



BIOPOWER KWAZULU (PTY) LTD

Sanitation and Wastewater Solutions
for 21st Century South Africa



SANITATION CHALLENGES

- ❖ Water supply and sanitation in KwaZulu-Natal is characterised by achievements and challenges

Toilet facilities

55.7%

Have access to flush or chemical toilets

about 90 percent of the rate in South Africa:
63.53%

2.7%

Have no access to any toilets

about 10 percent higher than the rate in South
Africa: 2.39%

- ❖ In rural areas facilities such as schools, clinics, and communities in general have little access to flushing-toilet facilities, causing:
 - Health concerns and disease propagation;
 - Safety concerns especially for young children;
 - Undignified living conditions.



SANITATION CHALLENGES

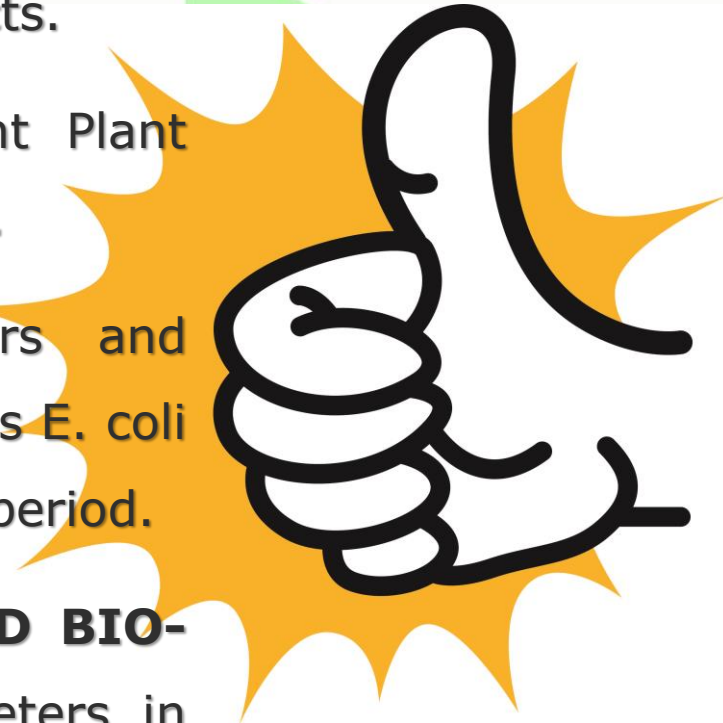
Name	Bucket toilet (collected by municipality)	Bucket toilet (emptied by household)	Chemical toilet	Ecological toilet (e.g. Enviroloo)	Flush Toilet (Sewered)	Flush Toilet (Septic Tank)	Pit Latrines and VIP Toilets	None	Other
KwaZulu-Natal	31 109	149 171	1 799 400	95 282	4 027 482	340 772	3 955 486	295 241	371 298
Amajuba	103	5 106	45 589	1 379	250 343	13 744	196 990	8 753	9 319
eThekwini	13 280	57 608	427 759	12 782	2 480 808	149 317	459 770	32 033	68 875
Harry Gwala	2 539	1 113	115 307	741	74 733	6 182	285 902	9 400	14 947
iLembe	167	10 805	166 497	3 752	126 801	24 054	295 619	14 998	14 918
Ugu	9 863	9 898	78 759	17 694	120 523	18 972	429 180	24 174	44 274
Umgungundlovu	912	9 390	124 982	13 224	406 818	67 482	399 665	9 022	64 370
Umkhanyakude	985	6 261	161 791	6 050	27 604	9 230	387 138	67 943	22 089
Umzinyathi	35	17 158	67 443	20 094	82 528	3 958	330 368	12 058	21 241
Uthukela	703	11 388	128 952	7 608	155 608	5 686	354 679	14 597	27 367
Uthungulu	368	7 805	262 725	7 511	182 562	30 408	424 846	28 924	25 985
Zululand	2 154	12 639	219 596	4 447	119 154	11 739	391 329	73 339	57 913

SANITATION SOLUTIONS

- ❖ **BioSol SL36:** Biological Additive
- ❖ **Flush-Tech Sanitation System:** Biological Wastewater Treatment Plant
- ❖ Wastewater Treatment Works (WWTW)/Waste Stabilisation Pond bioremediation, Bio-Augmentation and Bio-Stabilisation
- ❖ Processors and Monitoring Equipment for WWTW

SOME NOTABLE ACHIEVEMENTS

- ❖ **SOUTH AFRICAN BUREAU OF STANDARDS:** Originators and co-creators of SANS 1781 for biological wastewater treatment products.
- ❖ **TINLEY MANOR FTS:** 36m³ Biological Wastewater Treatment Plant constructed for Tinley Manor Primary School. Serves as demo site.
- ❖ **RIVERS/BEACHES BIOREMEDIATION:** Treatment of rivers and beaches in eThekweni over the 2023/2024 Festive Season. Beaches *E. coli* counts improved drastically, and most were open after treatment period.
- ❖ **WASTEWATER TREATMENT WORKS BIOREMEDIATION AND BIO-AUGMENTATION:** Exemplary improvements in diverse parameters in KwaZulu-Natal, and North West province.



BIOSOL SL36 IN A NUTSHELL



WHAT IS BIOSOL SL36?

Our **unique** biological sanitation blend:

- ❖ is 100% natural, non-toxic and non-poisonous;
- ❖ digests any organic waste and removes bad odours;
- ❖ improves the environment back to its previous unpolluted state;
- ❖ caters for all waste systems incl. pit latrines, septic tanks, FTS etc.
- ❖ saves costs for public- and private entities
- ❖ creates sustainable job opportunities
- ❖ complies to SANS 1781 from SABS as developed by BioPower, SABS and other stakeholders.



WASTEWATER TREATMENT WORKS SOLUTION

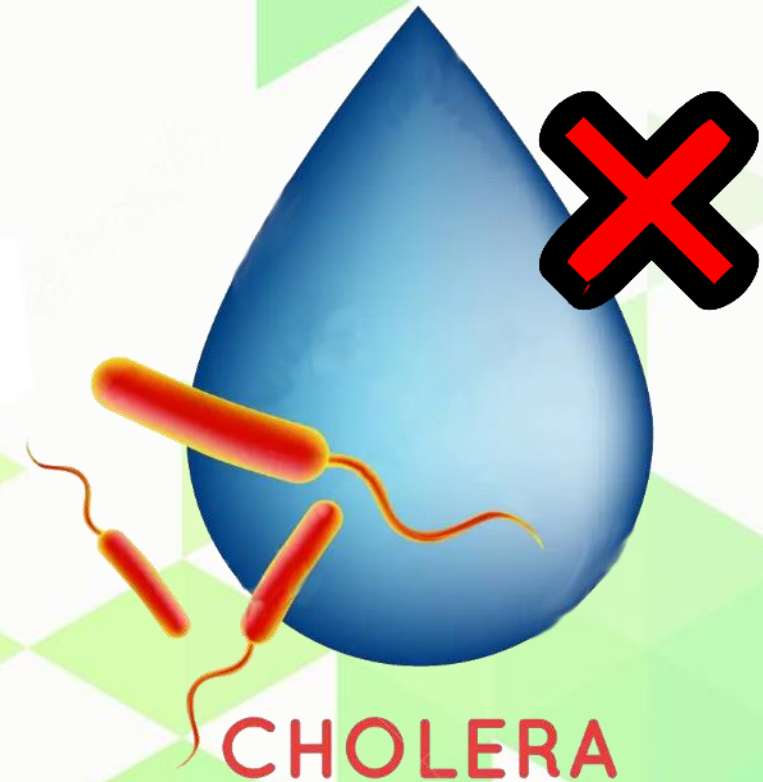
The application of 5 litres for every megalitres in Wastewater Treatment Works and Waste Stabilisation Ponds will:

- ❖ digest the organic waste
- ❖ eliminate odours
- ❖ facilitates improved nitrification/denitrification for ammonia reduction
- ❖ reduces COD and BOD counts
- ❖ improves Dissolved Oxygen levels
- ❖ save costs associated with wastewater treatment

PIT LATRINE/VIP TOILETS

The application of 250ml of BioSol SL36 mixed with a litre of water every 10-days (for 2 full treatments) in alternative sanitation infrastructure will:

- ❖ digest the organic waste
- ❖ establish an average drop in pit latrine sludge levels up to 900mm in the first month
- ❖ eliminate odours which attracts flies, thereby reducing the spread of diseases like cholera
- ❖ improve the dignity of end-users after application
- ❖ ensure the health and dignity of end-users
- ❖ save costs associated with desludging.



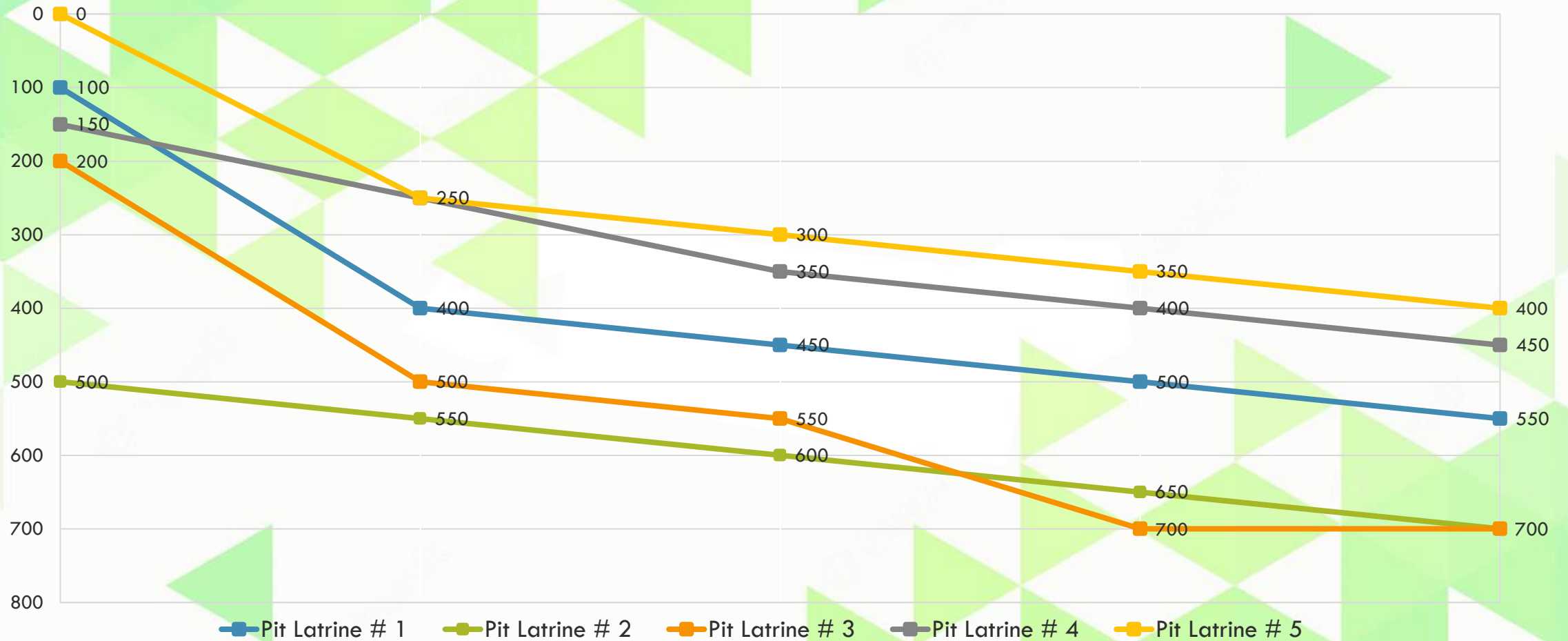
BIOSOL SL36 BENEFIT SUMMARY

- ❖ Water Resource Management
- ❖ Human Waste Management
- ❖ Environmental Rehabilitation
- ❖ Disease control
- ❖ Odour control



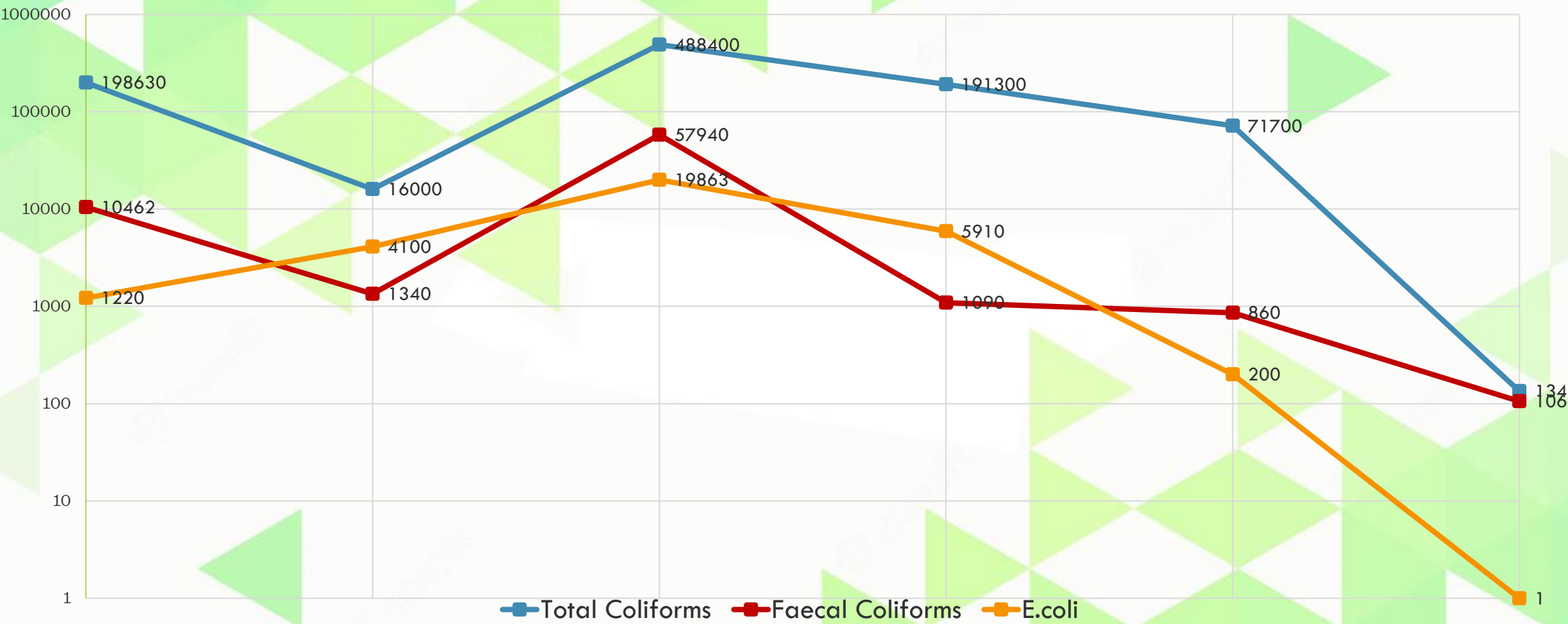
PHYSICAL IMPACT OF BIOSOL SL36

Pit Latrines (1 month trial) (average sludge levels dropped by 370mm)



MICROBIOLOGICAL IMPACT OF BIOSOL SL36

Waste Stabilisation Pond over 6-Weeks



FLUSH-TECH SANITATION (FTS) SYSTEM IN A NUTSHELL



BENEFITS OF THE FTS

Advantages of the FTS system:

- ❖ Recycles and recirculates black/grey water from the drains
- ❖ Saves up to 60% of precious fresh water for consumption, showering/bathing or irrigation/gardening, saving costs associated with freshwater usage
- ❖ Takes pressure off the existing WWTW infrastructure
- ❖ Is the environmental- and socially conscious solution, saving water, and improving the country's health- and environmental profile
- ❖ Water Research Commission (WRC) SanIC 2015 rating of 8,5

APPLICATION OF THE FTS

- ❖ BioPower KwaZulu uses the Flush-Tech Sanitation System to recycle wastewater at schools, clinics and communities to re-flush toilets
- ❖ Adding BioSol SL36 biological additive, sludge build-up is nearly eliminated and no odours will be present, while ensuring compliant effluent to use for re-flushing toilets
 - All connected toilets can be flushed from the FTS system,
 - Excess water is used to irrigate gardens/sports fields.
 - Any further excesses will be released into the sewer system.
- ❖ Water Research Commission (WRC) SanIC 2015 rating of 8,5



TINLEY MANOR FTS



TINLEY MANOR FTS



HAZELMERE FTS (UNDER CONSTRUCTION)



HAZELMERE FTS (UNDER CONSTRUCTION)



WORK CREATION, SKILLS DEVELOPMENT- AND TRANSFER

During the construction and implementation phase:

- ❖ Local labour will be used during the project as identified by the counsel;
- ❖ Skills transfer and development will be conducted with all local employees to assist in future careers/job opportunities;
- ❖ Three members of the community will be trained to clean and do basic maintenance on the system as a permanent job opportunity.



PROCESSORS AND MONITORING IN A NUTSHELL

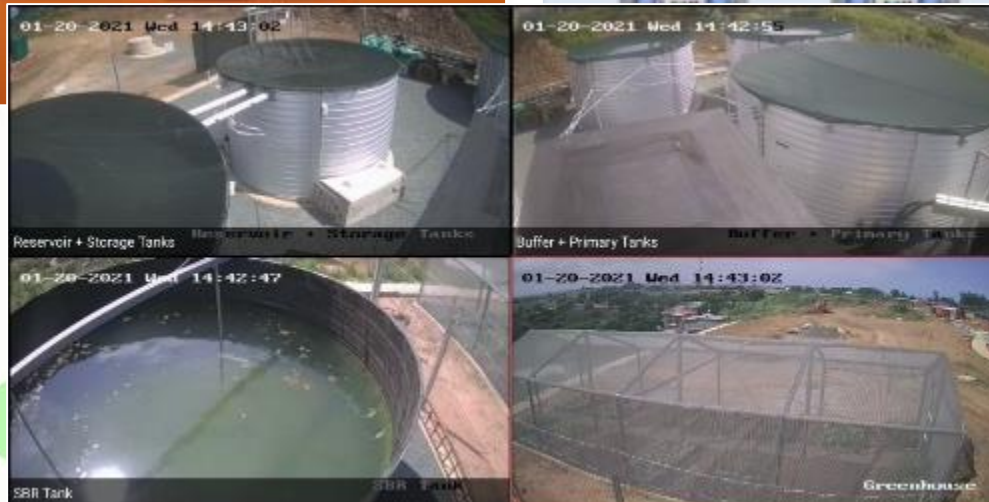


WWTW PROCESSORS

State-of-the-art Control Units can be used to replace current controllers and offer major updated functionality with internet connectivity and remote-accessible offsite capability, for:

- Offsite Monitoring.
- Offsite Troubleshooting.
- Offsite Operation.
- 4-beam alarm-system.
- 4-channel/8-channel security/monitoring cameras showing live footage of the plant for security and monitoring.
- Retrospectively add remote wastewater quality probes for real-time monitoring – such as Dissolved Oxygen, pH, MLSS etc.

WWTW PROCESSORS



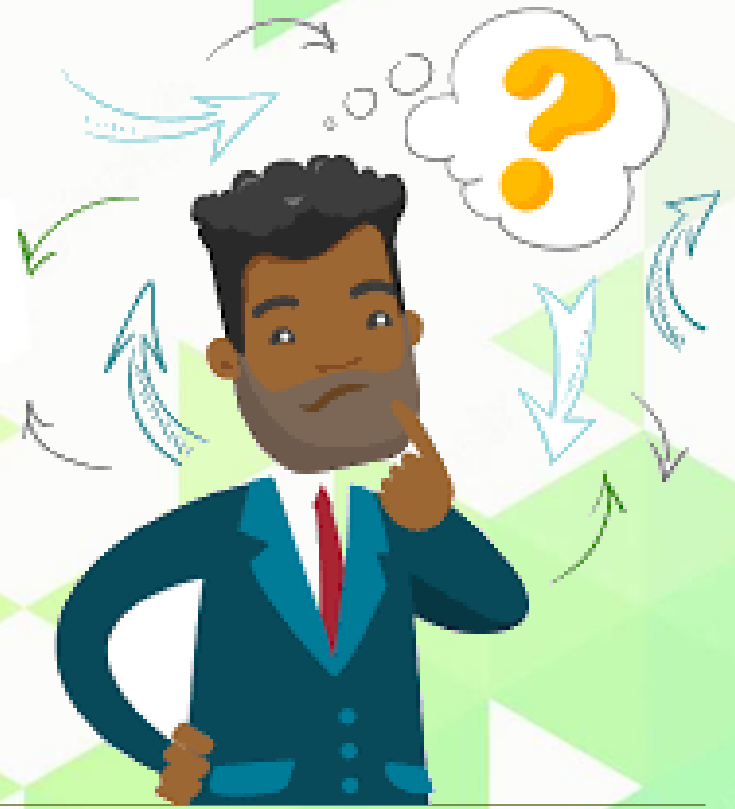
WWTW PROCESSORS

- The same interface is available on the phones and laptops of key personnel – meaning manual adjustment and monitoring from anywhere in the world is possible.
- Plant operation is an automatic process but can be overridden.
- Cameras have been installed in the plant at strategic points with one month footage back-up. This ensures security and monitoring at any time, as live streaming is available.
- The processor units host a touchscreen interface to manually control the pumps and aerators for the plant.

CONCLUSION

Through our proven technology – which has been rated the highest of its class by the Water Research Commission in its 2015 Sanitation Innovation Challenge – BioPower can ensure cost savings associated with water usage and desludging at schools, hospitals, shopping centres, housing developments etc.

Along with the cost savings, the FTS system with BioSol SL36 provides a healthy and hygienic way to reclaim used water and ensure a clean and healthy community.



CONTACT DETAILS

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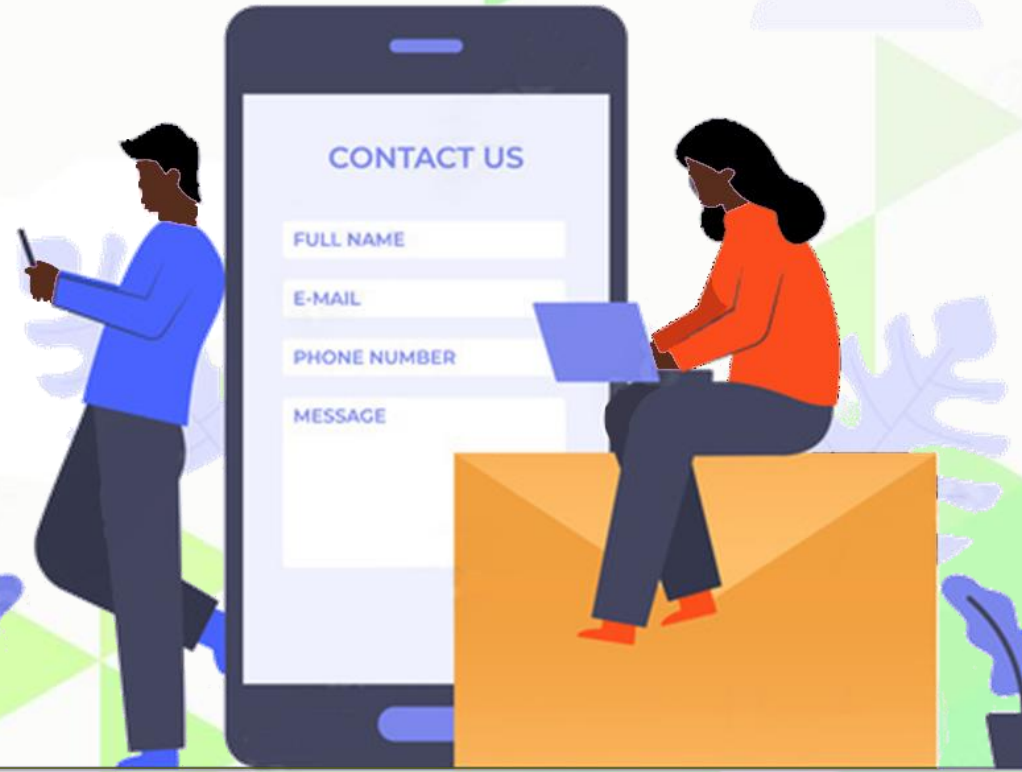
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Thank You !

*Save our water, save
our lives*