

**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 TO ATTEND THE SPONSORED SHORT COURSE “USING  
OPEN DATA, QGIS AND HEC-RAS FOR HYDRAULIC MODELLING” FROM  
10 TO 21 JUNE 2024 IN THE NETHERLANDS**

**ONDERWERP**

**TERUGVOERING OOR DIE INTERNASIONALE REIS BUITE DIE GRENSE  
VAN DIE RSA ONDERNEEM OM DIE GEBORGDE KORTKURSUS “USING  
OPEN DATA, QGIS AND HEC-RAS FOR HYDRAULIC MODELLING”  
VANAF 10 TOT 21 JUNIE 2024 IN NEDERLAND BY TE WOON**

**ISIHLOKO**

**INGXELO ENGASEMVA KOHAMBO KUMAZWE  
APHESHEYA/ANGAPHANDLE KWEMIDA YASEMZANTSI AFRIKA EQHUTYWE  
UKUSUSELA KWEYE 10 UKUYA KOWAMA21 KWEYESILIMELA 2024,  
NGENJONGO YOKUZIMASA ISIFUNDWANA ESIXHASWE NGEZIMALI  
“APHO KUSETYENZISWA IDATHA EVULELEKILEYO, I-QGIS NE-HEC-RAS  
KULUNGISELWA UHLAZIYO NGOKUTSHA LOTHUNGELWANO  
LWEMIBHOBHO” ESE NETHERLANDS**

**Language Service Reference Number: R0260**

### 3. EVENT SUMMARY

EVENT DETAILS	
CONFERENCE/SEMINAR	Using Open Data, QGIS and HEC-RAS for Hydraulic Modelling
OTHER	The study trip was extended for holiday purposes until 10 July 2024 by Kristin Botes using her own leave and funds.
DATE	10 to 21 June 2024
VENUE	IHE Delft Institute for Water Education
TOTAL COST TO THE CITY	<b>R474.00</b>
CITY	<b>Delft</b>
COUNTRY	<b>THE NETHERLANDS</b>

ATTENDEE DETAILS	
NAME AND SURNAME	DESIGNATION
KRISTIN BOTES	PRINCIPAL GIS ANALYST

PROVIDE SUMMARY OF HOST ORGANISATION / CITY
<p>IHE Delft Institute for Water Education is the largest international graduate water education facility in the world and is based in Delft, Netherlands. They address water and sanitation challenges through education, research and capacity development and focuses on all water-related fields. Their world-class experts teach and research fields such as climate change adaptation, governance, water diplomacy, desalination, water supply, wetlands and sustainable hydropower.</p> <p>They offer high-quality education, including an MSc Programme in Water and Sustainable Development, a PhD programme, diploma courses, various short courses and online courses as well as customized training and capacity development, all within a uniquely international and interdisciplinary environment.</p>

### 4. OBJECTIVE

Kristin Botes was awarded an Orange Knowledge Programme (OKP) scholarship to attend the 2-week short course “Using Open Data, QGIS and HEC-RAS for Hydraulic Modelling” at IHE Delft Institute for Water Education. The scholarship covered the tuition fees, flights, accommodation, travel insurance and visa fees.

Kristin holds the position of a Principal GIS Analyst in the Catchment Stormwater and River Management (CSRM) Branch in the Bulk Services Department in the Water and Sanitation Directorate. Her role is to manage the Geographic Information Systems (GIS) function of the CSRM Branch. The CSRM Branch's mandate is to reduce the

impact of flooding on community livelihoods and regional economies, safeguard human health, protect natural aquatic environments, and improve and maintain recreational water quality. This mandate feeds in to the greater Cape Town Water Strategy to become a water sensitive city by 2040.

Kristin manages the stormwater, drainage & river system, floodline and catchment GIS data, which forms the basis on which hydrologic, hydraulic and flood models are built, which in turns informs important decisions such as infrastructure upgrades, flood mitigation measures and pollution abatement strategies

Attending the “Using Open Data, QGIS and HEC-RAS for Hydraulic Modelling” course greatly improved Kristin’s knowledge and skills to better manage the City’s GIS data in accordance with best catchment, stormwater and river modelling practices. As a GIS professional, it also provided invaluable insights into the vast potential of utilising open geospatial technologies. It also aligns with the City foundations of a Resilient City and a Capable and Collaborative City Government by having a City employee trained at a world renowned education facility and exposed to best international practices in hydraulic modelling.

## **5. OUTCOMES**

Kristin gained valuable insights into the data required for accurate hydraulic models, and various hydraulic and GIS software options that could be used. The course focused on using open data and open source software (HEC-RAS and QGIS), with Europe taking the lead on developing and adopting open geospatial technologies.

The City uses proprietary ESRI ArcGIS software, but it was eye opening and empowering to see how far the geospatial open source technologies have developed in the past decade and how it can really be a viable option on enterprise level if the City ever considered moving away from proprietary geospatial software. Data formats are interchangeable with propriety GIS formats and the full stack of software is available from database to server level (e.g. PostgreSQL to QGIS).

The City already has comprehensive and detailed spatial datasets available, and many of the free and open data available would be on a smaller scale and less detailed what the City already has, so that will be more appropriate for municipalities or regions without adequate spatial data.

With the knowledge and skills gained from the course, Kristin will be able to generate updated topographical catchment boundaries using QGIS software.

## **6. ACTIONS REQUIRED**

There are no obligations resulting for attending the short course, but with the knowledge and skills gained from the course, Kristin will be able to review the City’s Stormwater geo-database schema and data standards against best hydraulic modelling standards and recommend any schema changes or data clean-up required.

Using QGIS, Kristin will also be able to generate a new set of updated topographical catchment boundaries.

## 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

It is recommended that the feedback report on the trip to attend the short course from 10 to 21 June 2024 "Using Open Data, QGIS and HEC-RAS for Hydraulic Modelling" at IHE Delft Institute for Water Education in the Netherlands undertaken by Kristin Botes be considered and noted.

### AANBEVELINGS

Daar word aanbeveel dat die terugvoerverslag oor die reis onderneem deur Kristin Botes om die kortkursus "Using Open Data, QGIS and HEC-RAS for Hydraulic Modelling" vanaf 10 tot 21 Junie by die IHE Delft Instituut vir Wateropleiding in Nederland by te woon, oorweeg word en dat daarvan kennis geneem word.

## IZINDULULO

Kundululwe ukuba makuthathelwe ingqalelo kwaye kuqwalaselwe ingxelo engasemva kohambo, ebelingokuzimasa isifundwana “Apho kuSetyenziswa iDatha evulelekileyo, iQGIS neHEC-RAS kulungiselwa uHlaziyo ngokutsha lothungelwano lwemibhobho” kwiZiko elingeziFundo ezingezaManzi laselHE Delft eliseNetherlands, ebeliqhutywe nguKristin Botes, ukususela kweye10 ukuya kowama21 kweyeSilimela 2024.

## 9. GENERAL DISCUSSION

It was a very informative, and very intensive, highly specialized course. It was also very good to network with fellow water professionals from various countries who also attended the course.

## 10. ANNEXURES

### FOR FURTHER DETAILS, CONTACT:

DATE	24/7/2024		
NAME	Kristin Botes	CONTACT NUMBER	021 444 4938
E-MAIL ADDRESS	<a href="mailto:kristin.botes@capetown.gov.za">kristin.botes@capetown.gov.za</a>		
DIRECTORATE	Water and Sanitation	FILE REF NO	
SIGNATURE :			

### EXECUTIVE DIRECTOR: WATER AND SANITATION

LEONARDO 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: