MANGAUNG
METRO MUNICIPALITY
METRO MUNISIPALITEIT
LEKGOTLA LA MOTSE

DIRECTORATE
ENGINEERING SERVICES

WATER SERVICES MASTER PLAN

SLUDGE HANDLING IN BLOEMSPRUIT WASTE WATER WORKS

Presented by Mr. Henry Jones

Bloemspruit Waste Water Treatment Works Superintendent

INDEX

1. BACKGROUND

1. BACKGROUND (CONTINUES)

- Henry Jones has been working in the municipality since 1997
- Started as Plant operator then plant controller, Senior Plant Controller and then Superintendent since 2003

1. BACKGROUND (CONTINUES)

- Bloemspruit Waste Water Works was build in 1904
- It was upgraded in 1945 building number 1 works which incorporates grit channels, 6 Primary Sedimentation tanks, 4 Humus tanks, 2 anaerobic primary digesters, 1 secondary anaerobic digesters, 6 bio filters, pump station, boiler house, hand raked screens and laboratory.

1. BACKGROUND (CONTINUES)

- It was upgraded again in 1965 by establishment of number 2 works, which comprise of 4 primary sedimentation tanks, 4 humus tanks, 4 biological filters, 3 primary anaerobic digesters, 3 secondary digesters, pump station, grit channels, hand raked screen and boiler house.
- It was upgraded again in 1965 by establishment of number 2 works, which comprise of 4 primary sedimentation tanks, 4 humus tanks, 4 biological filters, 3 primary anaerobic digesters, 3 secondary digesters, pump station, grit channels, hand raked screen and boiler house.

1. BACKGROUND (CONTINUES)

- Current Design capacity of 54Ml/d
- Current flow is about 48 Ml/d
- It is divided into three different treatment works
- The plant is operated 24 hours a day and there are shifts

2. INLET WORKS THROUGH SCREEENING

2. INLET WORKS THROUGH SCREEENING (Continues)

- Water comes in through the screw pumps (3)
- Goes through to the mechanical screen
- Then through to the Grit Channels

3. GRIT REMOVAL

3. GRIT REMOVAL (Continues)

- Grit removal is done manually by Process Controllers
- The purpose is to protect the mechanical equipment
- Manual operated hand screen to remove rags

4. PRIMARY SEDIMANTATION TANK

4. PRIMARY SEDIMANTATION TANK (Continues)

- Settling tanks are used to separate the solid particles from the water

5. SLUDGE IN DIGESTERS UNDERFLOW

5. SLUDGE IN DIGESTERS UNDERFLOW (Continues)

- Particles collected from the bottom of the sedimentation tanks are removed daily to the sludge digesters.
- On the Sludge Digesters we draw off supinated
- Ensure the temperature of the Sludge digester is 37 degrees Celsius
- We effect this heating process using methane gas boiler

6. SLUDGE UNDERFLOW FROM DIGESTERS TO SECONDARY TANKS

6. SLUDGE UNDERFLOW FROM DIGESTERS TO SECONDARY TANKS (Continues)

- Sludge from the Digester goes to the secondary sludge thickener
- Secondary sludge thickener thickness the sludge from the digester which gives us a 10 day retention time.

7. SLUDGE FROM SECONDARY TANKS TO DIGESTERS

7. SLUDGE FROM SECONDARY TANKS TO DIGESTERS

- Stabilised sludge will then be pumped to the sludge drying beds
- The sludge at the drying beds takes 14 -21 days to dry
- It is then removed by a front end loader and stock piled

8. SLUDGE FROM DRYING BEDS TO FARMERS

8. SLUDGE FROM DRYING BEDS TO FARMERS

- Arrangements are made with the farmers to fetch sludge which they use in their farms for everything that grows above the soil like corn and other vegetables.

9. SAMPLING REGULATION AT DUMPING SITE

9. SAMPLING REGULATION AT DUMPING SITE

- Our laboratory tests our sludge to ensure that it complies with the necessary regulations

10. CHALLENGES

- The plant was built in 1902 and it was far from urban settlements but today is it right in the centre of the City thus the operations are constantly under the spotlight
- The budget for the Operation, Maintenance and Refurbishment is not adequate
- There is shortage of staff
- Shortage of budget for staff training
- Theft of cables and steel material for scrap
- There is a high volumes of clean water coming into the plant due to water losses on leaking toilets

10. CHALLENGES (Continues)

- The stolen manhole covers lead to the obstacles being thrown in them that are unsuitable for the inlet works like dead bodies, grit, cow heads etc.