Appendix B

WWTP supplier information

15th November, 2007 ABN 23 070 206 101

ENVIROFLOW Water Technologies

REVISED QUOTATION No. 71737 / 22123

SUPERSEDES QUOTATION No. 71737 / 21477 PREPARED FOR:

Coal Stream
• ALLIANCE • JILALAN •

SARINA ACCOMODATION VILLAGE

ATTENTION: CRAIG THAMM

YOUR ENVIROFLOW CONTACT: ZAK FLOYDE SMITH

Table of Contents

1. Specific Design Parameters

This project requires a sewage treatment plant to treat a domestic stream, for a 300-person construction village near Sarina, Queensland to service the Jilalan upgrade project.

The proposed sewage treatment plant has been designed to cater for a maximum daily flow of 75m^3 – calculating at a maximum use of 250 litres/person/day.

The proposed sewage treatment plant will treat the waste from the village including laundry, ablutions, kitchen and shower block to Queensland Class 'C' quality. A grease trap is required at the camp facility for the kitchen waste. It is a requirement that this grease trap remains maintained and installed prior to the kitchen waste entering the sewage treatment plant to prevent oils and fats from impeding the biological process.

Enviroflow proposes pump wells to transfer waste into a 30,000L balance tank. This balance tank has been sized to hold 40% of the maximum daily flow. This tank will serve as a flow equalising tank for expected morning and evening surges of approximately 40% of total daily inflow. A duty standby pump set and level floats to draw from the balance tank and feed the sewage treatment plant at a controlled rate, will be provided.

The sewage treatment plant will be pre-commissioned at the Enviroflow premises in Brisbane and will include all appropriate control boards and plumbing required so that on-site commissioning will take the least time possible.

Coal Stream Alliance has requested Enviroflow include proposals for the following final effluent qualities.

- Class 'C' final effluent: Suitable for on site beatification via sub-soil irrigation or above ground irrigation under heavy mulch.
- Class 'A' final effluent: Suitable for many onsite re-use applications including dust suppression and 'sprinkler' irrigation systems.

The proposed sewage treatment plant will comprise of three (3) TransPAC® FG (fibreglass) skid mounted bio-tanks.

There are two options for the disposal of the final effluent:

1. The Class C final effluent from the proposed sewage treatment plant could be pumped to an existing storage dam where it may be treated further to produce construction water.
2. Optional Class A tertiary treated final effluent could be utilised for above ground irrigation or dust suppression, reducing the reliance on potable water thereby reducing the potable water consumption of the site.

Calculations for the camp site are:

300 personnel @ 250 litres per person per day, (75,000 litres per day.)

Class 'C'

Proposed STP Effluent Requirements Class 'C'			
Characteristics	***Unit***	***Influent***	***Effluent***
Flow Maximum expected	m^3/day	75	75
B.O.D^5 (Biochemical Oxygen Demand)	mg/L	<280	<20
SS (Suspended Solids)	mg/L	<250	<30
pH	pH scale	5 - 9	6– 8.5
Coliforms	(counts/100ml)	-	<1000

Optional Class 'A'

Proposed STP Effluent Requirements Class 'A'			
Characteristics	***Unit***	***Influent***	***Effluent***
Flow Maximum expected	m^3/day	75	75
B.O.D^5 (Biochemical Oxygen Demand)	mg/L	<280	<20
SS (Suspended Solids)	mg/L	<250	<5
pH	pH scale	5 - 9	6– 8.5
Coliforms	(counts/100ml)	-	<10
Turbidity	NTU	-	2(5Max)

Nutrient Reduction

In addition to the above parameters Coal Stream Alliance has requested typical influent and effluent figures for total Nitrogen and Phosphorus. Note that the Enviroflow STP plants being offered are not designed for nutrient reduction capabilities. The effluent quality of these nutrients is therefore subject to the influent quality, with very little reduction through the sewage treatment plant process.

Below we have tabled typical strengths which could be expected, however this will totally depend on the levels of nutrients in each of the streams being transported to the STP.

Typical Nitrogen and Phosphorous strengths				
Nutrient	***Unit***	***Strong***	***Medium***	***Weak***
Nitrogen	mg/L	70	40	20
Phosphorus	mg/L	12	7	4

Ranges given for influent quality parameters are derived from standard values typically encountered in untreated domestic wastewater (Source: Metcalf & Eddy, 1991).

NB: The client is required to provide Enviroflow with copies of ALL influent and effluent sample analysis as per the Client's EPA permit and in accordance with specifications detailed in the Enviroflow Operations and Maintenance Manual

2. Enviroflow Proposed Sewage Treatment Plant

The waste water from the accommodation camp will gravity flow into a 3,000L pump well. All kitchen waste will flow through a suitably sized grease trap prior to entering this pump well. From the pump well the waste water will be pumped via a duty standby grinder pump set into an adequately sized balance tank. The balance tank needs to be capable of holding approximately 40% of the daily flow (30,000L). The balance tank averages flow during peak usage times, and allows the pump set in the balance tank to deliver a controlled flow to the STP.

The triple TransPAC® system will produce Class 'C' final effluent that can be used in sub soil irrigation applications. If Class 'A' final effluent is required then the Class 'C' treated water would become the filter feed water for a series of Ultra-Filtration membranes. The additional treatment process would be housed within a new ISO shipping container and would include the following equipment and process.

The filter feed tank will be set up with level floats to automate the process. The filter feed water will be fed via pumps through a course screen to remove any contaminants (which may accidentally enter the system) thus ensuring integrity of the Ultra-Filtration membranes. The Ultra-Filtration membranes are very effective at reducing the bacteria, suspended particulates, colloidal material and high molecular weight material greater than 0.1 micron, and produces Class 'A' final effluent in the permeate stream.

The containerised membrane system is predominately automated. The plant will need daily checks and monitoring, however automation equipment has been incorporated in the programming of the system. A pressure differential backwash system allows the plant to measure when the product water pressure is lower than the filter feed water pressure, and initiates a backwash cycle. A re-circulation system works to increase the longevity of the Ultra-Filtration membranes, as they require continual operation. When the level floats indicate a reduction of filter feed water the automatic re-circulation system initiates.

A CIP (clean in place) will be required approximately once a month and will need to be carried out by the plant operator. This procedure is a manual operation which is detailed within the operation and maintenance manual.

An in-line chlorine dosing system is integrated, along with turbidity measurement prior to the product tank. This allows the product tank to act as a chlorine contact tank ensuring the product water has half an hour contact time with the chlorine. The monitoring system ensures the final treated product water is correctly treated, and adheres to the appropriate Queensland regulations

3. Sewage Treatment Plant Specifications

Design

The existing camp will require a STP consisting of three Enviroflow TransPAC® 6-metre fibreglass tanks. The images below are of a similar treatment plant at the BHP Billiton Riverside mine in the Pilbara region in North West Australia

The proposed plant is similar to that indicated below:

Note: Safety Handrails illustrated are optional if required. Refer page 13

4. Construction

The aesthetically pleasing rivergum green, isophthalic lined fibreglass tanks are extremely durable. The unique interior design allows the oval shaped construction to completely satisfy the process requirements without compromising transport and shipping costs.

This unique packaged biological sewerage treatment plant is constructed in our Brisbane workshop. The plant is both hydrostatically tested and pre-commissioned tested prior to shipment.

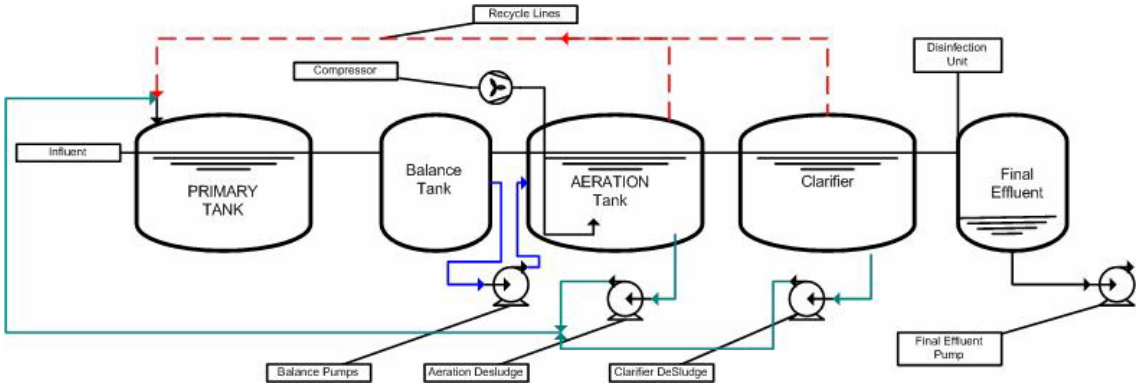
The plant can be placed into position on site directly from the transport and is designed for turnkey installations.

This site proven, sturdy plant is virtually silent, odourless and is specifically designed to operate with a minimum of maintenance in harsh isolated conditions.

Length	6.00 Metres
Width	2.40 Metres
Height	2.40 Metres
Weight Empty	1.80 Tonne
Weight Full	20.0 Tonne

5. Principle of Operation

We are informed that a pump well will be required for the main camp. A balance tank is provided to provide a buffer against the peak periods. The balance tank will provide the plant with an even flow.



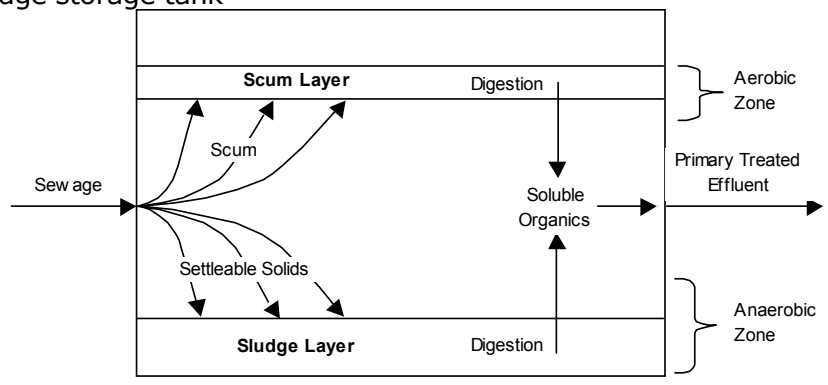
The Enviroflow treatment process consists of the following elemental units:

- Primary tank for sedimentation, digestion and storage of solid matter
- Balance tank for flow equalisation
- Aeration compartment for reduction of organic matter
- Clarifier for further removal of residual suspended solids
- Final effluent tank for disinfection and storage of treated water

Primary Sedimentation & Digestion

The primary tanks function as follows:

- Combined settling and flotation tanks
- Unheated-unmixed digesters
- Sludge storage tank



Settling and Flotation

Settleable solids in the incoming wastewater settle and form a sludge layer on the bottom of the tank. Grease and other light materials float to the surface where a scum layer is formed as floating material accumulates.

Digestion

Organic material present in the sludge and scum layers is converted to soluble organic compounds and waste gases. These decomposition processes are driven by bacteria and may be represented simply as in the equation below:

Complex Organic Matter => Energy + Waste Products

Energy is derived from the biochemical decomposition of the complex organic molecules in processes similar to the way animals obtain energy from food. The energy is used for cell growth, maintenance and reproduction.

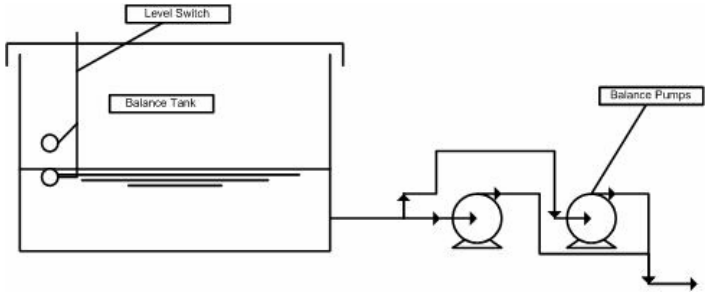
The waste products of these processes may be either gases (e.g. CO_2 or CH_4) or soluble organic molecules (e.g. alcohol and organic acids). The gases escape from the system and the soluble waste products are further degraded in subsequent treatment units.

Sludge Storage

Despite the volume of solid material being deposited being reduced continually by anaerobic decomposition, there is always a net accumulation of sludge in the tank. The design of the primary tanks generally makes some allowance for this sludge accumulation. However, as the long-term accumulation of sludge reduces the effective volume of the tank, the sludge needs to be pumped out periodically. Desludge of the tank is recommended once the crust exceeds 400mm in thickness.

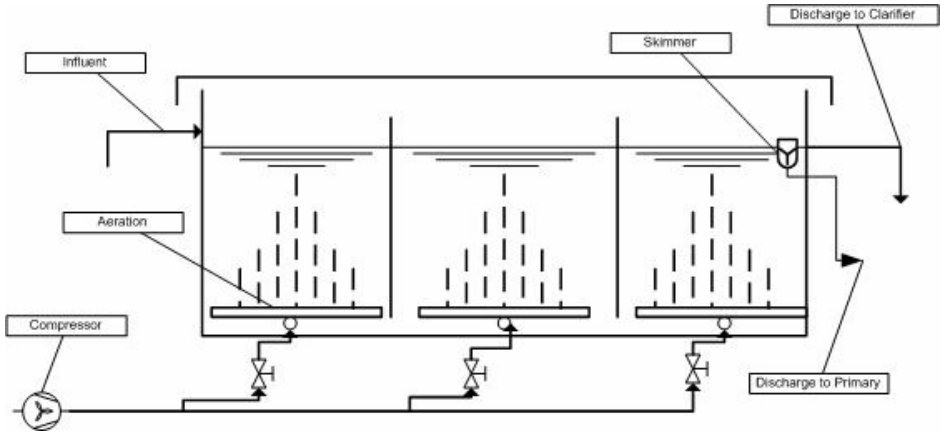
Flow Equalisation

The flow equalisation compartment (Balance tank) is installed to level out the hydraulic surges or balances out the hydraulic loads to the subsequent units.



Aeration Compartment

Wastewater (influent) from the balance tank is discharged into the first aeration tank and by means of baffles the influent is directed in, under and upwards throughout the aeration compartment with revised air injection in the first and second compartment for mixing energy as well as aeration.



Clarification

Further sedimentation occurs in the clarifier. Most of the solid material that settles out in the clarifier consists of sloughed microbes from the aeration tank. The effluent leaving the clarifier should have a high clarity.

The clarifier like the primary tanks may be fitted with baffles to decrease short-circuiting of effluent through the tank sections, thus increasing sedimentation.

The settled sludge that accumulates at the base of the clarifier is recycled to the primary tanks. The returned sludge, which contains a vigorous microbial population, undergoes further decomposition in the primary tanks and regenerates the biological process.

Disinfection

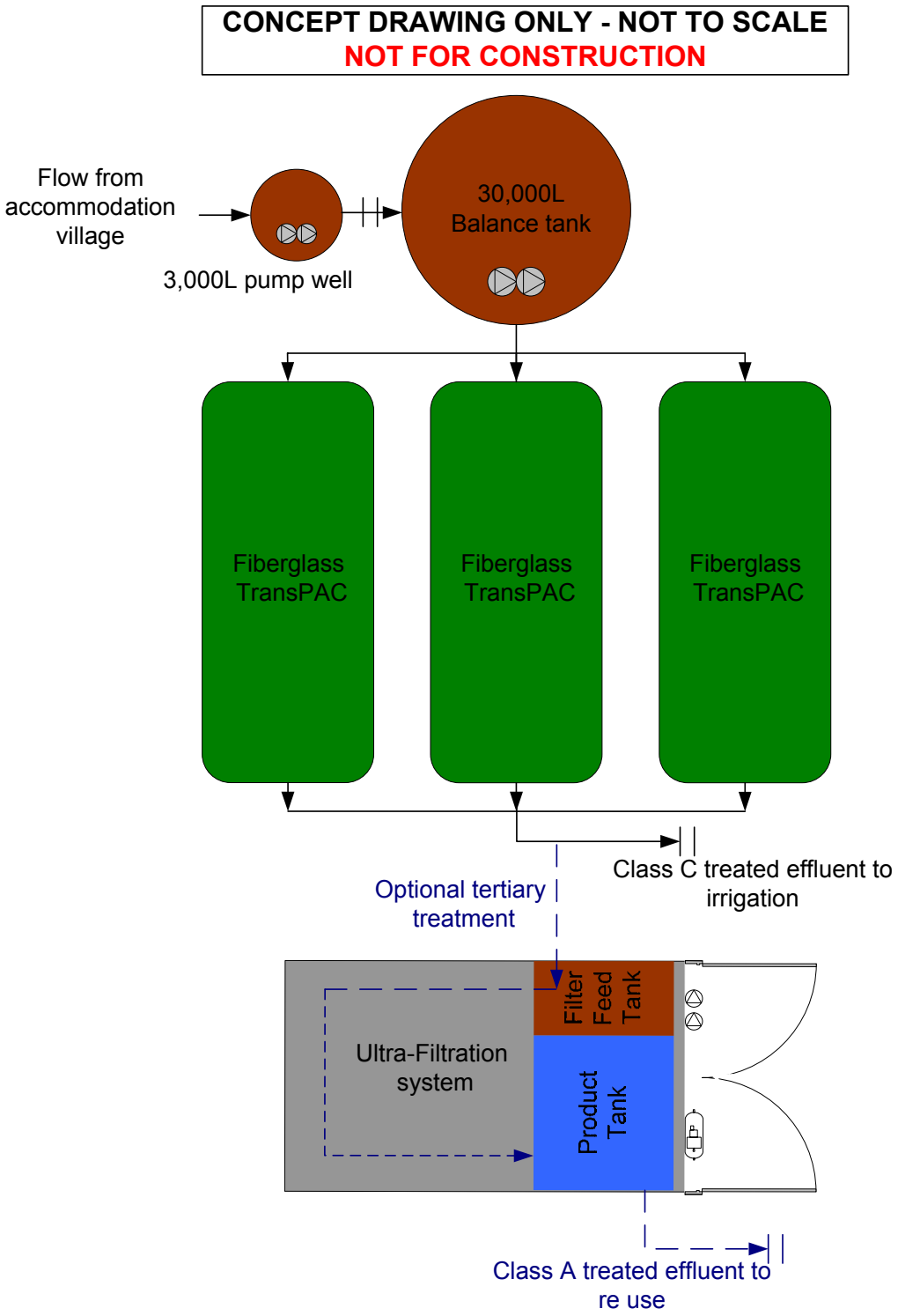
Disinfection is required to reduce the number of disease-causing organisms (e.g. viruses, bacteria). Chlorine provides disinfection of an aqueous media, which eliminates the need for harmful chemicals.

The effluent from the clarifier is discharged to the final effluent compartment by means of an overflow weir and is passing through a chlorination unit for disinfection. A final effluent pump discharges the final effluent, which is automatically controlled by a built in float switch.

Optional Filtration

To provide the Class A quality effluent Enviroflow encompasses an additional treatment process at the back end of our standard Class 'C' STP. The Class C treated effluent is passed through an Enviroflow Ultra filtration membrane system that reduces the bacteria, suspended particulates, colloidal material and high molecular weight material greater than 0.1 micron, and produces Class 'A' final effluent. This treatment method is highly regarded within the Queensland Water recycling Guidelines and is superior over other filtration methods.

6. Conceptual Site Layout

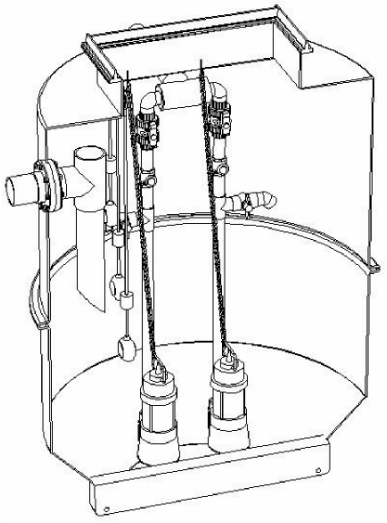


7. Proposed Duty / Standby Pump Well.

A 3,000 litre pump well is proposed to receive the gravity fed sewage stream, providing controlled transfer to the sewage treatment plant. The well is fitted with a duty/ standby grinder pumps set pushing a maximum of 14.4m head

All "in-tank" fittings are incorporated in the packaged pump well, including bronze gate and non-return valves, barrel unions and interconnecting PVC pipe work, galvanised lifting chain and guide rails.

The pump well is controlled by a weatherproof lockable, baked enamel control panel, which is supplied separately and incorporates the following features:



- Main isolating switch
- Power on light
- D.O.L. starter/contractor for each pump
- Pump 1 and 2 run lights
- Pump 1 and 2 overload lights
- Manual on/off/auto switches for each pump
- High level visual alarm
- Alternating relay to provide for alternate pump operation on consecutive starts to allow for even wear and usage in both pumps and eliminating "freeze-up" due to non-operation.
- On level rise in tank – Duty Pump operates
- On further rise – Standby Pump operates
- On further rise - high-level visual alarm is activated.
- On level drop - both pumps cease to operate.

Depth	***Outer Diameter***	***Inner Diameter***	***Nominal Litres***	***Access Cover***	***Approximate Weight***
2125mm	1,730mm	1,600mm	**3,000**	900x600mm	165kg
Duty Pump Type	***kW***	***Phase***	***Current***	***Starting Current***	***Daily Total Run Hours***
Grinder	0.9kW	3	2.7A	21A	6
Standby Pump Type	***kW***	***Phase***	***Current***	***Starting Current***	***Daily Total Run Hours***
Grinder	0.9kW	3	2.7A	21A	6
				Total kWHr/D	10.8

8. Enviroflow Scope of Supply/Works

Item No.	Description
1	Design, manufacture, package for transportation, supply and supervise installation of a pre-tested packaged sewage treatment plant to conform within the parameters described above.
2	Provide 3,000L pump well.
3	Provide a suitable 30,000L balance tank including duty standby pumps, controls and floats.
4	Provide a control system for plant operation.
5	Provide a control board for plant operation.
6	Enviroflow technician to carry out site installation.
7	Provide on site training of suitable client maintenance staff.
8	Training, maintenance and operation manuals – 2 sets.
9	Provide "As Constructed" drawings – 2 sets.
10	To produce installation drawings consisting of plant, hydraulic and electrical layouts and conceptual footprints – 2 sets.
11	Install safety alarm requirements.
12	Install all necessary electrical control systems.
13	Loading of equipment onto transport at Brisbane manufacturing premises.

9. Client Scope of Supply/Works

Item No.	Description
1	Provide all-weather road for access to site.
2	Provide suitable transport for plants from Brisbane factory to site.
3	Provide suitable cranage from transporter to required position on site.
4	Power supply to be connected to Enviroflow control boards and provide construction power for installation.
5	All statutory approvals required, payment of permits, inductions, government charges, taxes, landscaping, security, fencing and signage if required.
6	Influent will be pumped or gravitate to the provided pump wells.
7	Cover costs incurred by Enviroflow commissioning technician including travel time, meals, accommodation and site inductions.
8	Civil works, concrete slab as required by Enviroflow for positioning of tankage, and for installation of pump well.
9	Clean rapid fill water for on site commissioning of the plant.
10	Supply suitable maintenance personnel for plant familiarisation and on site training by Enviroflow technician. Preferably an electrician a plumber and the site maintenance manager.
11	Connection of influent and effluent mains.

10. Commercial

Supply and installation of 75m^3/day sewage treatment plant as described above.	**$255,000.00 + GST**
Supply and installation of 30,000L balance tank as described above.	**$12,000.00 + GST**
Supply of 1 x 3,000L pump well as described above.	**$11,500.00 + GST**
Optional: Class A filtration plant including chlorine dosing.	**$75,760.00 + GST**
Optional: Supply and installation of yellow safety rails around the top of the sewage treatment plant excluding balance tank including access ladder (Optional)	**$32,000.00 + GST**

Commissioning (per personnel)

Commissioning of the plant will be carried out by Enviroflow commissioning engineers. Client to provide travel, accommodation and meals from Brisbane to site and return. For estimating purposes we recommend an allowance of twelve working days for this procedure.	**$850.00/day + GST**

Spare parts

Due to the remote location of this plant Enviroflow recommends the purchase of the following spare parts. This is applicable for the Class C plant. **$3,250.00 + GST**

- Davey Pump
- Davey Seal kit
- Rietschle Thomas blower
- Rietschle Thomas blower Seal kits
- Spare level floats
- Spare lights for control panel
- Klaxon alarm lamp

Programmed Maintenance and Plant Servicing

Enviroflow are able to provide a service and maintenance contract specific to your plant requirements. This will enable Enviroflow to fully comply with warranty provisions. This quoted price is applicable if service may be arranged during an existing run.

$3,500.00 + GST

Terms of Payment

Mobilisation:	35%	Of contract price on placement of order.
Progress Claims	60%	Monthly claims in portions up to 60%.of contract price prior to delivery from the Enviroflow plant (All components and sub-assemblies will be available for Client inspection in factory and ready for delivery.) Payment terms are Nett 14 days
Final Claim:	5 %	Final balance of contract price within 30 days of delivery on site OR within 7 days after clear water commissioning/practical completion (whichever occurs first). This will be subject to Enviroflow completion of the documented scope of works and advice that all components are installed and in an operational or stand-by mode. Payment terms are Nett 14 days.

Warranty Details

A full twelve (12) month manufacturers warranty applies to all working parts from the date of practical completion (practical completion must take place within one month of equipment delivery or unless agreed upon).

Commissioning

Commissioning of the plant will be carried out at the completion of the plant installation.

Should this not occur due to circumstances beyond Enviroflow's control the client will be responsible for the return visit and subsequent costs. If an extended delay is envisaged the pumps and affected components must be removed stored and/or protected from damage as per the operator's manual.

The commissioning will include:

- Electrical connection of internal equipment to the control panel.
- Installation and testing of pumps.
- Instruction of relevant personnel on the operation of the Enviroflow plant at the time of clear water commissioning.
- Operation and maintenance manuals.
- Outline basic on site training

Validity

This quotation is valid for a period of thirty days from the date of this quotation. Should an order be received after this date Enviroflow reserves the option to increase pricing reflected by market price variances.

Terms & Conditions of Sale

This quotation is subject to Enviroflow standard terms and conditions of sale. Please refer to the attached Terms & Conditions of Sale supplied with this quotation.

11. Conclusion

The plant contains minimal electro-mechanical components that allow for simple operation and maintenance therefore a highly skilled operator is not required.

Enviroflow is the leader in the field of Packaged Sewage and Water Treatment Plants. Our systems are constructed to rigorous standards and consistently surpass the design parameters currently recognised in Australia and worldwide to ensure the highest level of performance.

We would appreciate the opportunity to discuss our proposal with you and welcome any further inquiries that you may have.

Zak Floyde Smith

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