



# **KHANYISA PROJECTS CASE STUDY**

Project Management of Engineering Field Testing Platform

Testing innovative non-sewered sanitation systems

## **AT A GLANCE**

### **FUNDERS**

The Bill and Melinda Gates Foundation.

### **TIMELINE**

2018 to 2022

### **AREAS**

Testing sites included informal settlements, rural areas and municipal WWTW in eThekweni Municipality (Durban)

## **NSS TECHNOLOGIES INCLUDE**

- New urine diverting technology
- Dry sealed front end systems
- Back end technology such as membranes, biological reactors and electro chlorination

## **PARTNERS**

We work in partnership with the University of KwaZulu Natal WASH R & D Center and the eThekweni Water & Sanitation department to manage this toilet testing platform. The UKZN PRG will be assisting technology developers with the testing of their prototypes. The objective of the testing process is to assess whether prototypes are suitable for the sanitation market and if so then to partner with suitable manufacturers for the scale up process.

## **OBJECTIVES**

**What:** The platform allows for engineering testing of Non-Sewered Sanitation (NSS) prototypes in a real environment with different types of users. Developers can measure the performance of their prototypes over various time periods.

**How:** Khanyisa Projects has worked with over 20 different toilet prototypes reporting directly to the Bill and Melinda Gates Foundation on progress.

## **KEY TECHNICAL SERVICES**

Key technical services provided by Khanyisa Projects for preparation of the toilet testing sites include:

- Site selection
- Community engagement
- Site preparation
- Engagement with developers
- Scoping and design
- Contractor documentation and tender
- Construction management
- Logistics planning and management
- Technical support during installation and commissioning
- Ongoing operation and management
- Security
- Decommissioning



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## WHAT ARE NON-SEWERED SANITATION (NSS) SOLUTIONS?

- Non-sewered sanitation recognised as critical for the future by International Water Association (IWA) and World Toilet Board
- Do not require connection to sewer
- Can offer the same level of user experience as a regular flush toilet
- Can be desirable, aspirational products
- High tech systems, produced at scale, at an affordable price
- Innovative – the ‘Reinvented Toilet’
- Contribute to the circular economy



### COMMUNITY ENGAGEMENT



### SITE PREPARATION



### INSTALLATION & COMMISSIONING



### TESTING



## SOME LESSONS LEARNED

- Site selection and preparation challenging due to space, topography and community dynamics
- Community support is more important than technical suitability
- Community expectations need to be managed
- Ensure quality data collected to inform decision making
- Have testing exit strategy planned upfront

## EXAMPLES OF SYSTEMS TESTED

- ECOSAN off-grid black water recycling
- New Generation off-grid waste water recycling
- EAWAG household flush toilet and handwash system
- Pee Power UWE electricity from Urine using microbial fuel cells