



WATER, WASTEWATER, IRRIGATION SOLUTIONS.



PROJECT PROPOSAL



PACKAGED SEWAGE TREATMENT PLANTS.

CLIENT:	TMBA Architects	PROJECT NO:	BB BUG2 TMBA LOVEMORE KL15925
REPRESENTED BY:	Ms. Tracey Mills Brink	PROPOSED BY:	K. LEVIN
TEL:	+27 (0)	DATE:	15/09/2025
MOBILE:	+27 (0) 82 922 6775	SITE LOCATION:	Featherbed, Knysna
EMAIL:	tracey@traceymillsbrink.com	PROJECT DESCRIPTION:	2000 litre per day plant – PPE

Contents

SECTION 1 – COMPANY OVERVIEW	3
SECTION 2 – THE BIOBLOO RANGE	4
SECTION 3 – PROCESS OVERVIEW	5
a. ANAEROBIC PHASE	5
b. AEROBIC (BIOREACTOR) PHASE	5
c. SETTLING OR CLARIFIER PHASE	5
d. DISINFECTION PHASE	5
SECTION 4 – CLIENT BRIEF	6
Assumptions:	6
SECTION 5 – PREVIOUS INSTALLATIONS	6
SECTION 6 – TREATED EFFLUENT STANDARDS	7
SPECIAL STANDARDS – required for returning water to public water source	7
GENERAL STANDARDS – water can be reused for irrigation, wash-bays, toilets, game, and stock	7
SECTION 7 – TECHNICAL SPECIFICS	8
SECTION 8 - MAINTENANCE	9
Daily Maintenance (Client responsible person to conduct)	9
Weekly Maintenance (Client responsible person to conduct)	9
Monthly Maintenance (Client responsible person to conduct)	9
SECTION 9 – COMMERCIAL - PRICING	10
SECTION 10 – COMMERCIAL TERMS	10
INSTALLATION ON SITE	10
DELIVERY & OFF-LOADING	10
HSEQ REQUIREMENTS	10
EXCLUSIONS	10
LEAD TIMES:	11
Manufacturing will commence upon:.....	11
1. Receipt of signed order by client,	11
2. The necessary deposit payment.	11
PAYMENT TERMS:	11

SECTION 1 – COMPANY OVERVIEW

FLUIDCO was founded to meet the growing needs of the African continent for water, air, and alternative forms of energy. Their product range of state-of-the-art solutions can resolve all the continent's issues in a sustainable manner. Best practices are constantly sought within a framework of good corporate governance and social responsibility. Their proven technologies are continually being critically assessed, upgraded, and adapted as new international technologies become available.

FLUIDCO has several unique competencies within the organisation, and the depth of experience of its team members provides the basis for technological solutions that are world class. A branch and agents' network that caters for servicing the country is complimented by a service ethic that ensures prompt response to customer needs.

FLUIDCO are members of the Water Institute of South Africa and through their association with **Nano Water Technologies**, are certificated by the **Agrément South Africa** process for quality management on Wastewater and Sanitation products.



FLUIDCO have developed the following range of products/divisions:

- **BIOBLOO®** PACKAGED SEWAGE TREATMENT PLANTS.
- **BIOOUA®** PACKAGED WATER TREATMENT PLANTS.
- **BIOGATE®** IRRIGATION DESIGN AND INSTALLATION.
- **BIOWPOWER®** SOLAR, UPS & PFC SYSTEMS.
- **BIOPONICS®** HYDRO & AQUAPONICS.
- **BIOZYME®** ENZYMES AND BACTERIA.

to serve the following industries:

- Agriculture, Aquaculture, Pack houses and labour compounds,
- Border post facilities and Military Camps
- Breweries, Distilleries and Wineries,
- Building and Construction Sites, Park home manufacturers,
- Car wash facilities,
- Domestic dwellings, Golf and Residential estates, Eco Estates,
- Food processing plants, Process Plants and Petro-Chemical plants,
- Fuel stations,
- Game Lodges, Hotels, Wildlife parks and B & B's
- Hospitals and Clinics,
- Mining sites and compounds,
- Municipalities,
- Property Developers, Residential Estates, Township developments,
- Schools and Universities, Sports Clubs, Golf Courses
- Shopping Malls,

SECTION 2 – THE BIOBLOO RANGE

The **BIOBLOO®** range is a complete Biological Wastewater Treatment plant, based on submersed bio-media with return activated sludge. The advantage of these plants is that treated water can be re-used for irrigation purposes, dust suppression or in flushing of toilets etc. which contributes to saving and recycling of water. The treated water from the plant can also be treated further to potable standards should the need arise. Each one of the different plants is constructed and designed with a built-in safety margin (15%) as a standard which will accommodate for flush conditions.

- Hygienic and odour free,
- Cost effective,
- Electricity consumption is very low.

BIOBLOO® 'BUG BURIED TREATMENT PLANTS



BIOBLOO® 'AG ABOVE GROUND TANK PLANTS



BIOBLOO® CON CONTAINER PLANTS



BIOBLOO® ST STEEL TANK PLANTS

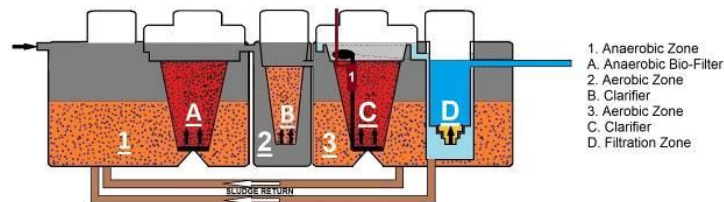


BIOBLOO® CIV CIVIL CONSTRUCTED PLANTS



SECTION 3 – PROCESS OVERVIEW

The process flow is the same for all the **BIOBLOO®** range and is described below. Although plant housings may require minor mechanical and structural variations to this, the chemical and biological process remains the same tried and tested process. The technology we use is a combination of anaerobic/aerobic Moving Bed Biological Reactor. The design concept has proven itself over the last 10 years to be reliable and cost effective. The biological process uses bacteria to reduce the BOD load as well as provide nitrification and denitrification of ammonia. The disinfection process ensures further water quality and filtration up to 1.6 micron as well as total removal of all coliforms. This allows treated effluent to be either safely discharged to the environment or alternatively reused for irrigation. Treated effluent conforms to the S.A.D.W.S. General Standards Limits.



a. ANAEROBIC PHASE

- The first tank (anaerobic process) allows for digestion of sewage and the separation of solids i.e., those that settle and those that float. The middle cut of the effluent then flows through to the second tank.
- The Anaerobic phase breaks down the fine sewage particles and alters to carbon dioxide and water. This ideal effluent then passes into the aerobic chamber for aeration.
- The de-nitrification cycle takes place in this phase. This function is responsible for the breaking down of nitrates to nitrogen gas.

b. AEROBIC (BIOREACTOR) PHASE

- In this phase the digestion takes place in an aerated environment. This phase can be divided into two or more bioreactors added together.
- This phase takes the smaller solids and bio-degrades them further.
- The type of bacteria that operates in this environment is called aerobic bacteria. It is very important to aerate this phase to enrich the liquid with oxygen.
- In the aerobic phase the nitrification takes place. This process breaks down the ammonia to nitrites and the nitrites to nitrates. To provide these bacteria with their "homes" we have designed a very effective aerobic zone.
- Aeration takes place by Blowers and fine bubble diffusers, which are quiet and efficient.

c. SETTLING OR CLARIFIER PHASE

- Secondary settling takes place in this phase.
- The cell material and settle able solids settle in this phase and form the so-called "sludge blanket".
- The sludge blanket is very important for the process. When the blanket matures, it is re-circulated to the primary settling tank in phase one to "seed" or inoculate the raw sewerage entering the plant and to alter the nitrates to nitrogen gas.
- This cycle is called the re-activated sludge cycle.

d. DISINFECTION PHASE

- In the fifth and final phase the final effluent is prepared for final discharge.
- The effluent is disinfected by means of Chlorine tablets in a dispenser.

SECTION 4 – CLIENT BRIEF

FLUIDCO (Pty) Ltd were requested to provide a proposal to **TMBA Architects** for a site at **Featherbed, Knysna, South Africa**.

Provide one BUG BELOW - ground treatment to cater for a total of 4 000 litres per day, this will cater for 12 to 16 people per day.

Plants are generally designed to conform to **South African Department of Water & Sanitation GENERAL LIMITS STANDARDS**. These allow the treated effluent to be re-used for irrigation etc. Should the treated effluent be returned to a public watercourse or stream however, the treated standard required is raised to that of **SPECIAL LIMITS**. The relevant clauses and standards are included further in this document. For the purposes of this exercise, we have assumed the treated effluent is required to conform to **GENERAL LIMITS Standards**.

Assumptions:

1. Standard domestic type effluent,
2. No biodegradable products will be allowed to enter the plant.
3. It is assumed that only biodegradable chemicals are used, and that no industrial type cleaning product will be used in this plant.
4. Treated effluent to conform to **GENERAL LIMITS** standards.
5. Excavation and civils work to be undertaken by others. (These can be quoted on separately if required.)

SECTION 5 – PREVIOUS INSTALLATIONS



SECTION 6 – TREATED EFFLUENT STANDARDS

The **South African Department of Water and Sanitation Standards** are used as a guideline for **FLUIDCO** (Pty) Ltd quality standards as they generally conform to all International Standards. Where not relevant they are adapted accordingly.) These standards are described below:

SPECIAL STANDARDS – required for returning water to public water source.

Quality standards for wastewater or effluent arising in the catchment area, draining water to any river specified in Schedule 1, or a tributary thereof, at any place between the source thereof and the point mentioned in the Schedule, insofar as such catchment area is situated within the territory of the Republic of South Africa.

The wastewater or effluent shall contain no constituents in concentrations which are poisonous or injurious to humans, animals, fish other than trout, or other forms of aquatic life, or which are deleterious to agricultural use.

The wastewater or effluent shall not contain any substance in a concentration capable of producing any colour, odour, or taste.

GENERAL STANDARDS – water can be reused for irrigation, wash-bays, toilets, game, and stock.

Quality standards for wastewater or effluent arising in any area other than an area in which the SPECIAL STANDARD is applicable, as described in paragraph 1.

The wastewater or effluent shall contain no constituents in concentrations which are poisonous or injurious to humans, animals, fish other than trout, or other forms of aquatic life, or which are deleterious to agricultural use.

The wastewater or effluent shall not contain any substance in a concentration capable of producing any colour, odour, or taste.

All tests shall be carried out in accordance with methods prescribed by and obtainable from the South African Bureau of Standards, referred to in the Standards Act, No. 30 of 1982, as listed in Schedule III.

VARIABLES AND SUBSTANCES	EXISTING SA STANDARDS	GENERAL	EXISTING SA STANDARDS	SPECIAL
Chemical Oxygen Demand	75mg/l		30mg/l	
Ionised and unionised ammonia (as N)	3.0mg/l		2.0mg/l	
Nitrate (as N)	15mg/l		1.5mg/l	
pH	Between 5.5 and 9.5		Between 5.5 and 7.5	
Residual Chlorine (as Cl)	0.25mg/l		0	
Suspended solids	25mg/l		10mg/l	
Phosphorous (Ortho Phosphate) (as P)	10mg/l		1 mg/l	
Total Iron (as Fe)	0.3mg/l		0.3mg/l	
Faecal Coli forms per 100ml	1 000		0	

All **BIOBLOO®** plants will treat effluent to the specified standard, subject to the correct maintenance regime being applied.

SECTION 7 – TECHNICAL SPECIFICS

BIOBLOO® BUG4 Below-ground plant.

BIOBLOO® BUG4 Below-Ground plant.		
Product code:	BB BUG4	
Daily treated capacity	4 000 litres per day	
Total capacity	12 500 litres	
No. of tanks	6	
Aeration method	Air Blowers and Diffusers	
Buffer tank	N/A	
Transfer pump	N/A	
Discharge pump	Yes	
Disinfection process	Klorman dispenser	
Total kW used per hour	1.1	
DB type	IP 65	
Control room	N/A	
Standard Treated to:	General Limits	
Power required:	220V	
Circuit Breaker required:	30 A	
Fresh water required at start up	12 500 litres	
Plant footprint - L - W - D	7m-2m-2.0m	
Concrete depth	150mm reinforced.	
PROJECT RESPONSIBILITY MATRIX		
BIOBLOO® BUG Buried plants.	FLUIDCO	OTHERS
Plant Manufacture and Delivery	✓	
Excavation for plant		✓
Engineering drawings	✓	
Concrete slab		✓
Installation of plant	✓	
Backfill provision - to standard		✓
Backfill process	✓	
Incoming pipework supply and installation		✓
Power supply to within 5m of site		✓
Supply of fresh water for filling plant		✓
Commissioning, Training and Handover	✓	
Supply of O & M Manual and One month's supply of chemicals	✓	

SECTION 8 - MAINTENANCE

Should the below processes be strictly followed, the plant will provide many years of efficient service. The below processes and costs are the same for **BUG** and **AG** plants.

Daily Maintenance (Client responsible person to conduct)

- ☉ Should there be any inorganic build-up in the inlet to the plant, it should be removed and disposed of in the appropriate manner, in-line with hazardous waste disposal legislation.
- ☉ Check that all mechanical Equipment is operational.
- ☉ Check bacteria level in bacteria holding tank and mix bacteria.

Weekly Maintenance (Client responsible person to conduct)

- ☉ Check that all mechanical Equipment is operational.
- ☉ Check the timers to ensure that the timing has not changed due to electrical failure.
- ☉ Remove all non-organic material from manual Screen or tank.

Monthly Maintenance (Client responsible person to conduct)

- ☉ Sampling – take feed sample and final treated effluent sample for SANAS accredited lab analysis.
- ☉ Manual Screen - Remove all non-organic material & agitate the accumulated organic material.
- ☉ Blowers – Verify that blowers are clear of obstruction and grease mechanical components where required.
- ☉ Clarifier Pumps - Verify that the submersible pumps are clear of obstructions and in good running order.
- ☉ Ozone Equipment - Measure & record Ozone Generation is to design specifications.
- ☉ Dosing Equipment - Measure & record dosing ratio & check bacteria level in bacteria holding tank and mix bacteria.
- ☉ Sludge ratio's - Measure & record sludge levels (both top & bottom Blanket) in each tank.
- ☉ Electrical - Check timers are set to correct intervals for the clarifier pumps and test & ensure time is accurate.
- ☉ Report - Full independent lab analysis for discharge effluent & full fault report and corrective action requirements to be provided.

The system design parameters **exclude non-organic matter**. The effective operation of on-site sewerage treatment plants requires that the design and maintenance of the upstream reticulation be in order, particularly the septic tanks and grease traps.

Monthly maintenance costs – excluding labour and electricity:

- ☉ Bacteria – manual application – R265.00/MONTH
- ☉ Klorman tablets – R 500.00/ MONTH
- ☉ Costs of chemicals are similar if system dosing pumps are included rather than manual application.

SECTION 9 – COMMERCIAL - PRICING

BIOBLOO® BUG4 BELOW GROUND STP.

Item	Description	Qty	Rate	Total
1	Manufacture and Supply BB BUG4 STP Complete	1	R 201 000.00	R 201 000.00
2	Delivery and Installation	1	R 22 400.00	R 22 400.00
Sub-Total				R 223 400.00
15% discount subject to deposit payment by 30th September 2025.				R 33 510.00
Revised Sub-Total				R 189 890.00
VAT				R 28 483.50
Total				R 218 373.50
70% Deposit required				R 152 861.45
Balance due upon commissioning				R 65 712.05

WARRANTY:

- ☉ Mechanical and Electrical Equipment Warranty - carries a 12-month OEM warranty,
- ☉ Process Warranty – Final water to be in accordance with this proposal, subject to correct maintenance procedures being followed,
- ☉ Structural Warranty – 10 years on tanks subject to correct upkeep.

INSTALLATION ON SITE

- ☉ **FLUIDCO** (Pty) Ltd will provide the following personnel for site installation and supervision:
 - 1 x Site Supervisor
 - 1 x Senior Technician
 - 2 x Skilled Workers
- ☉ **FLUIDCO** (Pty) Ltd will provide the following:
 - All transport to and from site
 - All PPE Requirements
 - Installation Equipment
 - Installation Materials

DELIVERY & OFF-LOADING

Delivery and off loading of equipment is included in this quotation.

HSEQ REQUIREMENTS

- ☉ There was no information provided in terms of the site HSEQ requirements.
- ☉ All Contractors packs and the approval thereof and related labour and traveling cost are excluded.
- ☉ All medical and inductions and related labour and traveling cost are excluded.

INCLUSIVE

- ☉ Supply of complete wastewater treatment plant
- ☉ Installation team
- ☉ Accommodation for installation team
- ☉ Travelling to and from site
- ☉ Commissioning of plant onsite
- ☉ Training – this will be done during installation, dedicated person to be provided by the client to be trained during the installation.
- ☉ Delivery

EXCLUSIONS

- ☉ All feed/supply connections to Distribution Board/Control Panel

- ⦿ All Civil, excavation and Earth works
- ⦿ Pipe reticulation to and from water treatment plant
- ⦿ Earth matting and grounding, lightning protection, and lighting.
- ⦿ Engineering drawings
- ⦿ Critical spares and back up components. A list of these will be provided upon request.
- ⦿ Disposal of waste stream after treatment.
- ⦿ Full terms and conditions apply and may be obtained on request.
- ⦿ All prices are excluding vat, prices will remain firm for a period of 30 days.
- ⦿ This design and proposal are the intellectual property of **FLUIDCO** (Pty) Ltd, this information cannot be used for tender purposes or basis for obtaining quotations without the written consent of **FLUIDCO** (Pty) Ltd
- ⦿ **FLUIDCO** (Pty) Ltd reserves the right to change technical aspects, designs, flow patterns, flow rates and equipment without prior notice to the client to ensure better performance and efficiency.
- ⦿ Any delays on site will be charged at R 22'550.00 per day, excluding all lodging & traveling which will be billed at cost plus 15%.

OWNERSHIP:

All goods supplied remain the property of **FLUIDCO** (Pty) Ltd until full invoice value has been paid in full.

LEAD TIMES:

Procurement of materials	2-3 Weeks
Workshop Fabrication and fitment	10 Working Days
System installation on site	5 Working Days
Civil work	Clients Responsibility
Total Duration	1 Months

Manufacturing will commence upon:

1. Receipt of signed order by client,
2. The necessary deposit payment.

PAYMENT TERMS:

- ⦿ A deposit of 60% will be required before commencement of the project.
- ⦿ Balance on Commissioning of Plant.
- ⦿ All payments are strictly 7 Days from invoice, but the deposit must be paid with order.
- ⦿ **FLUIDCO** (Pty) Ltd will require a cession if the goods are not purchased by the end user. An Interest rate of 10% on outstanding value , per calendar month will be charged to the client upon non-payment.

We trust that our proposal meets with your approval. Should you require further information, please do not hesitate to contact myself.

Yours sincerely,



Kevi Levin.