 2. Accident Reporting & Investigation

NO	DETAILS		
7	Area : Mechanical & Electrical		
	Job Title : Handyman/Fitter/Electrician	Level : 2	
	Job Description :		
	A Handyman / Fitter / Electrician is responsible to assist and carry out M&E Support Services on all matters related to mechanical plant and equipment to ensure all equipment are in optimum operating condition as to achieve vision and mission of the company. Usually work under direction of supervisor/M&E engineers. He is also responsible to carry out and operate test equipment to evaluate performance of developmental parts, assemblies, or systems under simulated operating conditions, and record results, to assist the M&E Engineers or other personnel to identify, define, or solve developmental simple problems, adhere to safety and security procedure, follow Standard Operating Procedure; and to carry out such other duties that may be assigned from time to time.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Apply and maintain effective communication	1	1. Effective Communication & Technical Writing skills
	2. Build and maintain good teamwork	2	1. Team Building
	3. Participate in problem solving	1	1. Problem Solving Skills
	4. Apply an interpersonal skills	1	1. Interpersonal - ESQ
	Technical Skills	Required Competency Level	Recommended Training
1. Carry out, perform implementations for Operation and Maintenance Management	2	1. M&E Operation & Maintenance 2. Mechanical Equipment & System 3. Electrical Equipment & System 4. Instrumentation Training 5. Electrical Legislation, codes, Standard of Practice 6. Lightning & Earthing System	
2. Perform implementations for Sustainable Energy Management	2	1. Energy Management 2. Renewable Energy 3. Green Technology	

Technical Skills	Required Competency Level	Recommended Training
3. Perform Testing & Commissioning - (Equipment and systems testing, Technical Inspection)	2	<ol style="list-style-type: none"> 1. Troubleshooting 2. Operation Fundamental 3. Equipment and Systems T&C 4. Electrical System Commissioning
4. Perform implementations for Quality System Management	1	<ol style="list-style-type: none"> 1. ISO 9001:2015 Quality Management System 2. Controlling Documented Information 3. Manufacturing & Quality Management 4. Asset and Inventory Management 5. Other relevant ISO - Energy, Environmental etc.
5. Perform implementations for Technology Application	2	<ol style="list-style-type: none"> 1. IT Training (Microsoft Excel, Microsoft Words) 2. Automation Technology Application (PLC, SCADA)
6. Perform, adhere to implementations for Health, Safety and Environment Management	2	<ol style="list-style-type: none"> 1. Workplace Safety and Health Culture Development 2. Accident Reporting & Investigation

NO	DETAILS			
1	Area : Instrumentation			
	Job Title : Manager	Level : 6		
	Job Description :			
	A Water Instrumentation Manager responsible to perform instrumentation Services including being responsible for the budgetary, risk management, development of department objective, development of key result area, monitoring of KPI, and approval of process instrumentation within a large industrial facility.			
	Soft Skills	Required Competency Level	Recommended Training	
	1. Communicate ,elaborate and present technical information to superior and sub-ordinate	4	1. Train the Trainer	
	2. Plan and perform project budgetary	4	1. Finance for Non Financial Managers	
	3. Identify and handle section and project risk management	4	1. Project Management Fundamentals	
	4. Write, review and approve instrument philosophy, technical report and standard operating procedures on instrumentation.	4	1. Business Writing Masterskills	
	5. Lead, plan and execute work with team members and other department towards achieving goals & KPI	4	1. Organisational Skills, Strategic Planning and Thinking Training	
	Technical Skills	Required Competency Level	Recommended Training	
	1. Write, review and approve instrumentation contract and procurement procedures	4	1. Contract Management 2. Negotiation Training	
	2. Identify and analyze instrumentation practice and risk	4	1. Process Safety Management for Safety Practitioners	
	3. Identify gaps and improve Instrumentation maintenance programme to meet the targeted performance standard	4	1. 6-Sigma Green Belt Training 2. Strategic Productive Maintenance	

Technical Skills	Required Competency Level	Recommended Training
<p>4. Improve and implement instrumentation resources planning and operational needs including organising the maintenance team to ensure effective and efficient instrument operations and maintenance.</p>	<p>4</p>	<p>1. Strategic Performance Management</p>
<p>5. Plan and improve the implementation, compliance and conformance of HSE, OHS and ISO as required by the relevant authority.</p>	<p>4</p>	<p>1. Integrated Management System (IMS, Health, Safety and Quality) Internal Auditor Training 2. Malaysian Skills Certificate (SKM) for Level 5 in Instrumentation and Control or equivalent</p>

NO	DETAILS		
2	Area : Instrumentation		
	Job Title : Executive / Engineer	Level : 5	
	Job Description :		
	An Instrumentation Executive / Engineer is responsible to perform instrumentation Services including being responsible for; Implementing the key performance indicator; organising the maintenance team; evaluating the maintenance costs & resources; assuring the instrumentation asset & system operations; design, plan & implementation process & control system.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Communicate ,elaborate and present technical information to superior and sub-ordinate	3	1. Effective Presentation Skills & Techniques
	2. Prepare and execute project planning, design and construction	3	1. Introduction to Project Management Essentials
	3. Write, draft technical report and preliminary data specification on instrumentation.	3	1. Writing Effective Reports and Procedures
	4. Analyze data for business interpretation and presentation	3	1. Essential Productivity Suite Skills for Analysis (MS Excel)
	5. Plan and execute work with team members towards achieving goals & KPI.	3	1. Developing Workplace Interaction & Interpersonal Skills
	Technical Skills	Required Competency Level	Recommended Training
	1. Prepare, plan, review and verify the implementation of instrument programme, design and installation	3	1. Introduction to Process Safety
2. Identify, plan and evaluate maintenance program for instrumentation to meet the targeted performance standard	3	1. Fundamental 6 Sigma 2. Productive Maintenance	

Technical Skills	Required Competency Level	Recommended Training
3. Monitor and review the instrumentation asset and system operations integrity & assurance	3	1. Foundation in Asset Management 2. ISO 55001
4. Review overall resources planning and operational needs including organising the maintenance team to ensure effective and efficient instrument operations and maintenance	3	1. Balance Scorecard - Identifying KRA & Setting KPI
5. Plan, monitor and evaluate spending for instrumentation related works within operation performance and approved budget	3	1. Strategic Performance Management Training
6. Review and monitor the implementation of instrumentation contract in order to meet targeted level of service	3	1. Management of Contract and Procurement training
7. To maintain and support the implementation, compliance and conformance of HSE, OHS and ISO as required by the relevant authority.	4	1. Occupational Safety, Health and Environment Management 2. Understanding, Evaluating and Implementing Effective HIRARC 3. Malaysian Skills Certificate (SKM) for Level 4 in Instrumentation and Control or equivalent

NO	DETAILS		
3	Area : Instrumentation		
	Job Title : Senior Technician / Senior Supervisor	Level : 4	
	Job Description :		
	An Instrumentation Senior Technician / Senior Supervisor is responsible for maintenance of water section monitoring and control instruments in compliance with applicable codes, policies and regulations and also be able to do calibration and verification of instrument. Key responsibility is for the continued safe, reliable and accurate performance and operation of water section instrumentation assets, integrity of historical data logged by Water Section instruments and to insure compliance to established policies and procedures according to Local Authorities approval.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Execute work according to work order and maintenance management system	3	1. Asset management
	2. Work effectively and safely under pressure when performing emergency repairs	3	1. Safety & Health training
	3. Communicate effectively with peers and supervisor	3	1. Computer Training
4. Demonstrate strong computer aptitude including proficiency with databases, spreadsheets and word-processing software.	3	1. Business Communication Skills Training	
5. Demonstrated ability to work unsupervised and co-operate with colleagues as a team, to understand and follow instructions and to provide guidance and instructions to operators, contractors or waterworks laborer	3	1. Interpersonal Skill Training	
6. Read, and understand blueprints, drawings, schematics and maps.	3	1. Technical Drawing Training	

Soft Skills	Required Competency Level	Recommended Training
7. Technical writing report	3	1. Technical Drawing Training
8. Coaching Skills	3	1. Emerging Leadership Training 2. Supervisory Training
Technical Skills	Required Competency Level	Recommended Training
1. Direct participation on assessment purchasing, installation, qualification, validation and servicing equipment's, machines and instrumentation technician	3	1. Supervisory Skill Training
2. Lead telemetry and instrumentation technician for control & monitoring system	3	1. SCADA and Distributed Process Control Training
3. Worked as instrumentation technician covering all department	3	1. Operation and Maintenance on Instrumentation Application
4. Assigned as instrumentation technician in plant maintenance and calibration of instrumentation	3	1. Competency Training for Calibration and Maintenance of Equipment
5. Trained new instrumentation technicians on the process of maintenance, calibration and monitoring system	3	1. Latern Failure Analysis and Critical Thinking
6. Authorised Entrant and Standby Person for Confined Space	3	1. Confined Space Training NIOSH
7. Perform instrument testing and commissioning	3	1. Safety Audit and Site Inspection 2. 5S Continuous Improvement Training 3. SKM Level 2 (Water Supply Instrumentation Application) and Level 3 (Water Supply Instrumentation Supervision Control).

Technical Skills	Required Competency Level	Recommended Training
8. Verify Programmable Logic Control (PLC)/Remote Terminal Unit (RTU) input and output	3	1. Advanced Electronic and Electrical Training

NO	DETAILS		
4	Area : Instrumentation		
	Job Title : Technician / Supervisor	Level : 3	
	Job Description :		
	<p>An Instrumentation Technician / Supervisor is responsible for maintenance of water section monitoring and control instruments in compliance with applicable codes, policies and regulations and also be able to do calibration and verification of instrument. Key responsibility is for the continued safe, reliable and accurate performance and operation of water section instrumentation assets, integrity of historical data logged by Water Section instruments and to insure compliance to established policies and procedures according to Local Authorities approval.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Execute work according to work order and maintenance management systems	2	1. Asset Management Training
	2. Work effectively and safely under pressure when performing emergency repair	2	1. Safety & Health Training
	3. Communicate effectively with peers and supervisor	2	1. Business Communication Skills Training
	4. Demonstrated ability to work unsupervised and co-operate with colleagues as a team, to understand and follow instructions and to provide guidance and instructions to operators, contractors or waterworks labourers	2	1. Interpersonal Skill Training
	5. Demonstrate strong computer aptitude including proficiency with databases, spreadsheets and word-processing software.	2	1. Computer Training
6. Read, and understand blueprints, drawings, schematics and maps	2	1. Technical Drawing Training	
7. Coaching Skills	2	1. Emerging Leadership Training 2. Supervisory Training	

Technical Skills	Required Competency Level	Recommended Training
1. Direct participation on assessment purchasing, installation, qualification, validation and servicing equipment's, machines and instrumentation technician	2	1. Supervisory Skill Training
2. Lead telemetry and instrumentation technician for control & monitoring system	2	1. PLC Training
3. Worked as instrumentation technician covering all departments	2	1. Operation and Maintenance on Instrumentation Application
4. Assigned as Instrumentation Technician in Plant Maintenance & Calibration of Instrumentation.	2	1. Competency Training for Calibration and Maintenance of Equipment
5. Trained new instrumentation technicians on the process of maintenance, calibration and monitoring system.	2	1. Analytical Troubleshooting and Problem Solving - Kepner Tregoe Reference
6. Authorised Entrant and Standby Person for Confine Space	2	1. Confined Space Training NIOSH
7. Verify Programmable Logic Control (PLC)/Remote Terminal Unit (RTU) input and output	2	1. Basic Electronic and Electrical Training (6 months)
8. Perform instrument testing and commissioning	2	1. Safety Training at Workplace 2. 5S Training 3. SKM Level 2 (Water Supply Instrumentation Application) and Level 3 (Water Supply Instrumentation Supervision Control).

NO	DETAILS		
	Area : Instrumentation		
	Job Title : Assistant Technician	Level : 2	
	Job Description :		
	<p>The Assistant Technician is responsible to perform instrumentation Services including being responsible for the installation and operation of instrument system for the pre level flow water quality, water and waste water supply. The instrumentation assistant basically perform the instrument and system installation, operation, maintenance which can give guarantee in maintaining good instrumentation performance operation of water and waste water supply</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Read and understand technical drawing and schematic diagram	1	1. Asset Management/ Technical Drawing Training
	2. Read and understand logic programming	1	1. PLC and Logic Programming Training
	3. Understanding operation and maintenance manual	1	1. Instrument Operation Training such as, Flowmeter, Analyzer, Level Sensor and Related to Instrumentation Equipment
	4. Understand and differentiate various tools according to job requirement	1	1. Process Instrumentation, Control and Instruments Integration
	5. Understand and perform basic computer skill	1	1. Computer Training (MS Word, Excel, Power Point)
	6. Execute and cooperate team work task	1	1. Team Management Training

Technical Skills	Required Competency Level	Recommended Training
1. Perform instrumentation installation	2	1. Safework Practice
2. Perform and check instrumentation functionality	2	1. Basic Electronic and Electrical Training
3. Perform preventive maintenance	2	1. Preventive and Corrective Maintenance Training
4. Perform instrumentation corrective maintenance and verification of equipment	2	1. Basic Electronic and Electrical Training 2. SKM Level 2 (Water Supply Instrumentation Application)

NO	DETAILS		
1	Area : Consumer / Customer Account Administration		
	Job Title : Senior Manager / Manager	Level : 6	
	Job Description :		
	A Senior Manager / Manager responsible to plan, lead and coordinate all activities and assign resources related to customer data for billing readiness and accuracy. To ensure the company and department goals and objectives are met. Ensuring timely and accurate billing and collection from customers in meeting the revenue target of the company. Other roles include planning of learning and development programmes for continuous optimisation of skills resources.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Managing Time Effectively	4	1. Leadership Training
	2. Problem-Solving	4	1. Creative Thinking and Problem Solving Training
	3. Managing Team	4	1. Coaching Skills Training
	4. Leadership Skills	4	1. Leadership Training
	5. Good Interpersonal Skills	4	1. Leadership Training
	6. Good Planning and Organizing Activities	4	1. Leadership Training
	7. People Management Skill	4	1. Leadership Training
	8. Negotiation Skills	4	1. Effective Negotiation Training
	Technical Skills	Required Competency Level	Recommended Training
1. Day to day project management and coordination.	4	1. Managing Projects Training 2. Customer Relation Management Training 3. Stakeholders Management Training	
2. Proficient in software applications.	4	1. Microsoft Office / Software Training	
3. Competent in handling Large database	4	1. Microsoft Office / Software Training 2. Training on IOT related	
4. Manage database accuracy and completeness.	4	1. Microsoft Office / Software Training	

Technical Skills	Required Competency Level	Recommended Training
5. Prepare relevant periodic management reports, as and when required by management.	4	1. Business Writing and Reporting Skill Training
6. Assist the management in the continual review of billing policies on related grey areas arising thereupon.	4	1. Formulating Policy & Procedures Training
7. Ensure effective implementation, maintenance and continual improvement of the ISO9001:2015 Quality Management System.	4	1. ISO Training
8. Comply to all health and safety regulations and policies.	4	1. Health and Safety Regulation and Policies Training
9. Prepare departmental budget and manage/ monitor annual expenditure.	4	1. Financial Management & Budgeting Training 2. Business Acumen Training

NO	DETAILS		
2	Area : Consumer / Customer Account Administration		
	Job Title : Executive	Level : 5	
	Job Description :		
	A Consumer / Customer Account Administration Executive is responsible to ensure the completeness and validity of database for the purpose of billing. Handling of data in ensuring the creation and maintenance of an accurate and comprehensive consumer / customer database. Assist manager on the implementation of the scope of work for the unit or section goals and objectives.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Managing Time Effectively	3	1. Managing Time and Priorities Effectively
	2. Problem-Solving	3	1. Creative Thinking & Problem Solving Training
	3. Effective Team Player	3	1. Team Building Training
	4. Supervising Skills	3	1. Leadership Training
	5. Good Planning and organising activities	3	1. Planning and organising
	6. Analytical Thinking Skills	3	1. Analytical Thinking Skills Training
	Technical Skills	Required Competency Level	Recommended Training
	1. Update system data and subsequent verification of existing and new billing data as and when required. Proficient in software application.	3	1. Microsoft Office/ Software Training
2. Competent in handling large scale database.	3	1. Training on IOT Related	
3. Perform all necessary adjustments to billing data within allocated time frame and ensure data accuracy in minimizing billing and adjustment errors.	3	1. Microsoft Office / Software Training	

Technical Skills	Required Competency Level	Recommended Training
1. Update system data and subsequent verification of existing and new billing data as and when required. Proficient in software application.	3	1. Microsoft Office/ Software Training
2. Competent in handling large scale database.	3	1. Training on IOT Related
3. Perform all necessary adjustments to billing data within allocated time frame and ensure data accuracy in minimizing billing and adjustment errors.	3	1. Microsoft Office / Software Training
4. Reconcile consumer / customer data to obtain the complete profiles and address for system updating.	3	1. Microsoft Office / Software Training 2. Customer Service Training
5. Ensure necessary documents are filed accordingly for easy records retrievable.	3	1. Records and File Management Training
6. Prepare reports as and when instructed.	3	1. ISO Training
7. Ensure effective implementation, maintenance and continual improvement of the ISO9001 Quality Management System.	3	1. Policies & Procedures Training 2. Regulation and Safety Training
8. Comply to all health and safety regulations and policies.	3	1. Risk Management Training
9. Timely identification and compliance to all internal and external risk management aspects related to work performance.	3	1. Risk Management Training

NO	DETAILS																				
3	Area : Consumer / Customer Account Administration																				
	Job Title : User Account Admin / Representative	Level : 4																			
	Job Description :																				
	A Consumer / Customer Account Admin / Representative is responsible to perform data entry for accounts creation, billing, payment receipts, miscellaneous debit and credit notes, special bills, and customer data maintenance. Other roles include process interfacing between existing systems is done on a timely and effective manner. A Consumer / Customer Account Admin needs to adhere to Occupational Health and Safety procedures as well as communicating with team members.																				
	<table border="1"> <thead> <tr> <th data-bbox="188 725 662 824">Soft Skills</th> <th data-bbox="662 725 1032 824">Required Competency Level</th> <th data-bbox="1032 725 1477 824">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 824 662 880">1. Effective Team Player</td> <td data-bbox="662 824 1032 880">3</td> <td data-bbox="1032 824 1477 880">1. Effective Team Player</td> </tr> <tr> <td data-bbox="188 880 662 936">2. Good Interpersonal Skills</td> <td data-bbox="662 880 1032 936">3</td> <td data-bbox="1032 880 1477 936">1. Interpersonal Skills</td> </tr> <tr> <td data-bbox="188 936 662 1041">3. Basic customer service Skills</td> <td data-bbox="662 936 1032 1041">2</td> <td data-bbox="1032 936 1477 1041">1. Basic customer service Skills</td> </tr> <tr> <td data-bbox="188 1041 662 1137">4. Communication Skills</td> <td data-bbox="662 1041 1032 1137">2</td> <td data-bbox="1032 1041 1477 1137">1. Communication Skills</td> </tr> </tbody> </table>			Soft Skills	Required Competency Level	Recommended Training	1. Effective Team Player	3	1. Effective Team Player	2. Good Interpersonal Skills	3	1. Interpersonal Skills	3. Basic customer service Skills	2	1. Basic customer service Skills	4. Communication Skills	2	1. Communication Skills			
	Soft Skills	Required Competency Level	Recommended Training																		
	1. Effective Team Player	3	1. Effective Team Player																		
	2. Good Interpersonal Skills	3	1. Interpersonal Skills																		
	3. Basic customer service Skills	2	1. Basic customer service Skills																		
	4. Communication Skills	2	1. Communication Skills																		
	<table border="1"> <thead> <tr> <th data-bbox="188 1137 662 1236">Technical Skills</th> <th data-bbox="662 1137 1032 1236">Required Competency Level</th> <th data-bbox="1032 1137 1477 1236">Recommended Training</th> </tr> </thead> <tbody> <tr> <td data-bbox="188 1236 662 1366">1. Knowledge in Computerise Information and Billing System</td> <td data-bbox="662 1236 1032 1366">2</td> <td data-bbox="1032 1236 1477 1366">1. Microsoft Office / Software Training</td> </tr> <tr> <td data-bbox="188 1366 662 1462">2. Thorough knowledge in data entry and system functions</td> <td data-bbox="662 1366 1032 1462">2</td> <td data-bbox="1032 1366 1477 1462">1. Microsoft Office / Software Training</td> </tr> <tr> <td data-bbox="188 1462 662 1559">3. Basic knowledge in Accounting</td> <td data-bbox="662 1462 1032 1559">2</td> <td data-bbox="1032 1462 1477 1559">1. Microsoft Office / Software Training</td> </tr> <tr> <td data-bbox="188 1559 662 1798">4. Scan and file the correspondences/documents into the existing system on daily basis for easy retrieval and references.</td> <td data-bbox="662 1559 1032 1798">3</td> <td data-bbox="1032 1559 1477 1798">1. Time management (Managing work priority)</td> </tr> <tr> <td data-bbox="188 1798 662 2141">5. Perform all other administrative work such as recording, photocopying, faxing, binding and collection/ dispatch of documents.</td> <td data-bbox="662 1798 1032 2141">3</td> <td data-bbox="1032 1798 1477 2141">1. Records and File Management Training</td> </tr> </tbody> </table>			Technical Skills	Required Competency Level	Recommended Training	1. Knowledge in Computerise Information and Billing System	2	1. Microsoft Office / Software Training	2. Thorough knowledge in data entry and system functions	2	1. Microsoft Office / Software Training	3. Basic knowledge in Accounting	2	1. Microsoft Office / Software Training	4. Scan and file the correspondences/documents into the existing system on daily basis for easy retrieval and references.	3	1. Time management (Managing work priority)	5. Perform all other administrative work such as recording, photocopying, faxing, binding and collection/ dispatch of documents.	3	1. Records and File Management Training
	Technical Skills	Required Competency Level	Recommended Training																		
	1. Knowledge in Computerise Information and Billing System	2	1. Microsoft Office / Software Training																		
2. Thorough knowledge in data entry and system functions	2	1. Microsoft Office / Software Training																			
3. Basic knowledge in Accounting	2	1. Microsoft Office / Software Training																			
4. Scan and file the correspondences/documents into the existing system on daily basis for easy retrieval and references.	3	1. Time management (Managing work priority)																			
5. Perform all other administrative work such as recording, photocopying, faxing, binding and collection/ dispatch of documents.	3	1. Records and File Management Training																			

Technical Skills	Required Competency Level	Recommended Training
6. Ensure effective implementation, maintenance and continual improvement of the ISO9001 Quality Management System.	3	1. ISO Training 2. Policies & Procedures Training
7. Comply to all health and safety regulations and policies.	3	1. Regulation and Safety Training
8. Timely identification and compliance to all internal and external risk management aspects related to work performance.	2	1. Risk Management Training

NO	DETAILS		
4	Area : Field Service		
	Job Title : Field Services Executive	Level : 5	
	Job Description :		
	A Field Services Executive is responsible to conduct and analyse site activities in order to capture the complete data at site for accuracy of billing purposes. Assist manager on the implementation of the scope of work for the unit or section goals and objectives.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Problem-Solving	3	1. Effective Problem Solving Training
	2. Effective Team Player	3	1. Team Building Training
	3. Supervising Skills	3	1. Leadership Training
	4. Good Interpersonal Skills	3	1. Leadership Training
	5. Good Planning and Organizing Activities	3	1. Leadership Training
	6. Analytical Thinking Skills	3	1. Creative Thinking and Effective Problem Solving Training
	Technical Skills	Required Competency Level	Recommended Training
	1. Obtain and verify existing and new billing data. Proficient in software application.	3	1. Microsoft Office (Access, Excel & Words) 2. Software Training (Billing, Records and Collections) 3. Training on IOT related
	2. Ensure data collections from necessary parties for reconciliation of consumer / customer data.	3	1. Data processing Training
3. Resolve customer enquiries and complaints within the stipulated Level of Service in ensuring customer satisfaction.	3	1. Customer Service Training	
4. Gather and process data for report preparation.	3	1. Business Communication & Report Writing	

Technical Skills	Required Competency Level	Recommended Training
5. Ensure documents are filed and scanned accordingly for easy records retrievable.	3	1. Records and File Management Training
6. Ensure effective implementation and continual improvement of the International Organisational of Standard (ISO) Procedure.	3	1. ISO Training (Quality Management System, Handling Customer Complaint) 2. Policies & Procedures Training
7. Comply with all health and safety regulations and policies.	3	1. Regulation and Safety Training
8. Timely identification and compliance to all internal and external risk management aspects related to work performance.	3	1. Risk Management Training

NO	DETAILS		
5	Area : Field Service		
	Job Title : Field Services Representative	Level : 4	
	Job Description :		
	A Field Services Representative is responsible to supervise site activities in order to capture the complete data at site for accuracy of billing purposes. Assist manager on the implementation of the scope of work for the unit or section goals and objectives.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Effective Team Player	3	1. Team Building training
	2. Good Interpersonal Skills	3	1. Interpersonal skills training
	3. Communication Skills (Verbal & Written)	3	1. Communication Skill training
	Technical Skills	Required Competency Level	Recommended Training
	1. Perform and supervise site activities capturing data.	3	1.Apps/ System Training (Internet of Things)
	2. Verify data collections from necessary parties for reconciliation of consumer / customer data.	3	1. Data Analytical Training 2. Data processing Training
	3. Supervise inspections for connection and disconnection of utility services.	3	1. Basic Customer Service Training 2. Policies & Procedures Training 3. ISO Training
	4. Report to service departments of any problems.	3	1. Basic Customer Service Training 2. Policies & Procedures Training 3. ISO Training
5. Comply with all health and safety regulations and policies.	3	1. Regulation and Safety Training	
6. Timely compliance to all internal and external risk management aspects related to work performance.	3	1. Risk Management Training	

NO	DETAILS		
6	Area : Field Service		
	Job Title : Senior Meter Reader/ Supervisor	Level : 3	
	Job Description :		
	A Senior Meter Reader / Supervisor is responsible to supervise site activities in order to capture the complete data at site for accuracy of billing purposes. Assist manager on the implementation of the scope of work for the unit or section goals and objectives.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Effective Team Player	3	1. Team Building training
	2. Good Interpersonal Skills	3	1. Interpersonal skills training
	3. Communication Skills (Verbal & Written)	3	1. Communication Skill training
	Technical Skills	Required Competency Level	Recommended Training
	1. Perform and supervise reading of water consumption meters.	3	1. Supervisory skill training
2. Check data in hand-held computers/ equipment	3	1. Apps/ System Training (Internet of Things) 2. Data processing Training	
3. Verify readings in cases where consumption appears to be abnormal, and record possible reasons for fluctuations.	3	1. Skills in controlling machine and processes 2. Skills in handheld computer functions	
4. Supervise inspection of meters for unauthorized connections, defects and damage.	3	1. Supervisory skill training	
5. Report to service departments of any problems such as meter irregularities, damaged equipment, maintenance or equipment problems.	3	1. Basic Customer Service Skill 2. Reporting skills	

Technical Skills	Required Competency Level	Recommended Training
<p>6. Supervise and conduct connection and disconnection of utility services at specific locations.</p>	<p>3</p>	<p>1. Supervisory skill training</p>

NO	DETAILS		
7	Area : Field Service		
	Job Title : Meter Reader	Level : 2	
	Job Description :		
	A Meter Reader is responsible to read utility meters and record consumption details, to record the data in the hand-held computer/equipment, record cases where consumption appears to be abnormal, inspect defects and damage, connect and disconnect utility services at specific locations and report to service departments of any problems.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Effective Team Player	2	1. Team Building training
	2. Good Interpersonal Skills	2	1. Interpersonal skills training
	Technical Skills	Required Competency Level	Recommended Training
	1. Knowledge and skills in controlling machines and processes.	2	1. Apps/ System Training (Internet of Things)
	2. Knowledge in handheld computer functions.	2	1. Apps/ System Training (Internet of Things)
3. Report to service departments of any problems.	3	1. Basic Customer Service Training 2. Policies & Procedures Training	
4. Comply with all health and safety regulations and policies.	3	1. Regulation and Safety Training	

NO	DETAILS		
8	Area : Billing		
	Job Title : Senior Manager / Manager	Level : 6	
	Job Description :		
	A Senior Manager / Manager is responsible to plan and lead billing activities related to customer data for billing processes and accuracy. Ensuring timely and accurate billing and collection target of the company. To approve and review SOPs and guidelines for continuous improvement. Other roles include structuring learning and development programmes for optimisation of skills resources.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Managing Time Effectively	4	1. Leadership Training
	2. Problem-Solving	4	1. Creative Thinking and Problem Solving Training
	3. Managing Team	4	1. Coaching training
	4. Leadership Skills	4	1. Coaching training
	5. Good Interpersonal Skills	4	1. Leadership Training
	6. Good Planning and Organizing Activities	4	1. Leadership Training
	7. People Management Skill	4	1. Leadership Training
	8. Analytical Thinking Skills	4	1. Analytical Thinking Skills
	Technical Skills	Required Competency Level	Recommended Training
	1. Day to day manage and coordinate project.	4	1. Managing projects Training 2. Customer Relation Management Training
2. Proficient in software applications.	4	1. Microsoft Office / Software Training 2. Training on IOT related	
3. Competent in handling billing database.	4	1. Microsoft Office / Software Training	
4. Prepare relevant periodic management reports, as and when required by management.	4	1. Business Acumen Skill Training 2. Business Writing and Reporting Skill Training	
5. Manage billing database accuracy and completeness.	4	1. Microsoft Office / Software Training	

Technical Skills	Required Competency Level	Recommended Training
6. Assist the management in the continual review of billing policies on related grey areas arising thereupon.	4	1. Formulating Policy & procedures Training
7. Ensure effective implementation, maintenance and continual improvement of the ISO9001:2015 Quality Management System.	4	1. ISO Training
8. Comply to all health and safety regulations and policies.	4	1. Health and Safety Regulation and Policies Training
9. Timely identification and compliance to all internal and external risk management aspects related to work performance.	4	1. Risk Management Training

NO	DETAILS		
9	Area : Billing		
	Job Title : Executive	Level : 5	
	Job Description :		
	A Billing Executive is responsible to ensure issuance of billing is raised correctly. He / She is also responsible to monitor the printing of the billing data in ensuring all bills are produce to customer on a timely basis.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Managing Time Effectively	3	1. Time Management (Managing Work Priorities)
	2. Problem-Solving	3	1. Creative Thinking and Problem Solving Training
	3. Effective Team Player	3	1. Team Building Training
	4. Supervising Skills	3	1. Leadership Training
	5. Good Interpersonal Skills	3	1. Interpersonal Skill Training
	6. Analytical Thinking Skills	3	1. Analytical Thinking Skills
	Technical Skills	Required Competency Level	Recommended Training
	1. Perform and verify data and billing process in ensuring quality, timely and accurate billing of customers as per determined billing cycle.	3	1. Microsoft Office / Software Training 2. Training on IOT related
	2. Prepare reports and analyse information as and when required by superior.	3	1. Data Processing Training 2. Business Communication & Report Writing Training
	3. Ensure the bills are generated and send to customer on timely basis.	3	1. Time Management (Managing Work Priorities)
4. Liaise with relevant parties for any discrepancies found during the data verifying process	3	1. Customer Service Training	
5. Comply to all health and safety regulations and policies.	3	1. Health and Safety Regulation Training	

Technical Skills	Required Competency Level	Recommended Training
6. Ensure effective implementation, maintenance and continual improvement of the ISO9001 Quality Management System.	3	1. ISO Training 2. Policies & Procedures Training
7. Timely identification and compliance to all internal and external risk management aspects related to work performance.	3	1. Risk Management Training

NO	DETAILS		
10	Area : Billing		
	Job Title : Billing Admin/ Representative	Level : 4	
	Job Description :		
	A Billing Admin / Representative is responsible to monitor and provide guideline to team leaders and subordinates. To ensure data accuracy by performing detail checking prior approval to avoid billing and adjustment error.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Effective Team Player	2	1. Team Building Training
	2. Good Interpersonal Skills	2	1. Interpersonal Skills Training
	3. Communication Skills	2	1. Communication Skill Training
	Technical Skills	Required Competency Level	Recommended Training
	1. Perform and verify data of billing process including adjustments, raise charges and live bill run on timely and accurate.	2	1. Microsoft Office / Software Training
	2. Prepare reports and analyse information, as and when required by superior.	2	1. Business writing skill Training
	3. Ensure the bills are generated and send to customer on timely basis.	2	1. Time management (managing work priorities)
	4. Liaise with relevant parties for any discrepancies found during the data verifying process	2	1. Basic customer service Skills
5. Ensure effective implementation, maintenance and continual improvement of the ISO9001 Quality Management System.	3	1. ISO Training 2. Policies & Procedures Training	
6. Comply to all health and safety regulations and policies.	3	1. Health and Safety Regulation	

Technical Skills	Required Competency Level	Recommended Training
<p>7. Timely identification and compliance to all internal and external risk management aspects related to work performance.</p>	<p>3</p>	<p>1. Risk management training</p>

NO	DETAILS		
11	Area : Customer Service		
	Job Title : Senior Manager / Manager	Level : 6	
	Job Description :		
	<p>A Senior Manager / Manager is responsible to plan, lead, implement and coordinate all activities and assign resources related to customer services. To ensure the company and department goals and objectives are met. Ensuring timely resolution of customers enquiries, request or complaints. Responsibilities include planning of learning and development programmes for continuous optimisation of skills resources. Review and formulate customer services policies, procedures and business practices to ensure uniformity and optimization of operational efficiency. Preparation and consolidation of annual budget and related budget reports for the department and operating expenses analysis, inclusive of reporting to management on budget variances.</p>		
	Soft Skills	Required Competency Level	Recommended Training
	1. Managing Time Effectively	4	1. Leadership Training
	2. Problem-Solving	4	1. Creative Thinking and Problem Solving Training
	3. Managing Team	4	1. Coaching Skill Training
	4. Leadership Skills	4	1. Leadership Training
	5. Good Interpersonal Skills	4	1. Leadership Training
	6. Good Planning and Organizing Activities	4	1. Leadership Training
	7. People Management Skill	4	1. Leadership Training
	8. Negotiation Skills	4	1. Effective Negotiation Training
	Technical Skills	Required Competency Level	Recommended Training
1. Verify and analyse monthly reports on customer service enquiries.	4	1. Microsoft Office (Access, Excel & Words) 2. Software Training (Billing, Records and Collections) 3. Training on IOT related	
2. Handle investigation and resolve premier/difficult customer complaints in relation to billing discrepancies and issues thereupon.	4	1. Customer Relation Management Training 2. Stakeholders Management Training	

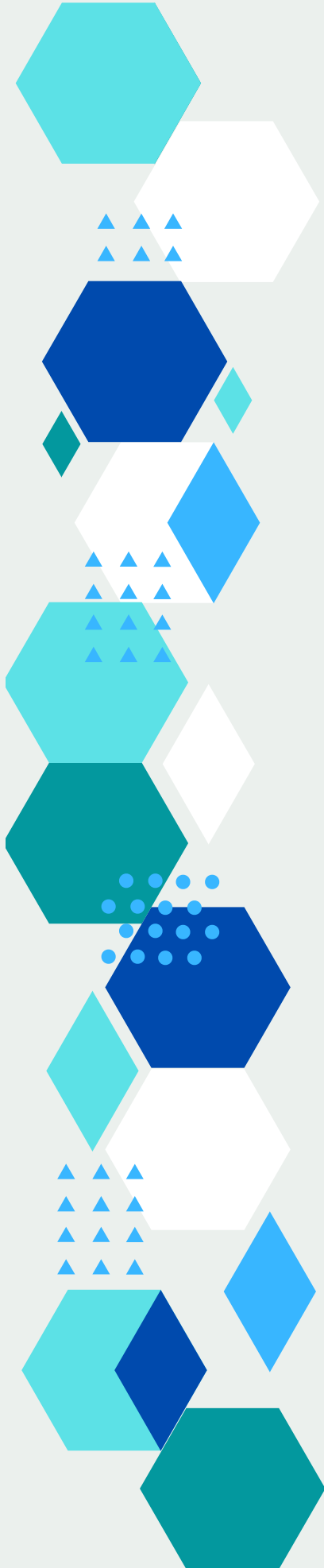
Technical Skills	Required Competency Level	Recommended Training
3. Review and formulate policies, procedures and business practices to ensure uniformity and optimization of operational efficiency.	4	1. Formulating Policy & procedures Training 2. Business Writing and Reporting Skill Training
4. Prepare departmental budget and manage/ monitor annual expenditure.	4	1. Financial management & budgeting training 2. Business Acumen Training
5. Plan and organize staff deployment in accordance with manpower requirement.	4	1. Managing projects
6. Liaise with the internal auditors and external auditors to ensure corrective action and comply with the company's policies, procedures and work flow	4	1. Company policies & procedures
7. Ensure effective implementation, maintenance and continual improvement of the International Organisational of Standard (ISO) Procedure.	4	1. ISO Training (Quality Management System, Handling Customer Complaint)
8. Monitor compliance to all health and safety regulations and policies.	4	1. Health and Safety Regulation and Policies Training
9. Timely identification and compliance to all internal and external risk management aspects related to work performance.	4	1. Risk management training

NO	DETAILS		
12	Area : Customer Service		
	Job Title : Executive	Level : 5	
	Job Description :		
	A Customer Service Executive is responsible to resolve customers enquiries, requests, complaints and response to the customers in according to the policy and procedures set. Assist manager on the implementation of the scope of work for the unit or section goals and objectives.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Managing Time Effectively	3	1. Leadership Training
	2. Problem-Solving	3	1. Creative Thinking and Problem Solving Training
	3. Supervising Skills	3	1. Planning & Organizing Skill Training
	4. Good Planning and Organizing Activities	3	1. Time Management & Managing priorities effectively
	5. Analytical Thinking Skills	3	1. Analytical Thinking Skills Training
	6. Effective Team Player	3	1. Team building training
	Technical Skills	Required Competency Level	Recommended Training
	1. Perform and verify that customers enquiries are resolved within the stipulated time.	3	1. Customer Service Training
	2. Monitor customers enquiries handled by the team members are logged into the system for record purposes.	3	1. Microsoft Office/ Software training 2. Training on IOT related
	3. Ensure to respond accurately to customer correspondence and emails on a timely basis.	3	1. Business Communication & Report writing Training 2. Records and File Management training
4. Respond to Walk-In customers issues and ensuring timely response	3	1. Customer Service Skill training	

Technical Skills	Required Competency Level	Recommended Training
5. Monitor and ensure all incoming calls are answered in accordance with the SLA to minimize calls delays and abandoned calls.	3	1. Customer Service Skill training
6. Prepare and execute customer services satisfaction survey.	3	1. Customer Service Software training
7. Prepare reports and analyse information.	3	1. Business Communication & Report writing Training
8. Implement effective and ensure continual improvement of the International Organisational of Standard (ISO) Procedure.	3	1. ISO Training 2. Policies & Procedures Training
9. Comply with all health and safety regulations and policies.	3	1. Regulation and Safety Training
10. Timely identification and compliance to all internal and external risk management aspects related to work performance.	3	1. Risk Management Training

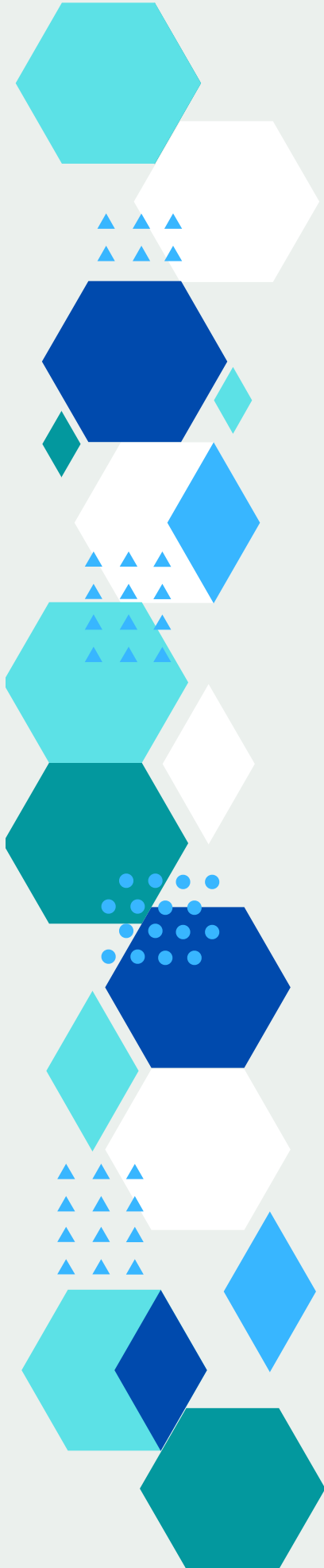
NO	DETAILS		
13	Area : Customer Service		
	Job Title : Customer Service Representative	Level : 4	
	Job Description :		
	A Customer Service Representative is responsible to coordinate a comprehensive solutions for the complaint/ report regarding the Company's services, adhere to policies and procedures .He/She requires to communicate with other departments/ divisions/ units to assist all complaints/ reports, coordinates Consumer Education programs/ activities and provides information regarding the Company's services.		
	Soft Skills	Required Competency Level	Recommended Training
	1. Effective Team Player	3	1. Team Building training
	2. Good Interpersonal Skills	3	1. Interpersonal skills training
	3. Communication Skills	3	1. Communication Skill training
	4. Managing Time Effectively	3	1. Time Management (Managing Work Priorities)
	Technical Skills	Required Competency Level	Recommended Training
	1. Coordinate a comprehensive solutions for the complaint/ report regarding the Company's services	3	1. Customer Service Training
	2. Monitor customers enquiries handled by the team members are logged into the system for record purposes.	3	1. Microsoft Office/ Software training
	3. Response accurately to customer correspondence and emails on a timely basis.	3	1. Business writing skill
4. Comply with all health and safety regulations and policies.	3	1. Regulation and Safety Training	
5. Monitor and ensure all incoming calls are answered in accordance with the SLA to minimize calls delays and abandoned calls.	3	1. Customer Service Training	

Technical Skills	Required Competency Level	Recommended Training
6. Response to Walk-In customers issues and ensuring timely response	3	1. Customer Service Skill training
7. Implement effective and ensure continual improvement of the International Organisational of Standard (ISO) Procedure.	3	1. ISO Training 2. Policies & Procedures Training
8. Timely identification and compliance to all internal and external risk management aspects related to work performance.	2	1. Risk Management Training



LIST OF SOURCES

- 1) Eigis Analysis (Base Data : Transforming the Water Sector, ASM, 2016 ; MWIG 2010-2018)
- 2) Eigis Analysis (Base: MWIG 2010-2018; Water Footprint Network)
- 3) HRDF Internal Data, (2019)
- 4) Individual BIM Competency Index ,(2014)
- 5) Malaysia Industrial Water and Waste Water Treatment Market Outlook to 2022, (2018)
- 6) Malaysia Water Vision, FAO
- 7) Malaysian Water Industry Status and Outlook Report 2020-2021, (2020)
- 8) Skills Forecast 2019, Australian Industry Standards, (2019)
- 9) The Water IRC's 2020 Skills Forecast, (2020)
- 10) United Nations SDG Synthesis Report



LIST OF ABBREVIATIONS

AGT	Authorized Gas Tester	INDSF	Industrial Skills Framework
A.I	Artificial Intelligent	IoT	Internet of Things
ALC	Active Leakage Control	IR4.0	The Fourth Industrial Revolution
AMR	Automatic Meter Reading	ITS	Industrial Training Scheme
AMS	Asset Management System	IWK	Indah Water Konsortium
BRAINS	Billing, Records and Information System	IWRM	Integrated Water Resources Management
BSC	Balance Scorecard	JPK	Jabatan Pembangunan Kemahiran
B40CaB	B40 Capacity Building	JSA	Job Safety Analysis
CAD	Computer-Aided Design	KPI	Key Performance Indicator
CAPEX	Capital Expenditures	KRA	Key Result Area
CePIETSO	Certified Environmental Professional in the Operation of Industrial Effluent Treatment System	LIMS	Laboratory Information Management System
CePSWaM	Certified Environment Professional in Schedule Waste Management	MHCP	Management of Hazardous Chemicals Programme
CHRA	Chemical Health Risk Assessment	MISG	Malaysian Sewerage Industry Guidelines
CIDB	Construction Industry Development Board	MWA	Malaysian Water Association
DMA	District Metering Area	NbIOT	Narrow Broadband Internet of Things
DMS	Desludging Management System	NDWQS	National Drinking Water Quality Standard
ERP	Emergency Respond Plan	NIOSH	National Institute of Occupational Safety and Health
EIA	Environmental Impact Assessment	NOSS	National Occupational Skills Standards
EAM	Enterprise Asset Management	NPS	Network Pumping Stations
EWS	Early Warning Systems	NRW	Non-Revenue Water
EAP	Emergency Action Plan	OHSAS	Occupational Health and Safety Assessment Series
ERP	Enterprise Resource Planning	OTEP	OKU Talent Management Programme
FWT	Future Workers Training Scheme	PMA	Pressure Management Area
FAL	Financial Authority Limit	PRV	Pressure Relief Valve
GDL	Goods Driving License	P&L	Profit and Loss
GIS	Geographic Information Systems	QMS	Quality Management System
GSR	Guided Self Regulations	RPEL	Recognition Of Prior Experiential Learning
HIRARC	Hazard Identification, Risk Assessment and Risk Control	SAP	System Applications and Products
HRDF	Human Resources Development Fund	SAS	Statistical Analysis System
HAZOP	Hazard and Operability Study	SBL	Skim Bantuan Latihan
HiRADC	Hazard Identification Risk Assessment and Determination Control	SBL-KHAS	Skim Bantuan Latihan Khas
HSE	Healthy, Safety & Environment	SCADA	Supervisory Control and Data Acquisition
IMS	Integrated Management System	SCM	Stream Current Monitoring
INCERT	Industry Certification	SCV	Sewer Cleaning Vehicle
		SKM	Sijil Kemahiran Malaysia
		SOP	Standard Operating Procedure

SRF	Sludge Reception Facility
STC	Sectoral Training Committee
ST	Suruhanjaya Tenaga
STF	Sludge Treatment Facilities
STOP	Safety Training Observation Program
STP	Sewage Treatment Plants
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TPM	Total Productive Maintenance
TTT	Train the Trainer
UTG	Uniform Technical Guideline
VIS	Visual Inspection and Sounding
WSP	Water Safety Plant
ZPT	Zero Pressure Test
3R	Reuse, Recycle and Reduce