Groundwater Ingress Management Statement – Century Gardens, Tars Farm, Barnham

Barratt David Wilson (BDW) Southampton proposes to manage groundwater ingress during the excavation of the attenuation basin at the Century Gardens development in Barnham in accordance with best practice and regulatory guidance.

In line with the Environment Agency's Regulatory Position Statement (RPS 261) titled *Temporary dewatering from excavations to surface water*, BDW Southampton confirms the following:

- **Duration**: Dewatering activities will be temporary and will not exceed the 3-month period specified in the RPS.
- **Volume**: The volume of water abstracted will remain below the 20 cubic metres per day threshold, thereby not requiring an abstraction licence. A meter will be fitted to the pump to ensure this is adhered to. The pump will also be restricted to 14 l/s, in line with the greenfield run-off rate as identified in the FRA.
- **Water Quality**: Only uncontaminated water, primarily rainwater, perched groundwater and groundwater that has ingressed into the excavation will be discharged.
- **Discharge Location**: Discharges will be made to surface water in accordance with the RPS, and not to groundwater or foul sewer systems.
- **Record Keeping**: BDW will maintain records for a minimum of **two years** to demonstrate compliance with the RPS, and will make these available to the Environment Agency upon request.
- **Environmental Protection**: Measures will be taken to prevent pollution, erosion, or flooding. These measures will include the below:
    - Contamination from fuel or other construction machinery related sources will be closely monitored through the excavation and formation process. The risk of pollution from sources as listed above has been deemed as low.
    - Overland flows and run off generated from rainwater/storm events will be diverted from the area by way of bunds and channels formed around the working area
    - Management at source as outlined above will prevent the contamination of the rainwater and groundwater that forms within the excavation thus on pumping and discharge there is no risk of pollution of the wider watercourse network.

Silt Management Strategy

To ensure that discharged water is free from excessive sediment, BDW Southampton will implement a two-stage silt control system:

1. **Silt Tank**: Water will first pass through a silt tank to allow settlement of suspended solids. Tank to be Siltbuster FB50 or similar, please refer to appendix A for details.
2. **Silt Bag**: Following the tank, water will be filtered through a silt bag positioned at the outfall to capture finer particles. Silt bag to be Siltbuster siltstoppa bag or similar.

The outfall will be directed overland prior to entering the existing watercourse network. This overland flow path will provide further opportunity for natural filtration and energy dissipation, ensuring discharge is in accordance with the GFRO rate, reducing the risk of erosion and improving water quality before final discharge. Please refer to appendix B for location details.

No discharge from the dewatering system will be permitted during rainstorms so as not to exceed the GFRO rate.

BDW Southampton is committed to ensuring that all groundwater ingress and dewatering activities are carried out responsibly, safely, and in full compliance with national guidance.

Appendix A – Siltbuster FB50 Data Sheet

MOBILE SILT TRAP

OPERATION AND MAINTENANCE MANUAL

Siltbuster FB50 (flat-bottom)

Hire, Sales & Technical Support

Siltbuster Limited
Unipure House,
Wonastow Road (West),
Monmouth,
Monmouthshire, NP25 5JA.
[redacted]

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1.0 Introduction

This manual covers the set-up and operation of a *Siltbuster* HB50 Hopper Bottom Lamella Clarifier. Siltbuster Ltd designs and manufacturers a range of silt traps, industrial water clarifiers and liquid/solids separators, for mobile and permanent installations together with a range of units specifically designed for subsurface drainage, trade effluents and domestic sewage applications.

Our *Siltbuster* FB50 units are highly effective mobile lamella clarifiers and have been specifically designed to provide water clarification for a range of applications. Process water, groundwater or site runoff can be treated either for re-use or discharge off site either to watercourse or sewer. The units are ideal for removing sediment load from water being discharged to sewer to reduce trade effluent discharge costs.

All our units are “Registered Designs”, Patented or have Patents Pending.

2.0 Health and Safety

2.1 Working From Height

The FB50 unit is equipped with four fixed steps to enable an operator to inspect the unit over the rim at the inlet end of the unit. If the need arises to gain access to the top of the unit this should be done in a safe manner using appropriate safety precautions and systems of work.

Always ensure the units are placed onto firm level ground. The units could topple if landed onto uneven ground and then filled with water.

During cleaning the unit, follow Siltbuster cleaning guide located in section 5.6 for safe procedures.

2.2 CE Mark

The HB50 Unit has been designed and built using components meeting all relevant EU legislation for this type of equipment.

A CE certificate for the unit is contained in Appendix A.

3.0 Lifting and Handling

The *Siltbuster* FB50 unit incorporates four lifting eyes, one located at each of the upper corners of the unit for lifting with chains, strops etc. Fork Lift channels are also provided at the base of the unit for to enable lifting by a fork lift/JCB with fork attachment.

WARNING: The unit should NOT be lifted or moved by applying force to any component other than those described above as this may result in severe damage to the unit or cause personal injury.

ONLY LIFT THE UNIT WHEN IT HAS BEEN EMPTIED OF WATER AND SLUDGE

IF IN DOUBT – Don't Lift

The *Siltbuster* FB50 can be lifted by a JCB with fork attachment when empty

4.0 Principal Dimensions and Components

4.1 Principal Dimensions

Table 1: Principal Dimensions

Dimension	Measurement
Width	1450mm
Length	3650mm
Length (Inlet Fittings)	3800mm
Height (With Lifting Eyes)	1800mm
Weight (with plates and fittings)	1960kg
Operating Weight	

Table 2: Port Sizes

Description	Size	Type
Inlet	100mm (4")	Female Bauer
Outlet	150mm (6")	Female Bauer
2No. Sludge Outlets	100mm (4")	Male Bauer
8No. Additional Drain Ports	100mm (4")	Threaded and Blanked

4.2 Principal Components and Parts

Figure 1: FB50 Overview

All tank components are fabricated from Mild Steel, shot blasted and painted with two-pack zinc rich primer followed by a two-pack polyurethane top-coat.

4.3 Checklist of parts included (typical)

- Water Inlet – 100mm (4”) Female Bauer Coupling.
- Water Outlet – 150mm (6”) Female Bauer Coupling
- Water Drain- down Valve – 100mm (4”) Ball Valve
- Standard Unit End Mounted Sludge Valves – 100mm (4”) Ball Valves
- Optional Sludge Discharge Ports – 100mm(4”) BSP Thread and Blanking Cap or Globe Valve fitted

Figure 2: Overview of Main Ports

5.0 Set-up and Operation

5.1 Locating the Unit

The *Siltbuster* FB50 should be located in a position where:

- The ground is firm enough to support the flooded weight of the unit (approx. 10 tonnes).
- The ground is reasonably level. The top edge of the unit should be placed level to within 10mm.
- Sufficient clearance overhead is required to allow for the periodic removal of individual lamella plates.
- Safe access to the unit for routine inspection and adjustment is available.

The *Siltbuster* unit itself requires no power, has no filters or moving parts. As a result, apart from emptying as required, the unit is virtually maintenance free.

Where chemical addition is required to improve water clarification and/or the units are to be primarily used for oil removal specific set-up guidance should be sought from *Siltbuster* Office - Tel. 01600 772256

5.2 Set-up and Operation

Provided the Siltbuster FB50 has been set-up in accordance with guidelines above:

- Connect correct pipe work to the Inlet, Outlet and Sludge discharge Port. Refer to Table 2 for port sizes.
- Close hopper bottom gate valves
- Commence pumping of untreated water through the unit at a reduced flow rate
- Once unit is full and treating check discharge is acceptable
- Increase flow to required level and monitor discharge
- Hoppers will require emptying to maintain optimum solids removal (refer to section 5.3 below)

Where chemical addition is required to improve water clarification and/or the units are to be primarily used for oil removal specific set-up guidance should be sought from the Siltbuster - Tel. 01600 772256

5.3 Emptying the Siltbuster

The frequency of emptying the *Siltbuster* FB50 unit is dependent on the solids loading and the nature of the solids. Larger grain sizes (sands to gravels) do not generally flow as easily as finer sizes (silts).

Emptying the Siltbuster can be carried out in a number of ways:

- Drain Sludge via the sludge discharge valves on either end of the unit using the weight of water to push out the sludge (refer to figure 2 above for port overview);
- Drain the water out of the unit using the water drain down valve, remove some of the plates to gain access to the sludge and use a vacuum tanker (gulley-sucker) to remove sludge;
- For difficult to handle material, remove the plates to access the sludge and remove manually or mechanically.

- Typical emptying frequencies vary from daily to fortnightly and we suggest you empty “little and often” until you know the material you are dealing with and how long you can leave the sludge in the unit whilst ensuring it is still fluid and mobile.

5.4 Oil Removal

The unit, as normally configured, will remove large particles of free phase oil. These will collect on the surface of the water immediately above the lamella plates. The unit is equipped with a scum board to prevent the discharge of free phase oil down the discharge pipe. Where the primary application is oil removal the unit can be run in reverse and the oil will be collected above the main tank area. Contact the Siltbuster team for specific advice on using the unit in this mode.

5.5 Emptying and Decommissioning

Before moving or off hiring the Unit carry out the following procedures;

- Stop flow through the unit,
- Follow instructions defined above in Section 5.3 for draining out the unit,
- Once water has finished discharging, open sludge gate valves and empty unit to designated sludge discharge point (water contained within the unit may not be fully treated and will require discharge to a correct discharge point,
- Wash unit out with clean water (follow instructions in section 5.6 below) using a pressure hose ensuring plates are clean and all sludge has been washed out from the unit.

5.6 Cleaning out the Unit

- Prior to cleaning the plates the retaining bar and scum weir must be removed. The plates cannot be removed with the bar in place and the scum weir board is a trip hazard that is not readily in view due to the stance that is required to undertake the plate removal & cleaning. **A risk assessment shall be undertaken by the user prior to undertaking the plate cleaning**

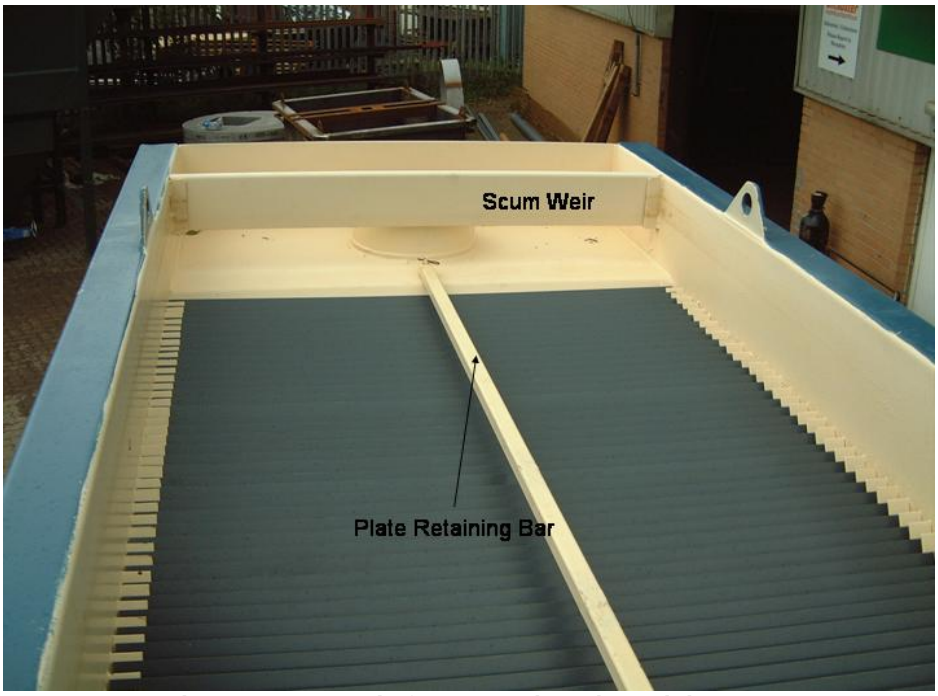


Figure 3: Removal of Scum Weir and Retaining Bar

- The plates can be cleaned in situ provided the silt has not been allowed to build up for too long. Cleaning of the plates should be undertaken with a pressure washer regularly, the exact frequency will be determined by operator familiarity. Failure to undertake the cleaning of the plates may give rise to poor performance of the unit and penalties if the discharge is consented and is exceeded

Figure 4: Cleaning of Plates

- The plates can be removed by sliding them from the tank body. The plates weigh approximately 12kg each (FB50) with no deposited sludge attached. If left for an extended period of operation without cleaning the plates can become clogged and difficult to lift. Avoid this by periodic plate cleaning. (The required frequency depends on the nature of product. Generally fatty products require more frequent cleaning whilst other products require no cleaning).

Figure 5: Removal of Plates

6.0 Performance

Our *Siltbuster* FB50 has a maximum recommended hydraulic capacity of 50m^3/hr (14litres/sec).

The performance of the unit is material specific and the *Siltbuster* 50 Series is nominally designed to achieve 90% removal of the +15 micron diameter particles (medium sized silt) at a flow rate of 45m^3/hr, +10micron at 20m^3/hr and some +6 micron at 5m^3/hr. Under normal operating conditions the unit will also remove a significant proportion of the material in the 2 to 15µm (fine to medium sized silt) range. These are based on average particle densities.

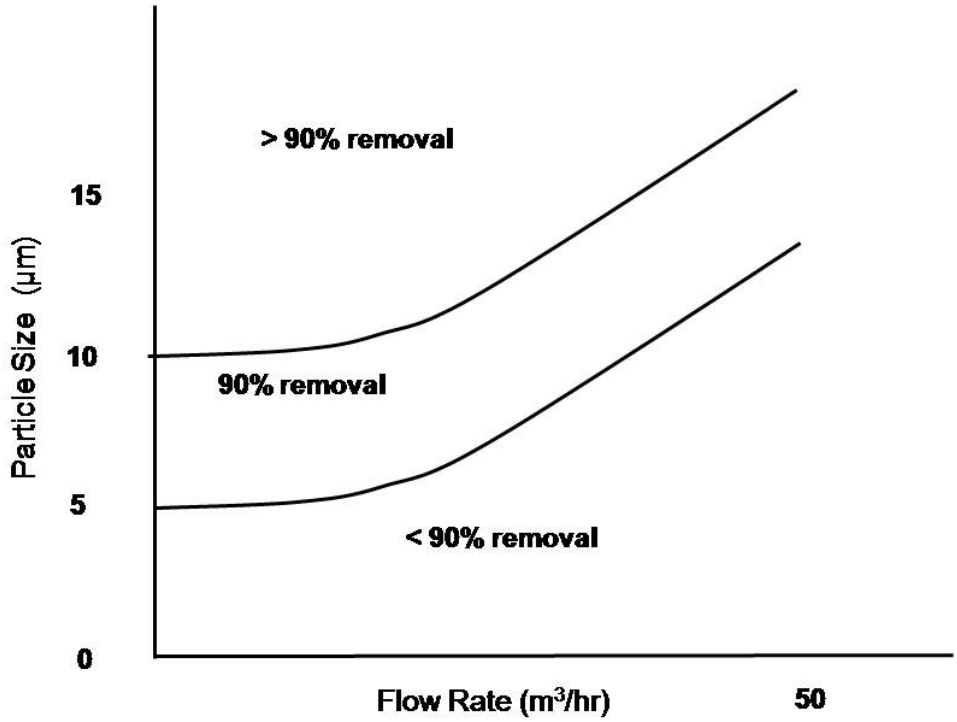


Figure 6: Anticipated Removal Rates

The *Siltbuster* will not typically remove very fine particles such as very fine silt or clay without chemical additives. The unit will also not remove colour from water.
The volume of water which can be processed by the unit is dependant upon the nature of the liquid / solid mix to be processed. The graph below provides a general performance guide. The hydraulic capacity is 50m^3/hour.

6.1 Methods of Increasing Effectiveness

The unit's settlement performance can be enhanced by adding settling agents (flocculants and/or coagulants) to the feed supply. Use of these agents normally requires Environment Agency approval. Should you wish to increase the performance of the unit in this way, please do not hesitate to contact us.

Alternatively, flow rates can be split between two or more Siltbuster HB50s operating in parallel increasing removal rates.

7.0 General Maintenance

Table 3: General Maintenance

Ref	Maintenance Item	Typical Frequency
1	General check over of unit	Weekly
2	Emptying - removal of sludge	As required
3	Draining of tank and washing down of plates	As required

Notes:
1 – The visual inspection should include inspection of the water surface for floating material (leaves etc). The scum board will prevent this material from over-topping between inspections.
2 – Emptying: see previous instructions
3 – Some materials (especially charged particles) can adhere to the plates and these will need periodic cleaning. The unit should be allowed to settle overnight, drained (using the 50mm globe valve provided), and then the sheets pressure washed in-place.

All frequencies given depend on the usage of the equipment and are given as typical guides.

8.0 Troubleshooting

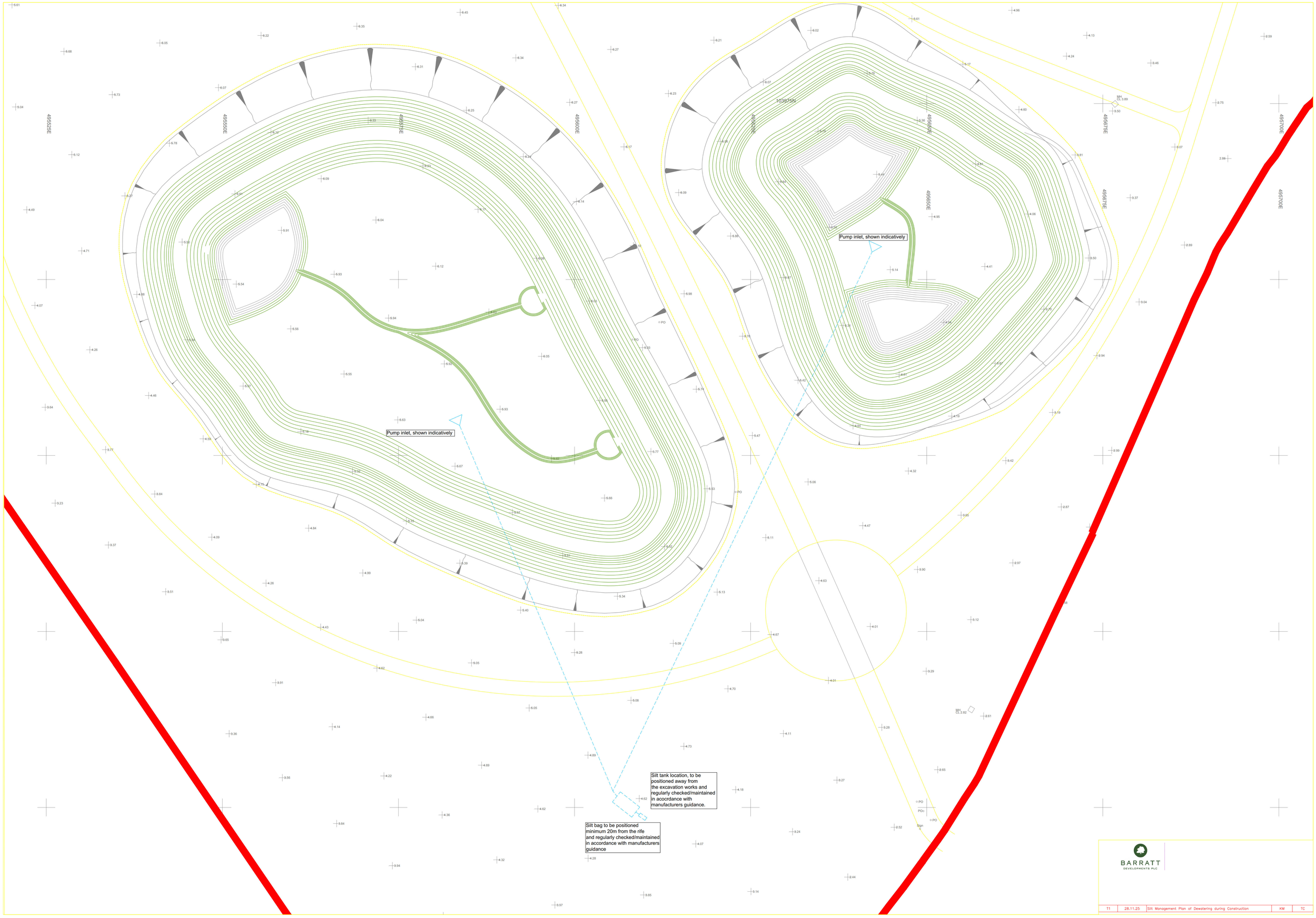
The *Siltbuster* FB50 itself requires no power, has no filters or moving parts and apart from emptying, the unit is virtually maintenance free.

As the nature of dirty water to be treated varies in terms of quantity and solids content, the table below lists some problems that could arise along with the actions required to solve the problems.

SYMPTOM	**REMEDY**
Water is overflowing from the inlet chamber or part way along main tank Typical Causes: 1. Too much flow through unit (unit overloaded) 2. Sludge in contact with plates	1. Reduce flow through the unit 2. Unit needs emptying of sludge
Water discharge is dirty Typical Causes: 1. Too much flow through unit (unit overloaded) 2. Water contains very fine silt and clay particles	1. Reduce flow through the unit 2. Add multiple units in parallel 3. Chemical conditioning of Inflow required – Contact *Siltbuster* [redacted]

In any other cases contact *Siltbuster* Engineers on [redacted]

Appendix B – Silt Management Location Plan



T1	28.11.25	Silt Management Plan of Dewatering during Construction	KM	TC