



## TERMS OF REFERENCE FOR A DIRECTED WRC PROJECT

<b>KEY STRATEGIC AREA</b>	<b>3</b>
<b>THRUST</b>	<b>Sustainable Municipal Wastewater and Sanitation</b>
<b>PROGRAMME</b>	<b>5</b>
<b>TITLE</b>	<b>Understanding bound water content and water binding strength in Faecal Sludge from on-site sanitation technologies and human faeces</b>

**Objectives:** To examine and provide insight to the scientific processes limiting faecal sludge dewatering and drying processes.

### **General:**

The understanding of faecal sludge dewatering and drying behaviour remains a major bottleneck in the cost-efficiency of current faecal sludge beneficiation technologies. This project seeks to address two challenges in parallel; i) provide insight to the scientific processes that limit faecal sludge dewatering and drying processes, with emphasis of water binding in faecal sludges, and ii) to develop appropriate techniques and methodology to scientifically evaluate water binding in faecal sludges. It is envisaged that the research will result in following benefits. First, it will provide process optimization for volume and mass reduction which can reduce the cost of transport and subsequent treatment. Second, sludge that is processed with a low moisture content and significant organic content can be repurposed into biofuel. And lastly, the research will result in the development of standardized methods for faecal sludge characterization.

### **Specific Aims:**

The main objectives of the proposed project are as follows:

1. Develop and scientific evaluate techniques and methods to understand faecal sludge dewatering and drying behaviour;
2. Provide insight into the scientific process that contribute to water binding in faecal sludges including VIP latrines, UDDT sludge and fresh faeces.
3. Dissemination of outputs in scientific journals and conferences.

### **Rationale:**

The information generated from this project will enable the developers, innovators and operators of faecal sludge beneficiation technologies to better understand processes that limit faecal sludge dewatering and drying.

### **Deliverables:**

1. Development of standardized methodology to understand water binding in faecal sludges.
2. Understanding of water binding behavior in various faecal sludges.
3. Dissemination of scientific outputs in academic journal and conferences.

#### 4. Final Report

##### **Expected outputs**

1. Development of scientific methods for understand water binding in faecal sludges
2. Understanding the mechanisms which contribute to faecal sludge dewatering and drying behaviour
3. Final Report including scientific journals.

##### **Lighthouse:**

- Not specific to WRC Lighthouse

##### **Knowledge Tree**

- Sustainable Development Solutions

**Time Frame:** 2-years

**Total Funds Requested:** R 700,000 inclusive of VAT (R350,000 available in year 1).