ANNEXURE A

TERMS OF REFERENCE FOR A DIRECTED WRC PROJECT

KEY STRATEGIC AREA	**Research, Development, and Innovation (Branch)**
THRUST	**SASTEP**
PROGRAMME	**SASTEP**
TITLE	**SASTEP Next Generation Sanitation (NGS) Technology Demonstration Platform**

Strategic Objective:

- Demonstration of next generation sanitation technologies in informal settlements and other sites outside sewer reticulation coverage.
- Strengthening community resilience to natural disasters and building disaster readiness and technical capability for emergency response through the introduction and adoption of innovative sanitation technologies.

Specific Aims:

1. Installation and commissioning of blackwater and greywater demonstration units at assigned informal settlement sites.
2. Operations and maintenance support for the installed system over the duration of the demonstration.
3. Technology and skills transfer to local municipal personnel to enable O&M to take over post demonstration.
4. Monitor, collect and report on technical, O&M, cost, behavioural and user acceptance, and climate related data.
5. To support the assessment of the technology's capacity in building climate reliance, adaptation, and emergency response in sanitation service delivery in informal settlements or in other sites outside sewer reticulation coverage.
6. Promote sanitation and hygiene awareness amongst the communities and other sanitation stakeholders within the informal settlements.
7. Support independent evaluation and assessment.

Rationale:

One of the most pressing issues facing the entire world now is climate change. With rising temperatures, rising sea levels, and more frequent and severe weather events, the scientific community has proved the existence of anthropogenic climate change. The economic sectors of energy, agriculture, water, and sanitation, as well as ecosystems and human societies, are all significantly and widely impacted by these changes (IPCC, 2018). The provision of appropriate and sustainable sanitation services is anticipated to be significantly impacted by climate change, particularly in low- and middle-income countries where the demand for such services is greatest (UNICEF and WHO, 2019). It is anticipated that rising temperatures,

extreme weather, and sea level rise will make it even harder to provide basic sanitation services. The creation and implementation of sanitation systems that are resilient to climate-related risks and can sustainably function under shifting climatic conditions is known as "climate-resilient sanitation." This entails addressing the underlying causes of vulnerability and increasing adaptive capability, as well as incorporating climate resilience concepts into the planning, design, construction, and operation of sanitation systems. Innovative approaches that increase the resilience of sanitation infrastructure and services are required to achieve climate-resilient sanitation. In addition to enhancing the governance structures and policies that enable the sustainable administration of sanitation services under changing climatic conditions, this also entails the development of new technologies such as non-sewered sanitation systems and off-grid sanitation systems.

SASTEP is a collaborative technology accelerator programme funded by Department of Science and Innovation (DSI) and Bill and Melinda Gates Foundation (BMGF) and implemented by the Water Research Commission (WRC) to seek new and innovative solutions around sanitation provision. SASTEP is working with eThekwini and Cape Town municipalities to support demonstration of appropriate sanitation technologies that can improve climate resilience and adaptation as well as strengthen emergency disaster response. Selected innovative sanitation technologies will be demonstrated. Functionality, safety, performance, and user acceptance data will assist SASTEP and the municipalities to develop appropriate disaster management approaches and as a baseline for future large-scale roll-out to address sanitation challenges in these communities. The SASTEP programme has successfully deployed these next generation sanitation technologies to informal settlements and schools in Gauteng, NW, and EC provinces. Innovative solutions such as the full recirculation blackwater treatment system was installed at Mofolo North informal settlement and in Tsholetsega Primary School in Kagiso (Krugersdorp) and Coligny in the NW. The resource and nutrient recovery black water implemented in Slovoville informal settlement and Khanyisani primary school in EC. More results from these two metros will be used as an exemplar for other metros and municipalities.

This TOR defines the scope of work for onboarded SASTEP technology transfer partners participating in the SASTEP Demonstration Project - Climate resilient sanitation service delivery in eThekwini and the City of Cape town.

Note:

Deliverables:

1. Inception report – including project implementation plan,
2. Detailed design of proposed demo unit.
3. Sanitation and hygiene awareness workshop for community and end users. Mandatory training and hygiene awareness for community/end users. The aim of the event is to sentitize the community / users to social and behavioural changes needed to support the positive outcome of the demo. A report detailing activities and outcome of the workshop is required.
4. Commissioning /Handover report – This should include site compliance and permit to operate from host municipality.
5. Milestone progress reports (Quarterly as a minimum), report should include as a minimum, water quality report (influent, intermediate, effluent, and recycle streams), water and energy consumption, functionality, security report, challenges, and opportunities. Note: this excludes the mandatory SASTEP project update dashboard.
6. Training report – Mandatory training session for host municipality personnel. This should be in the form of both classroom and on-site training for assigned personnel from the host municipality. – This should include training material, feedback from attendees and photos, if available.
7. User acceptance, social and behavioral change report – This should include a baseline and post demo surveys. Baseline survey to be administered during site preparation/construction phase, post demo

survey to be administered within last 3 months of demonstration. – refer to SASTEP Demo guidelines for template survey.

8. Sanitation and hygiene awareness workshop for community and end users.
9. Sanitation workshop with municipalities presenting findings to local government sanitation stakeholders.
10. Final Report

Mandatory Requirements:

- Project shall hold liability insurance over the period of the demonstration period. The project shall indemnify the WRC and host municipality from any claims that can arise from accidents, poor workmanship and other risks that could arise from the project.
- Project shall provide security personnel during the demonstration period.
- Project shall provide janitorial personnel and toiletries e.g., toilet papers, hand washing soap at toilet block during demonstration period.
- Project budget contingency should include cost of removing the installation and returning the site to its original state should the demonstration not meet desired outcome and/or host municipality not satisfied with installation.
- Assessment of assigned site should be conducted prior to compiling proposal.
- Containerized front end toilet block may be required if the assigned site has no existing toilet block (where applicable).
- All sites with no access to sewer mains should provide means of emergence disposal/containment of inventory i.e., onsite containment tank, soakaway/French drain/septic tank depending on soil/environment condition.
- An independent assessment of the site installation and demo outcomes will be conducted by an independent assessor. Project to provide necessary support and information for the independent assessment.
- Mandatory handover documentation – this should include but not limited to a comprehensive operating manual detailing the operational envelope, process description, process flow, critical equipment list and datasheets, general arrangement drawings, dosing requirements, dosing chemical MSDS, maintenance schedule, electrical diagrams and any other drawing and document required by host municipality to operate and maintain unit post demonstration.
- Inclusion of flux chambers on NSSS installation to facilitate measurement of Green House Gases (GHGs) emissions.

Time Frame: 15 Months (3 months for construction, 12 months demonstration) Proposal should allow for 12 full months of demonstration from date of commissioning/handover.

Attachment:

1. SASTEP Field-testing Guidelines - https://wrcwebsite.azurewebsites.net/wp-content/uploads/mdocs/3045_final%20web.pdf
2. Site Assessment report.