



REPORT TO: CITY MANAGER

**TO BE REFERRED BY THE OFFICIAL TO MAYCO VIA THE RELEVANT WATER AND
SANITATION SECTION 79 COMMITTEE [AFTER CONSIDERATION BY CITY MANAGER]**

1. ITEM NUMBER

2. SUBJECT

**FEEDBACK ON THE INTERNATIONAL/OUTSIDE THE BORDERS OF THE RSA
TRIP UNDERTAKEN FROM THE 8 JULY TO 12 JULY 2024 TO PARTICIPATE IN
A WADER YOUNG ENGINEERS “CHANGEMAKERS” PROGRAMME (YECF)
INTERNATIONAL EXCHANGE IN SINGAPORE AND THAILAND**

**INGXELO ENGASEMVA KOHAMBO KUMAZWE APHESHEYA/ANGAPHANDLE
KWEMIDA YASEMZANTSI AFRIKA EQHUTYWE UKUSUSELA NGOWE 8
UKUYA KOWE12 KWEYEKHALA 2024 UKUZE KUTHATYATHWE INXAXHEBA
KWINKQUBO ENGOTSHINTSHELWANO YAMAZWE APHESHEYA “ABENZI
BOTSHINTSHO” NGOKUJOLISWE KWIINJNELI EZILULUTSHA (YECF) ESE
SINGAPORE NASE THAILAND**

**TERUGVOERING OOR DIE REIS NA DIE BUITELAND/BUITE DIE GRENSE VAN
DIE RSA ONDERNEEM VAN 8 TOT 12 JULIE 2024 OM DEEL TE NEEM AAN 'N
INTERNASIONALE UITRUILBESOEK VAN DIE WADER-JONGINGENIEURS-
“CHANGEMAKERS”-PROGRAM (YECF) IN SINGAPOER EN THAILAND**

[R0378] / [R0692]

3. EVENT SUMMARY

EVENT DETAILS	
CONFERENCE/SEMINAR	The International Exchange of the WADER Young Engineers “Changemakers” Programme (YECP)
OTHER	Not Applicable
DATE	8 to 12 July 2024
VENUE	Nanyang Environment and Water Research Institute, Singapore Water Association, Marina Barrage, TÜV SÜD Pty Ltd, Asian Institute of Technology, and the National University of Singapore (NERI)
TOTAL COST TO THE CITY	R70 998.96
CITY	Changi City and Bangkok
COUNTRY	Singapore and Thailand

ATTENDEE DETAILS	
NAME AND SURNAME	DESIGNATION
Unathi Portia Jonginamba	PROFESSIONAL OFFICER
Noma-Afrika Mbeje	SENIOR PROCESS CONTROLLER
PROVIDE SUMMARY OF HOST ORGANISATION / CITY	
<p>The Department of Science and Innovation (DSI), in collaboration with the Water Research Commission (WRC), established the Water Technologies Demonstration Programme (WADER) to consolidate the applied research and development and pre-commercialisation stages of the water and sanitation innovation continuum.</p> <p>Acting as an innovation intermediary, the Programme's mission was to facilitate high-level, collaborative technology demonstrators from the public and private sectors to maximise the potential of the water innovation value chain and contribute towards achieving the technology deployment aspirations of the National Water Research, Development, and Innovation Roadmap. The Young Engineers 'Changemakers' Programme (YECp) was one of the initiatives that WADER facilitated to build capacity among engineers working for municipalities in South Africa by providing Innovation Support and Demonstration opportunities such as the YECp International Exchange Programme.</p> <p>Unathi Jonginamba and Noma Africa Mbeje were selected for the Young Engineers Changemakers International Exchange phase. This phase was the last phase of the one-year programme in which the two City officials participated. The officials participated in an International Wastewater Treatment Masterclass led by Professor Kartik Chandran, a wastewater specialist from Columbia University. They underwent a rigorous selection process, resulting in their selection as two of six delegates out of 20 municipal employees from South Africa to be part of the international exchange programme. Their inclusion in this prestigious programme highlighted their significant expertise and leadership in water management. This event offered unmatched networking opportunities with global experts and access to cutting-edge research and technologies.</p> <p>As part of their programme, the officials visited the Nanyang Environment and Water Research Institute, Singapore Water Association, Marina Barrage, TÜV SÜD Pty Ltd, Asian Institute of Technology, and the National University of Singapore (NERI). During these site visits, the officials toured wastewater facilities, were presented with the latest technologies implemented by the two countries, observed the water conservation methods undertaken by Singapore to become a water-resilient country, and reviewed several research projects that the two countries were focusing on.</p>	

4. OBJECTIVE

The objective was for Unathi Portia Jonginamba and Noma-Afrika Mbeje (as part of the 6 chosen delegates) to participate in the International Exchange phase of the WADER Young Engineers “Changemakers” Programme (YECF), to gain unparalleled networking opportunities with global experts and access to cutting-edge research and technologies. This was achieved by exposing the officials to innovative water and sanitation technologies and research projects being developed by institutions in Singapore and Thailand. Additionally, the Water Research Commission aimed to expose municipal engineers to the water treatment, management, conservation, and technologies used and developed in these institutions. This exposure was intended to enable the officials to acquire valuable knowledge and insights to address the city’s water management challenges and improve its infrastructure, aligning with the city's strategic goals of environmental sustainability and infrastructure development.

5. OUTCOMES

The International Exchange phase of the WADER Young Engineers “Changemakers” Programme (YECF) exposed Unathi Jonginamba and Noma-Afrika Mbeje to a number of new innovations and technologies which can be applied in the City of Cape Town. This programme provided the officials an opportunity to network and share knowledge with the Singaporean and Thai professionals in the water and sanitation field.

The visits to these facilities provided valuable lessons, including strategies for drastically decreasing non-revenue water, water augmentation methods implemented by Singapore since the 1960s drought, successful operation of reclamation plants due to the segregation of industrial and domestic wastewater treatment, effective water pollution prevention methods, management of decentralized plants, and innovative research at Singaporean and Thai institutes aimed at improving water and sanitation services.

6. ACTIONS REQUIRED

No actions are required.

7. IMPLICATIONS

7.1 Constitutional and Policy Implications No ☒ Yes ☐

7.2 Environmental implications No ☒ Yes ☐

- 7.3 Financial Implications No ☒ Yes ☐
- 7.4 Legal Implications No ☒ Yes ☐
- 7.5 Staff Implications No ☒ Yes ☐
- 7.6 Risk Implications No ☒ Yes ☐
- 7.7 **POPIA Compliance**

- ☒ It is confirmed that this report has been checked and considered for POPIA Compliance.

*NOTE: POPIA Section **MUST** be completed otherwise the report will be returned to the author for revision.*

Contact your Directorate POPIA Stewards should you require assistance.

The City has a contract in place with Izani Embassy Joint Venture for the safe-keeping of Traveller's personal information as required by the POPI Act.

8. RECOMMENDATIONS

- a) It is recommended that the feedback report on the trip the WADER Young Engineers "Changemakers" Programme International Exchange undertaken by Unathi Portia Jonginamba and Noma-Afrika Mbeje on 8 to 12 July 2024 **be considered and noted.**

IZINDULULO

- a) Kundululwe ukuba **makuthathelwe ingqalelo kwaye kuqwalaselwe** ingxelo engasemva kohambo obelumalunga neNkqubo engoTshintshelwano kuMazwe aphesheya "abenzi botshintsho" ngokujoliswe kwiiNjineli eziluLutsha, eqhutywe nguUnathi Portia Jonginamba noNoma-Afrika Mbeje ukususela ngowe8 ukuya kowe12 kweyeKhala 2024.

AANBEVELINGS

- a) Daar word aanbeveel dat die terugvoeringsverslag oor die internasionale uitruilbesoek van die WADER-jongingenieurs-"changemakers"-program deur Unathi Portia Jonginamba en Noma-Afrika Mbeje van 8 tot 12 Julie oorweeg word en daarvan kennis geneem word.

9. GENERAL DISCUSSION

Through the International Exchange phase of the WADER Young Engineers “Changemakers” Programme (YECF), Noma-Afrika Mbeje and Unathi Jonginamba had the opportunity to explore and witness innovative technologies and engineering solutions utilised by Singapore and Thailand for efficient water use, treatment, and distribution as well as environmental protection practices, which focus on the successful implementation of ISO standards. This included advanced monitoring systems, water recycling technologies, stormwater management strategies, energy and resource recovery from wastewater operations, and desalination methods.

Singapore's approach to water sustainability is a model of innovation and strategic planning. Given its limited natural water resources, the country's landscape and high population density, Singapore has invested in a rigorous, comprehensive, and multifaceted strategy to ensure a sustainable water supply for its growing population. This strategy is known as the “Four National Taps”:

1. **Local Catchment Water:** Singapore has an extensive network of reservoirs and drainage systems to capture and store rainwater. About two-thirds of Singapore's land area is designated as a water catchment, maximizing rainfall collection.
2. **Imported Water:** Historically, Singapore imported water from Malaysia. Though this is being gradually phased out, agreements with Malaysia have been key to managing this resource.
3. **NEWater:** This is Singapore's brand of reclaimed water. Through advanced membrane technologies and ozone disinfection, wastewater is purified to meet drinking water standards. NEWater is used for industrial purposes and supplements the potable water supply.
4. **Desalinated Water:** Singapore has invested in desalination plants to convert seawater into fresh water, providing a reliable and consistent water source independent of weather conditions.

Singapore is a global leader in water technology and innovation, heavily investing in research and development to advance water treatment processes, including membrane technologies, bioreactors, and other advanced purification methods as well as implementing climate change adaptation methods such as their coastal protection plan which is protecting their coastal areas from erosion. The country has also implemented artificial intelligence to decrease water losses within the water conveyance infrastructure, reducing non-revenue water to about 5% of all water produced.

Thailand is emerging as a significant player in wastewater management, addressing urbanization challenges and environmental concerns. The country has a mix of centralized and decentralized sewage systems. Major cities, including Bangkok, have extensive sewage networks transporting wastewater to treatment facilities, while rural and suburban areas often rely on on-site systems like septic tanks. Thailand's wastewater treatment plants vary in technology, from primary to tertiary treatments, with more advanced facilities in urban areas.

The Thai government is investing in constructing and upgrading wastewater treatment plants, aiming for higher treatment standards and increased capacity. There is a growing interest in small-scale, decentralized wastewater treatment solutions for areas where centralized systems are not feasible. Adoption of advanced technologies, such as membrane bioreactors (MBRs) and advanced oxidation processes, is increasing to enhance treatment efficiency and meet stricter discharge standards.

10. ANNEXURES

FOR FURTHER DETAILS, CONTACT:

DATE	1 August 2024		
NAME	Unathi Jonginamba Noma-Afrika Mbeje	CONTACT NUMBER	0837898209/ 0632186085
E-MAIL ADDRESS	UnathiPortia.Jpnginamba@capetown.gov.za Nomaafrika.mbeje@capetown.gov.za		
DIRECTORATE	Water and Sanitation	FILE REF No	
SIGNATURE :	<div></div> <div></div>		

EXECUTIVE DIRECTOR

MR. LEORNADO MANUS

The ED's signature represents support for report content and confirms POPIA compliance.

COMMENT:

SIGNATURE:

NAME

DATE

MANAGER: INTERNATIONAL RELATIONS

COMMENT:

DR. DENVER VAN SCHALKWYK

SIGNATURE:

DATE

☐ REPORT COMPLIANT WITH THE PROVISIONS OF COUNCIL'S DELEGATIONS, POLICIES, BY-LAWS AND ALL LEGISLATION RELATING TO THE MATTER UNDER CONSIDERATION.

LEGAL COMPLIANCE

☐ NON-COMPLIANT

COMMENT:

NAME

TEL

DATE

Certified as legally compliant based on the contents of the report.

CITY MANAGER

☒ NOTED

☒ REFER TO THE MAYORAL COMMITTEE VIA THE RELEVANT SECTION 79 COMMITTEE

DATE

COMMENT: