



Siltbuster Ltd, Williams Building
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SE32526-RW-01
28 February 2024

Darren Rees
Jones Brothers (Henllan) Ltd

By Email: dr@jbhl.co.uk

Dear Darren,

**Hire of Siltbuster Treatment System for Slow Settling Solids Treatment
Tonyrefail, CF39 8LB**

Further to your recent enquiry please find below our proposal for treatment of slow-settling suspended solids at your project site in Tonyrefail.

This proposal has been generated using the information available at the time, the scope of supply maybe subject to change should further information indicate an alternative treatment method is required.

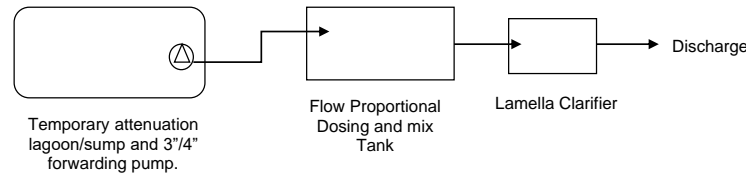
Background Information

- You are carrying out groundworks for a housing development site in Tonyrefail.
- This development will involve the removal of topsoil in the area. There is potential for surface water to enter the work area which will come in to contact with the local geology. As a result, you require a treatment system to deal with resultant suspended solids prior to discharge off site.
- Due to the high occurrence of clay and colloidal particles in the region (particles are geologically classified as solids < 2 microns in diameter), **chemical pre-treatment will be required** (in the form of coagulants and flocculants) to improve the rate at which these particulates settle from suspension by overcoming these negatively charged particles and flocculating the material into rapidly settling "clumps" known as flocs.
- A representative sample has been collected which will be tested at the Siltbuster laboratory prior to treatment to confirm the correct treatment system (**especially concerning the pH correction step**).
- The waters will be transferred to the Siltbuster treatment system(s) using a pump (**supplied by others**).
- **The size of pump and anticipated flowrate are unknown at this stage.**
- A 2-stage (coagulant + flocculant) chemical dosing system is being proposed to remove slow-settling particles.
- A mix tank is used to enable homogeneous chemical dosing.
- The coagulant will modify the surface charges of slow-settling particles, enabling them to coalesce and form 'pin-flocs'.
- The flocculant binds the pin-flocs together into larger flocs, which can then settle under gravity in the lamella settlement unit(s).
- A block diagram of a typical 2-stage treatment system is shown in the figure below:

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- We cannot guarantee that maximum flowrates will be achieved due to the dependency on feed water and what our engineer finds upon commissioning. We strongly suggest the implementation of an attenuation lagoon to locate the feed pump.
- Maximising performance/size of lagoons on site will ensure:
 - The peak flow to be treated is attenuated allowing use of a smaller water treatment system.
 - Coarse rapidly settling solids will settle out in the colliery prior to entering the sump, thereby minimising the solids loading to be removed by the treatment system and reducing chemical consumption rates.
 - Better process control as the WTP will run under steady state conditions.
 - Chemical dosing costs are minimised as chemical dosing is only required to remove the slow settling solids rather than both the rapid and slow settling solids.
- As with any water treatment plant and particularly when using chemical dosing, best performance is seen under steady-state conditions and laminar flow. That is to say, the pump should be trimmed/valved to give **smooth and continuous flow as much as possible**. Allowing the pump to 'slurp' water/air, or pump pulsing (very large flows over a short time period) **WILL result in poor performance and inadequate treatment**.
- **Siltbuster strongly recommends supplying the system feed from an attenuation pond** to provide steady-state flow to the treatment system.
- It is recommended you place the captured solids (sludge) in a sludge storage area where you will allow them to consolidate and remove any supernatant liquor before placing elsewhere in your landscaping scheme or disposing off site.
- It is also recommended you assign an operative to monitor the system to ensure you are not in breach of any discharge requirements.
- We advise the system should be placed on flat and level ground and preferably on a stoned-up area.
- **Please note:** Siltbuster **does not** supply feed pumps, feed and discharge pipework and power supplies.

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Discharge Criteria

At this stage we have not been provided with any discharge criteria, however, typically, **when discharging to surface watercourse**, the treated waters will be expected to have:

- Total Suspended Solids (TSS) of < 60 mg/L
- pH of between 6 – 9
- No visual hydrocarbons

How Clean is Clean?



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Proposed Scope of Supply

Based on the information available it is recommended that chemical pre-treatment followed by gravity settlement be implemented in the following system as described below:

Siltbuster Treatment System – 2-Stage Chemical Pre-Treatment

1. Inlet electromagnetic flow meter to record the volume of water treated and allow flow proportional dosing of coagulant (Poly Aluminium Chloride) and polymer (AQ2084).
2. Siltbuster Mix Tank, MT8 (8m³), to allow the controlled mixing of the treatment chemicals ensuring flocculation of the solids (size dependant on flow).
3. Flow proportional control system for coagulant and flocculant polymer dosing. **The use of a flow proportional dosing system minimises the risk associated with the overdosing of the treatment chemicals.**
4. Coagulant dosing pump and associated pipework to allow the automatic flow proportional addition of the coagulant.
5. Flocculant make-up system complete with 1000 L makeup tank, mixer bridge mixer complete with paddle (potable water will be required on site for polymer dilution – to be provided by others) and flow proportional dosing pump (peristaltic or similar).
6. IBC spill stand/containment bunds for the temporary storage of chemicals.



Proposed Scope of Supply (Continued)

Siltbuster Gravity Operated Settlement Unit(s) (Recovery of Suspended Solids)

7. Siltbuster Lamella Clarifier(s) to separate the suspended solids from the treated water.
 - 2 No. HB40 lamella clarifiers (c/w flow splitter manifold and pipework).

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Equipment Hire Costs

Scope of Supply	Cost per week or part week (Minimum 2-week hire)
Siltbuster Two Stage Treatment System as mentioned above	£108,900 (Combined package)

Chemical Costs

We are unable to supply Chemicals for sale items. We recommend you contact Brenntag or Aquatreat to source your chemicals.

Set up and Commissioning and Decommissioning by Siltbuster Process Engineer

The following set up allowances assume no delays, inlet and discharge pipework, generators, haul roads and temporary pad will be present on site. Should the initial set up allowance be exceeded due to delays beyond the control of Siltbuster, the standard day rate will be applied for any additional days on site.

Scope of Supply	Rate
Provision of Siltbuster Process Engineer to install and commission <i>(allow 2 working days to set up and commission)</i>	£430 per day (Based on Day Rate + Travel Expenses)
Provision of Siltbuster Process Engineer at client's request and to decommission the system <i>(allow 1 working day to decommission)</i>	£430 per day (Based on Day Rate + Travel Expenses)

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Transport Costs

*FORS Silver Minimum Standard Haulier for Flatbed and Hiab deliveries.

Flatbed Delivery	Cost
Delivery to Jones Brothers (Henllan) Ltd Tonyrefail, CF39 8LB	£780 per load (2 loads required)

*Client to provide offloading and loading facilities for Flatbed deliveries.

Hiab Delivery	Cost
Delivery to Jones Brothers (Henllan) Ltd Tonyrefail, CF39 8LB	£870 per load (2 loads required)

Inlet and Outlet Sizes

In their standard configurations, the units have the following Inlet and Outlet sizes. However, these can be enlarged or reduced to suit your requirements if requested.

Port	Fitting Size
MT8	
Inlet	4" Female Bauer Connector
HB40s	
Treated Outlet	2 No. 6" Male Bauer Connector
Sludge Outlet	2 No. 4" Male Bauer Connector

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Lead Time

Typically allow **18-20 weeks** from receipt and processing of your formal written purchase order for delivery of hire equipment to site. Please note, this is dependent on the current status of the sale fleet and availability of transport and any necessary account processing requirements having already been completed (See note II of the Siltbuster Terms and Conditions listed below).

Exclusions

- Feed pump and associated pipe-work.
- Discharge pipe-work.
- Lightning protection.
- Heating protection.
- Attendance to operate the equipment.
- Disposal of waste.
- **Power Supply (20 kVA, 16 amp, 415V 3-Phase Earth plus Neutral Generator with variable earth leakage or minimum 300 mA RCD).**

We trust that the above information is sufficient for your current needs. However, should you have any queries please do not hesitate to get in contact.

Yours Sincerely,

Ranush Wijesekera

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Our Standard Terms and Conditions are as follows:

- I. All Costs are in Pounds Sterling and exclude VAT.
- II. Proforma Invoice on all new accounts and those which have been dormant for 6 months or more, covering:
 - Hires: - delivery, collection, installation costs and first month's hire
 - Purchases: - 40% of purchase cost
- III. For sales we require the agreement of a payment schedule; Typically, as follows:
 - 40% with order
 - 60% on availability to dispatch
- IV. Costs are valid for 30 days from date of quotation.
- V. Hire terms are standard Construction Plant Hire Association Conditions, Latest Edition.
- VI. Sale Terms are Siltbuster Standard Conditions of Sale (Available on request).
- VII. Invoices are raised monthly and Payment terms are strictly 30 days from date of invoice.
- VIII. No other terms and conditions are accepted, including those purported to apply under any purchase or confirmation order placed by the Client.
- IX. Client is responsible for the operation/maintenance of the equipment whilst on hire and ensuring the treated water is discharged/disposed of in accordance with the relevant legislation. The client is also responsible for any site-specific operational permits/authorisations/consents required and Health and Safety issues relating to the storage and use of chemicals on site.
- X. All hired units are to be visually cleaned of all settled sludge & oil residues before return. Units returned containing sludge and or oil residues will incur a cleaning cost plus any waste disposal fees (charged at cost) and the unit will remain on hire whilst the waste is tested to determine an appropriate disposal method in accordance with the relevant statutory regulations.
- XI. Transport Costs for Delivery & Collection are as Quoted above. Collection Charge may vary if individual units from multiple unit deliveries are off-hired and collected separately.
- XII. If there are delays to the delivery of the equipment outside of Siltbuster's control, then we reserve the right to charge for equipment once it is available to dispatch.
- XIII. In the event that an Order is cancelled by the client after our Order Acknowledgment is issued, we reserve the right to charge for up to four week's rental and any associated third-party costs (e.g., transport) that have been incurred at the time of cancellation.
- XIV. As per the Construction Plant Hire Associations Conditions for hire terms (VI above), once the equipment has left our yard in Monmouth for your project, hire rates apply.

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