



Siltbuster Ltd, Williams Building  
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SE31480-SB-01  
18 May 2023  
Byron Thomas  
Morgan Sindall

**By Email:** [Byron.Thomas@morgansindall.com](mailto:Byron.Thomas@morgansindall.com)

Dear Byron,

**Hire of Siltbuster 4-30 m<sup>3</sup>/hr 3-Stage Treatment System for Treatment of Slow Settling Solids  
Pont Y Felin, New Inn, Pontypool, NP4 0TN**

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

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**

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- You are in the planning phase of a project that will involve the construction of one primary reed bed (approx. 120 x 36 m) and two secondary wetlands (max. area: 4000 m<sup>2</sup>).



*Artist Impression of the Completed Scheme*

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## Background Information (Continued)

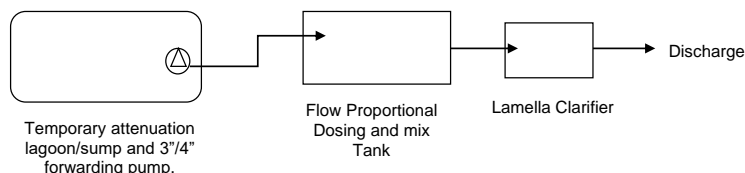
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- This project will involve the excavation of these areas to install liners.
- There is potential for ground and surface water to enter the excavation area which will come in to contact with the local geology. As a result, you require a treatment system to deal with resultant suspended solids prior to discharge off site.
- Groundwater quality assessments found exceedances in two site samples for heavy metals Cadmium, Iron and Manganese.
- **You have stated that the discharge point will be to either to combined sewer overflow or to surface watercourse (Afon Lwyd).**
- Due to the high occurrence of clay and colloidal particles in the region (particles are geologically classified as solids < 2 microns in diameter), as well as the discharge receptor being a surface watercourse, **chemical pre-treatment will be required** (in the form of coagulants and flocculants). This will 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.
- Due to the minor presence of heavy metals, an additional pH correction step using **caustic (Sodium Hydroxide) dosing will be required** to encourage these to precipitate out of solution, associate with the suspended solids, and be removed by the flocculant.
- **Siltbuster strongly recommends providing a representative sample of the waters** to be treated to confirm the appropriate treatment solution (especially concerning the pH correction step discussed above).
- At this stage **we have not been provided with a representative sample of the waters.**
- The waters will be transferred to the Siltbuster treatment system using a pump (supplied by others).

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## Background Information (Continued)

- A block diagram of a typical 2-stage treatment system is shown in the figure below:



- Following chemical pre-treatment, these suspended solids will be recovered using 1 No. Siltbuster HB50 (gravity operated) Settlement Unit which will remove the particles from suspension.
- The current proposed treatment system is configured to operate with flows between 4 and 30 m<sup>3</sup>/hr. Where flows exceed 30 m<sup>3</sup>/hr it is likely that increased suspended solids will remain in the outflow water. We cannot guarantee that 30 m<sup>3</sup>/hr will be achieved due to the dependency on feed water and what our engineer finds upon commissioning.
- 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 the implementation of a forwarding tank or attenuation pond** to provide steady-state flow to the treatment system. This is especially true when dealing with the 'stop-start' nature of excavation dewatering.
- 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 level ground and preferably on a stoned-up area.
- General arrangement drawings of the proposed treatment system have been supplied with this document.



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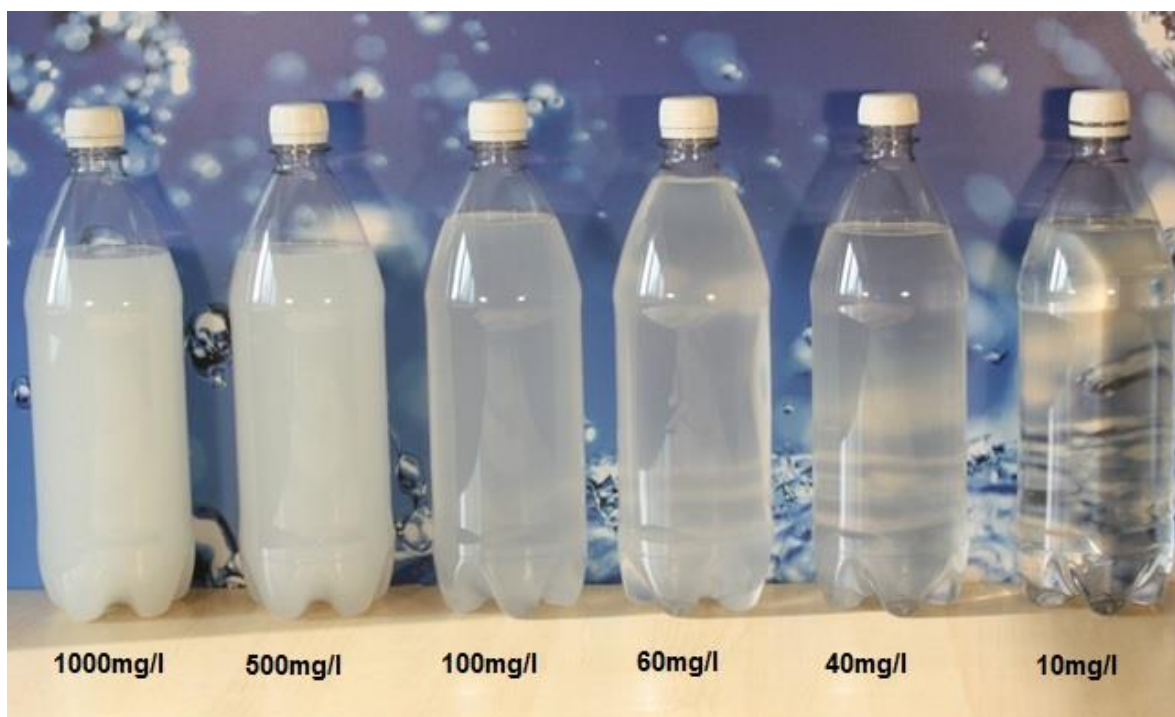
## Discharge Criteria

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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

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Based on the information available it is recommended that chemical pre-treatment followed by clarification be implemented as follows:

### Siltbuster MT8 3-Stage Chemical Pre-Treatment System

1. Inlet electromagnetic flow meter to record the volume of water treated and allow flow proportional dosing of coagulant (PAC) and polymer (AQ2084).
2. 1 No. Siltbuster MT8 Mix Tank 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 flow proportional dosing system minimises the risk associated with the overdosing of the treatment chemicals.
4. A pH correction step is required between coagulant and flocculant dosing using NaOH (caustic) dosing to encourage metals precipitation.
5. Coagulant and caustic dosing pump and associated pipework to allow the automatic flow proportional addition of the chemical.
6. Flocculant make-up system complete with 1000 L makeup tank, mixer bridge 110 V (32 Amp) 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).
7. 1 No. IBC spill stand/containment bunds for the temporary storage of chemicals.
8. An iCDS3 (Integrated Containerised Dosing System 3) unit **can be optionally supplied with the system** at additional cost to isolate and shield chemicals and dosing units from tampering and adverse weather conditions.

### Siltbuster HB50 Gravity Operated Settlement Unit (Recovery of Suspended Solids)

9. 1 No. Siltbuster HB50 or HB40 Lamella Clarifier to separate the suspended solids from the treated water at flows of up to 30 m<sup>3</sup>/hr.
10. 1 No. additional auto-desludge sludge pump **can be optionally supplied with the clarifier** for automated sludge removal.

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## Equipment Hire Costs

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Scope of Supply	Cost per week or part week (Minimum 2-week hire)
Hire of 2-Stage 4-30m <sup>3</sup> /hr Chemical Treatment System (Coagulation and Flocculant), MT8 Reaction Tank and 1 No. Siltbuster HB50 / HB40 Lamella Clarifier	£1,440 per system (Combined package)
Hire of pH Adjustment - Caustic Dose skid	£210 per system
Hire of Auto-Desludge Sludge Pump System (if required)	£320 per system
Hire of iCDS3 (Integrated Containerised Dosing System 3) (if required)	£380 per unit

## Chemical Costs

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Scope of Supply	Cost per unit
PAC 10% IBC	£910 per IBC
Aquatreat AQ2084	£116.60 per 25L Pail
Caustic Soda 32% IBC	£2,261.42 per IBC

***Disposal of any surplus chemicals is the responsibility of the client.***

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## Transport Costs

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\*FORS Silver minimum standard haulier for Flatbed and Hiab deliveries.

Flatbed Lorry	Cost
Delivery to <b>Morgan Sindall</b> Pont Y Felin, New Inn, Pontypool, NP4 0TN	£650
Collection from <b>Morgan Sindall</b> Pont Y Felin, New Inn, Pontypool, NP4 0TN	£TBC (Cost determined upon receipt of off-hire request)

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

Hiab Lorry	Cost
Delivery to <b>Morgan Sindall</b> Pont Y Felin, New Inn, Pontypool, NP4 0TN	£850
Collection from <b>Morgan Sindall</b> Pont Y Felin, New Inn, Pontypool, NP4 0TN	£TBC (Cost determined upon receipt of off-hire request)

\*Transport prices may vary if iCDS3 (Integrated Containerised Dosing System 3) is also hired.

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## 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 (allow <b>2 working days</b> to set up and commission)	£385 per day (Includes Day Rate + Travel Expenses)
Provision of Siltbuster Process Engineer at client's request and to decommission the system (allow <b>1 working day</b> to decommission)	£385 per day (Includes Day Rate + Travel Expenses)



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## Inlet and Outlet Sizes

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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
<b>MT8</b>	
Inlet	6" Female Bauer Connector
<b>HB40 (HB50)</b>	
Treated Outlet	6" Male Bauer Connector
Sludge Outlet	1 No. (2 No.) 4" Male Bauer Connector

## Lead Time

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Typically, allow **1 week** 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 hire 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

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- 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, 32 amp, 415V 3 Phase Earth plus Neutral Generator with variable earth leakage or minimum 300 mA RCD).**

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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,

**Sam Byrne**

**Our Standard Terms and Conditions of Hire & Sales 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 months hire
  - Purchases: 40% of purchase cost
- III. Costs are valid for 30 days from 18 May 2023.
- IV. Hire terms are standard Construction Plant Hire Association Conditions, Latest Edition
- V. The weekly hire rate is based on a 7 day working week.
- 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.

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