GeoSmart Information

Groundwater Risk Assessment

16 January 2023

BBP Property Ltd

[sent by email to qcicontracting@googlemail.com]

Ref 78121R1_Addendum

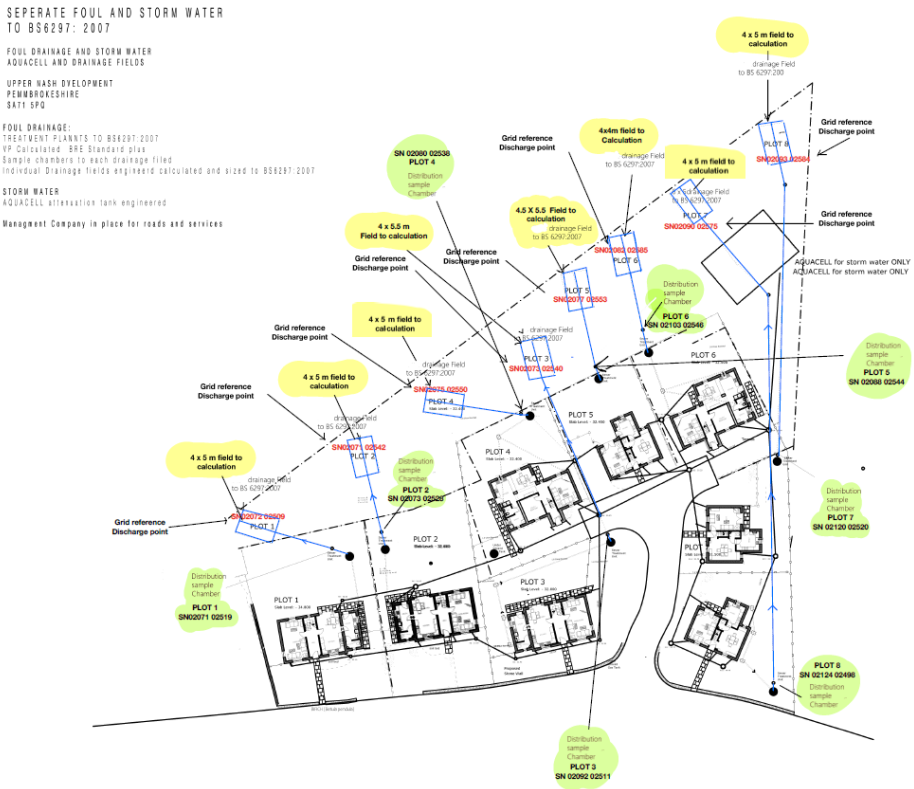
Objective

To provide a Groundwater Risk Assessment for the proposed development located at Upper Nash, Lamphey, Pembrokeshire, SA73 5AF (the site). This work follows on from the previously issued flood risk report issued by GeoSmart (78121R1, 30th Nov 2022). The report provides additional informaiton in response to the letter from Natural Resources Wales, dated 18th October 2022.

Background

The site was previously used as an old farmyard with portal buildings and a concrete yard and mixed stone buildings and slurry pit. This was subsequently demolished and the concrete removed. The new development underway includes 8 new build, 3-bedroom detached properties. Six of the properties sit in a cul-de-sac with a further two off a private drive from highway.

The premises includes 8 detached domestic homes and 8 associated effluent discharges to ground. The individual discharge points and grid references are shown in the drawing below.



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As the site is located within a source protection zone 1 (SPZ1), further assessment of the likely risk of discharging treated effluent into the ground impacting the drinking water abstraction is required.

Site Details

Each effluent discharge passes through a treatment plant before entering the drainage field. Each drainage field and treatment plant has been tested, sized and constructed to BS6297:2007. Effluent is domestic sewage only and treated by package treatment plant.

Package treatment plants meet BS 12566. Full details of the treatment plants are appended to this document.

The site is underlain by the Pembrokeshire Limestone, a principal aquifer. No superficial deposits are recorded by the British Geological Survey, however records of boreholes and trial pits in the area is very limited. Site specific investigation and photographs appended to this document instead indicate the presence of drift deposits comprising a brown to orangey brown, sandy, slightly clayey material with inclusions of grey limestone. No bedrock of the Pembrokeshire Limestone was encountered at any location.

Results of on-site tests for each discharge location are appended to this report. Groundwater was not encountered at any location

Depth to groundwater is not known. A review of the BGS borehole database (BGS, 2022) shows the nearest borehole is approximately 500m to the northeast of the Site at an elevation of 24.7mAOD. The borehole (ref: SN00SW12) indicates 33m of limestone overlying 17m of limestone & shale at which point the borehole ended. Groundwater was first struck at 21mbgl and rose to 10.25mbgl on completion.

The hydrogeological characteristics of the limestone suggest that there is potential for a variable groundwater table below the Site. Whilst the closest borehole (ref: SN00SW12) did not identify a high groundwater table it is noted that the borehole is approximately 500m from the Site at a lower elevation and may not be representative of conditions on Site.

Groundwater levels may rise in the bedrock aquifer in response to high river events subject to hydraulic continuity between the driving water level, the groundwater system and the Site.

Groundwater levels may also rise in the bedrock aquifer in response to prolonged rainfall recharge which may cause an unusually high peak in groundwater levels during some years, subject to hydraulic continuity between the groundwater system and the Site.

The site specific infiltration testing indicated that water drained, there was no evidence of karstic features and in addition the water did not rapidly drain.

The nearest surface water feature is 230m to the north and therefore a significant distance from the site. In addition, the absence of any nearby surface water courses is evidence that groundwater levels are not close to surface in the area of the site.

The site is located within 200m of the western edge of the source protection zone, and the nearest drinking water supply wells are around 2km to the east for which the zone is drawn.

The properties could potentially have 5-6 persons present but currently have principally been sold to elderly couples with occupancy at 2. Treated discharges are likely therefore to be between 0.3m^3 and 0.9m^3 for each property each day.

Risk Assessment

A summary of relevant information is provided below:

- There are 8 x 3 bed properties producing wastewater, likely producing between 0.3m^3 and 0.9m^3 for each property resulting in a total of up to 5.4m^3 /day of treated effluent from the site;
- The wastewater passes through a treatment plant for each property and then into a soakaway structure;
- The soakaways are within permeable superficial deposits and no evidence of karstic features has been identified; and
- The site is close to the edge of the SPZ, and the drinking water abstraction is approximately 2km east of the site.

Given the low volumes of treated effluent produced and the distance from the abstraction point there would be significant dilution of any treated effluent, such that there would be no discernible effect on the drinking water supply at a distance of 2km.

As such, no further assessment is recommended at this time.

Yours sincerely,

Martin Lucass
COMMERCIAL DIRECTOR
CGeol, MSc, BSc (Hons), FGS

Appendices
Site Photographs
Site Drainage Layout
Site Infiltration Testing
Package Treatment Plant Specifications and Maintenance Data
Permit Application Details

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VOLVO

SEPERATE FOUL AND STORM WATER
TO BS6297: 2007

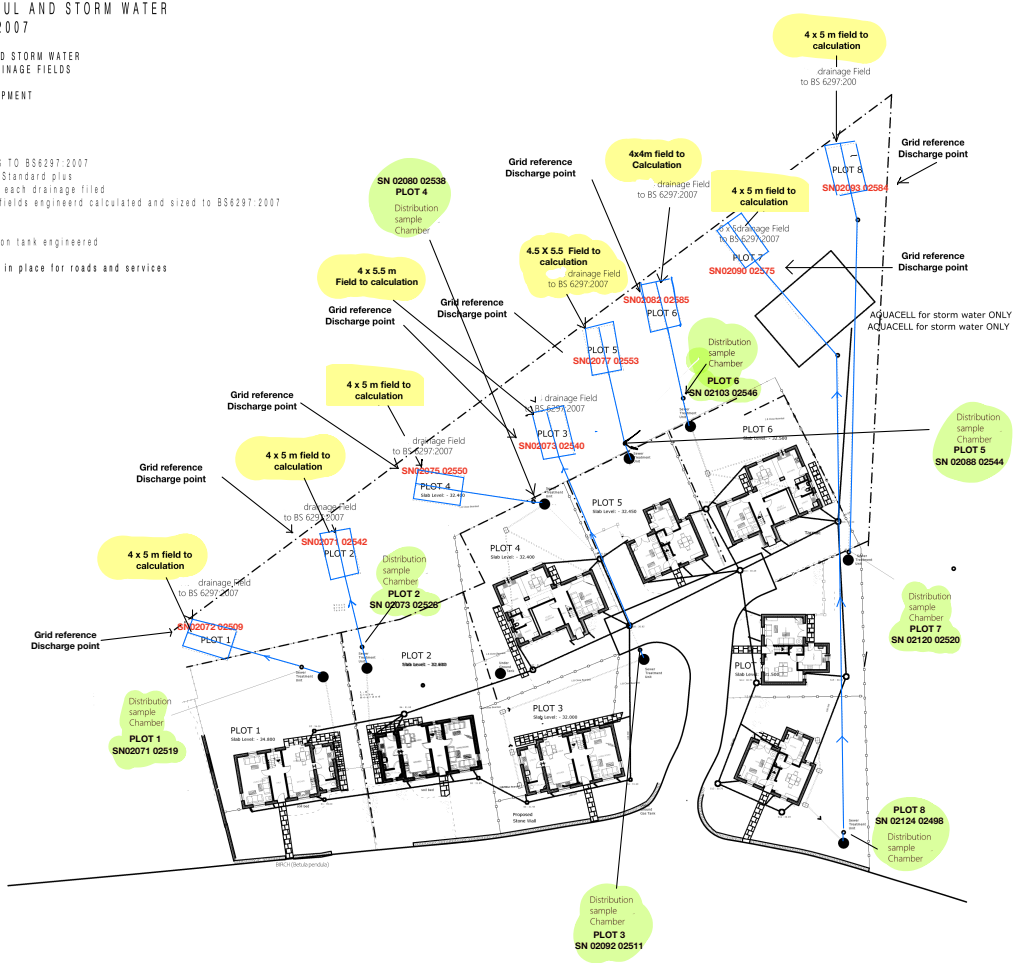
FOUL DRAINAGE AND STORM WATER
AQUACELL AND DRAINAGE FIELDS

UPPER NASH DYELOPMENT
PEMMBROKESHIRE
SA71 5PQ

FOUL DRAINAGE:
TREATMENT PLANNTS TO BS6297:2007
VP Calculated BRE Standard plus
Sample chambers to each drainage filed
Indivdual Drainage fields engineerd calculated and sized to BS6297:2007

STORM WATER
AQUACELL attenuation tank engineered

Managment Company in place for roads and services



Upper Nash Percolation test results

VP Calculations to BRE Standard Plus and field drainage to BS6297:2007

Plot 1 SN02072 02509

Date	09/08/2022	10/08/2022			
PLOT 1	Trial 1	Trial 2		Average	VP
Hole 1	3180	900		2040	13.6
Hole 2					

ge Treatment plants

	P	XVP	A=P* XVP*0.25
	5	13.6	17

		M	M	M2
	DF Size	4	5	20

Plot 2 SN02071 02542

Date	09/08/2022	10/08/2022			
PLOT 2	Trial 1	Trial 2		Average	VP
Hole 1	1920	1680		1800	12
Hole 2					

For sewage Treatment plants

	P	XVP	A=P* XVP*0.25
	6	12	18

		M	M	M2
	DF Size	4	5	20

Plot 3 SN02073 02540

Date	09/08/2022	10/08/2022			
PLOT 3	Trial 1	Trial 2		Average	VP
Hole 1	1980	2850		2415	16.1
Hole 2					

For sewage Treatment plants

	P	XVP	A=P* XVP*0.25
	5	16.1	20.125

		M	M	M2
	DF Size	4	5.5	22

Plot 4 SN02075 02550

Date	09/08/2022	10/08/2022			
PLOT 4	Trial 1	Trial 2		Average	VP
Hole 1	2880	1680		2280	15.2
Hole 2					

For sewage Treatment plants

	P	XVP	A=P* XVP*0.25
	5	15.2	19

		M	M	M2
	DF Size	4	5	20

SN02077 02553

Date	09/08/2022	10/08/2022			
PLOT 5	Trial 1	Trial 2		Average	VP
Hole 1	2640	2160		2400	16
Hole 2					

ge Treatment plants

	P	XVP	A=P* XVP*0.25
	6	16	24

		M	M	M2
	DF Size	4.5	5.5	24.75

Plot 6 SN02082 02585

Date	09/08/2022	10/08/2022			
PLOT 6	Trial 1	Trial 2		Average	VP
Hole 1	1380	2460		1920	12.8
Hole 2					

For sewage Treatment plants

	P	XVP	A=P* XVP*0.25
	5	12.8	16

		M	M	M2
	DF Size	4	4	16

Plot 7 SN02090 02575

Date	09/08/2022	10/08/2022			
PLOT 7	Trial 1	Trial 2		Average	VP
Hole 1	1980	1740		1860	12.4
Hole 2					

For sewage Treatment plants

	P	XVP	A=P* XVP*0.25
	6	12.4	18.6

		M	M	M2
	DF Size	4	5	20

Plot 8 SN02093 02584

Date	09/08/2022	10/08/2022			
PLOT 8	Trial 1	Trial 2		Average	VP
Hole 1	1620	2280		1950	13
Hole 2					

For sewage Treatment plants

	P	XVP	A=P* XVP*0.25
	6	13	19.5

		M	M	M2
	DF Size	4	5	20

Level Drops in Minutes

Plot 1 times

	300mm	225mm	75mm
Day 1		15	68
Day 2		36	51

Plot 2 times

	300mm	225mm	75mm
Day 1		30	62
Day 2		38	66

Plot 3 times

	300mm	225mm	75mm
Day 1		16	49
Day 2		10.5	58

Plot 4 times

	300mm	225mm	75mm
Day 1		11	59
Day 2		13	41

Plot 5 times

	300mm	225mm	75mm
Day 1		24	68
Day 2		36	72

Plot 6 times

	300mm	225mm	75mm
Day 1		38	61
Day 2		42	83

Plot 7 times

	300mm	225mm	75mm
Day 1		19	52
Day 2		39	68

Plot 8 times

	300mm	225mm	75mm
Day 1		11	38
Day 2		14	52

Applicant:

East Croft Close Managment Company Limited (Developer BBP Property Ltd)

Upper Nash Pembroke
SA71 5PQ
Contact Carl Beddis 07966548723 Director

Company name for Permit to be allocated to cover all 8 Plots
EAST CROFT CLOSE MANAGEMENT COMPANY LIMITED
Company No: 14257336

Grid reference for discharge point location	**Grid reference for sample chamber location**
Plot 1 SN02072 02509	Plot 1 SN 02071 02519
Plot 2 SN02071 02542	Plot 2 SN02073 02528
Plot 3 SN02073 02540	Plot 3 SN02092 02511
Plot 4 SN02075 02550	Plot 4 SN 02080 02538
Plot 5 SN02077 02553	Plot 5 SN 02088 02544
Plot 6 SN02082 02585	Plot 6 SN 02103 02546
Plot 7 SN02090 02575	Plot 7 SN 02120 02520
Plot 8 SN02093 02584	Plot 8 SN 02124 02498

July 2018

MATRIX
Clenviro
environmental technology
Sewage Treatment Systems

CE

BSEN 12566-3*
Certified Performance to 96.2% efficiency

MODELS

CLF1 (6pe) to CLF17 (300pe)

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

***Applies to models CLF1 – CLF7 only**

INTRODUCTION

Congratulations on the purchase of your **MATRIX** Treatment System. It is designed and manufactured exclusively by **Clenviro Limited** in the UK, with quality, reliability and efficiency being prime objectives of our company.

We ask that you take time to fully read this manual to ensure that all the installation requirements are met and the operating principles are fully understood so that you can enjoy a trouble free system.

It is extremely important to read the health and safety information before working on the treatment plant.

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NOTE: If you require any further information regarding any aspect of our products, please contact our Customer Services Department 0800 32 888 52

Prüfinstitut für Abwassertechnik GmbH

PERFORMANCE RESULTS

Clenviro Ltd
Unit 1C, Queensway Business Park, Telford, Shropshire, TF1 7UL
England

EN 12566-3, Annex B
Results corresponding to the Irish National Annex for IS EN 12566-3

Small wastewater treatment system MATRIX CLF
Submerged fixed film process

Test report PIA2008-093B49

Nominal organic daily load*	0.34 kg/d		
Nominal hydraulic daily load	1.20 m³/d		
Material	polypropylene		
Watertightness (Annex A)	pass		
Structural behaviour (pit test)	pass (also wet conditions)		
Durability	pass		
Treatment efficiency (nominal sequences)		Efficiency	Effluent
	COD	91.4 %	56 mg/l
	BOD_5	96.2 %	11 mg/l
	SS	95.5 %	16 mg/l
	NH_4-N**	83.3 %	5.9 mg/l
Electrical consumption	1.4 kWh/d		

**at a test influent of ≥ 300 mg/l BOD_5 (mean)*
***determined for temperatures ≥ 12°C in the bioreactor*

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
52074 Aachen, Germany

This document replaces neither the declaration of performance nor the CE marking.

Notified Body No.: 1739

Certified according to ISO 9001:2008

DAkkS Deutsche Akkreditierungsstelle D-PL-17712-01-00

Prüfinstitut für Abwassertechnik GmbH
geprüft - tested - testé

Elmar Lancé January 2016

3.3.5 Results

Plant reference	MATRIX CLF 7					
Declared date of manufacture	08/07/09					
Maximum authorised depth of backfill	65 cm					
Condition of use	Not within the water table (dry ground conditions)			Within the water table (wet ground conditions following testing in dry ground conditions)		
Observed characteristic	Visual assessment	Volume	Deformation	Visual assessment	Volume	Deformation
Before test	/	V_{1dry} = 20 970 litres	/	/	V_{1wet} = 20 128 litres	/
After being buried for 24 hours	/	$V_{1'dry}$ = 20 662 litres	- 1,5% (after 24 hours)	/	$V_{1'wet}$ = 20 120 litres	- 0% (after 24 hours)
A the end of the test	No failure No deformation at connections	V_{2dry} = 20 128 litres	Δ_{dry} = $V_{2dry} - V_{1'dry}$ = - 534 litres i.e. – 2,6% of the initial volume (after 3 weeks)	No failure No deformation at connections No loss of watertightness	V_{2wet} = 20 032 litres	Δ_{wet} = $V_{2wet} - V_{1'wet}$ = - 88 litres i.e. – 0,4% of initial volume (after 3 weeks) **Δ_{total} = $V_{2wet} - V_{1'dry}$ = - 630 litres i.e. – 3,0% of initial volume (after 6 weeks)**

Table 1. Results of the structural behaviour test (Pit Test)

This test report only certifies the characteristics of the sample submitted for testing and makes no judgement about the characteristics of similar products. It does not, therefore, constitute product certification under article L 115-27 of the French consumer code and of the law of 3 June 1994. The specifications of the reference standard are given for information.

Test carried out by:

L. MORCET LAMARCHE

Test Manager:

S. POUDEVIGNE

Clenviro
environmental technology

MATRIX
Clenviro
Sewage Treatment Systems

Certificate of Conformity & Guarantee

This certificate confirms that all MATRIX Sewage Treatment Systems are covered by a two year blower warranty and a minimum twenty five year tank warranty, commencing from the date of delivery.

All MATRIX Sewage Treatment Systems are designed and built to the requirements of BS6297 with treatment plants referenced CLF1 to CLF7 (6 – 50pe) additionally being fully certified and tested to BSEN12566-3, achieving a process efficiency rating of 96.2% which relates to a final effluent quality of 11mg/litre BOD : 16mg/litre Suspended Solids : 5.9mg/litre NH4.
Unless otherwise stated all Matrix Sewage Treatment Systems are designed to produce a final effluent quality of 20mg/litre BOD : 30mg/litre Suspended Solids : 20mg/litre NH4 subject only to the unit operating within the stated design parameters and being maintained in accordance with recommendations.

Every MATRIX sewage treatment plant is identifiable and fully traceable by a unique serial number located in the blower housing.
Manufactured within a certified ISO9001 Design & Build Quality Management System, extruded welds are spark tested to the requirement of operating procedure P50. Chamber is stress tested and checked prior to despatch.
Internal pipework is pressure tested.
This product is guaranteed as being free from any manufacturing defect.

All warranties are subject to the product having been installed in accordance with guidelines issued by the manufacturer and the equipment being used within the stated design parameters. Warranty cover is also subject to the equipment not having been misused or abused and that any routine maintenance required having been carried out in a timely fashion by authorised engineers.
Any bought in component parts included in this product are subject to that manufacturer's warranty, deemed to be not less than 12 months, unless specifically identified separately.

Clenviro Limited reserve the right to limit any valid warranty claim to repair or replacement of the defective component only and do not accept any responsibility or liability for consequential costs or damage.

United Kingdom Health and Safety at Work Act 1974

Section 6a of this act requires manufacturers to advise their customers on the safety and the handling precautions to be observed when installing, operating, maintaining and servicing their products.

The user's attention is drawn to the following:

1. The appropriate sections of this manual must be read before working on the equipment.

2. Installation must only be carried out by suitably trained/qualified personnel.

3. Normal safety precautions must be taken and appropriate procedures observed to avoid accidents.

Refer to **Clenviro Ltd** or your local distributor for any technical advice or product information.

HEALTH

The following is extracted from a health warning card supplied to all **Clenviro** Ltd staff. It is the client's responsibility to ensure that all necessary protective clothing/equipment is available.

Leptospirosis Are you at risk?

What is Leptospirosis?

Two types of Leptospirosis affect people in the UK.

Weil's disease. This is a serious infection that is transmitted to humans by contact with soil, water or sewage which has been contaminated with urine from infected rats.

Hardjo type Leptospirosis which is transmitted from cattle to humans.

What are the symptoms?

Both diseases start with a flu like illness with a persistent and severe headache, muscle pains and vomiting. Jaundice appears about the fourth day of the illness.

How might I catch it?

The bacteria can enter your body through cuts and scratches and through the lining of the mouth and throat and eyes.

How can I prevent it?

After having worked in sewage or anything contaminated with sewage, wash your hands and forearms thoroughly with soap and water. If your clothes or boots are contaminated with sewage, wash thoroughly after handling them.

Take immediate action to wash thoroughly any cut, scratch or abrasion of the skin immediately. Apply antiseptic to the wound, cover with cotton wool or gauze, and protect with a waterproof plaster.

DO NOT handle food, drink or smoking materials without first washing your hands.

If you contract the symptoms described after coming into contact with sewage, report to your doctor immediately and advise him/her of the circumstances.

SAFETY

Sewage gases are potentially explosives and toxic. **DO NOT** enter any of the below ground compartments of the Sewage treatment plant.

Before carrying out any maintenance work, the equipment **MUST** be electrically isolated at the fuse box from which the blower power supply is derived.

Do not leave covers open for any longer than necessary. Temporary barriers and warning signs should be erected around any open covers or manways as appropriate.

PLANT DESCRIPTION & PROCESS Section 2

The **MATRIX** range of treatment systems for residential population equivalents up to 300 persons are a "unitank" design comprising a primary settlement stage, a biological filtration zone and a final settlement zone, within a single structure.

THIS MANUAL REFERS SPECIFICALLY TO TREATMENT PLANT MODELS CLF1 (6pe) to CLF17 (300pe)

The treatment plant will provide long and trouble free operation provided the simple installation and maintenance procedures are adhered to.

Your attention is drawn to the Health and Safety section in this manual. It is imperative that you read these instructions carefully before attempting to carry out any work on the system.

The treatment plant has been designed to treat the volume and strength of sewage specified in the original quotation and as detailed in the technical data section of this manual. To ensure that the plant continues to operate efficiently, your attention is drawn to the following points:

DO NOT exceed the maximum design loading of the plant.

DO NOT allow surface water to enter the system.

DO NOT allow high volume discharges such as from swimming pools or jacuzzis to enter the system.

DO NOT allow large quantities of chemicals such as water softener regenerant, disinfectants, strong acids or alkalis, oil and grease, pesticides or photographic chemicals to enter the system.

DO NOT use chemical or biological emulsifiers in grease traps.

DO NOT allow fats, oil or grease from catering applications to enter the system.

If you have any doubt about a particular substance, please contact the Customer Service Department at **Clenviro Ltd** for further advice. 0800 32 888 52

SCOPE OF SUPPLY

Section 2

The **MATRIX** system comprises the CLF treatment unit itself and an enclosure containing an air blower unit with a mains power connection point and comes complete with 10m of airline and a failure alarm, as standard.

CLF Unit

This comprises a single tank containing all the components required for the sewage treatment process.

The CLF tank is manufactured in Elite Fabrication Grade Polypropylene and is supplied in a standard black colour. It is completely impervious to water and sewage and has been designed and independently tested to ensure a robust construction and a long service life. The tank is provided with a locking manhole cover, providing access to all parts of the unit.

The submerged filter beds comprise of plastic pieces of filter media, randomly packed into the tank. The media is made from UV stable polypropylene and provides a large surface area on which the bacteria, required for the purification process, can grow. The media is supported on an open mesh panel fixed above the base of the tank.

A fine bubble air diffuser is located underneath the filter bed(s) this is connected to the external air supply (blower) by uPVC pipework and a braided hose airline.
In most CLF units we incorporate recirculation systems which is a uPVC pipe running from the final settlement and media sections back to the primary settlement section.
The pipework has a tapping at its top where tubing is inserted down the uPVC pipe which is connected to the blower. On models which incorporate a media section continuous recycle (CLF5 to CLF17) a control tap in the 8mm air line inside the treatment plant ensures a correctly balanced air flow between the air lift recirculation pipe and the diffuser in the submerged filter zone. On models CLF3 to CLF17 there is a timed recirculation system from the final tank back to the primary settlement section. This is factory set, do not alter.

Blower

The blower is mounted along with its associated electrical controls inside a weatherproof enclosure.
The electrical controls comprise an isolator and a loss of air alarm connected to an external beacon which will provide a visual warning that the blower is not operational.
On models with a pumped discharge fitted there is also a high level/pump failure alarm and beacon. See pages 28-29-30.

NOTE :
Clenviro Ltd operate a policy of continuous product and process development and reserve the right to change specifications without prior notification.

INSTALLATION INSTRUCTIONS Section 3

Please read the Health & Safety, section 1 of this manual before attempting to work on the system.

Note: The **CLF** tank should be stored with access covers in place to prevent accumulation of rainwater within the unit.

IMPORTANT
The siting of a treatment plant must be agreed with the Building Regulation department of the local authority prior to installation. Similarly, the discharge from a treatment plant will require a Discharge Permit from the Environment Agency if the volume of discharge is greater than 5.0m3/day direct to watercourse, or 2.0m3/day to soakaway. This must be obtained before installation. Consideration must also be given to the need for access for desludging the unit by tanker

MECHANICAL INSTALLATION

Note: Please refer to drawing CLFINSTAL, Drawings, section 8 of this manual.

The following instructions are offered for guidance only. It is for the customer/contractor to satisfy themselves that installation is in accordance with the prevailing ground conditions and regulatory requirements.
Clenviro Ltd can accept no responsibility for incorrect offloading or installation.

The contractor is responsible for offloading all items of equipment with due regard to the following:

DO NOT use chains or wire ropes.

DO NOT lift the tank if it contains any water.

DO NOT subject the tank to sharp impacts.

DO check that all items delivered correspond with the packing note.

The CLF unit is provided with lifting eyes or lifting slings on the outside of the tank. These are not intended for transportation of the units. The lifting hook should be connected to the tank lifting eyes by separate slings of equal length**. Ensure that the slinging angle does not exceed 60° at the hook in order to eliminate excessive compressive loads on the side of the unit.**
When working in a deep excavation, make sure that all necessary safety precautions are taken to ensure the stability of the excavation and provide safe working conditions for site personnel. The only time anyone needs to be working at the bottom of the excavation is when levelling the base and ensuring that the first backfill is correctly placed.

MECHANICAL INSTALLATION (continued) Section 3

It is the responsibility of the installer to determine the thickness and strength of concrete required to suit the ground conditions, taking into account the buoyancy of the unit when being desludged, external forces exerted by the water table, backfill, traffic loading, etc.

The installation should be carried out in accordance with the requirements of the Construction and Building Regulations. An inspection chamber should be installed upstream of the Matrix CLF unit.
During the course of the installation, the following minimum equipment will be required:

Normal construction equipment and plant.

Concrete to C20P and semi dry to 30mm slump.

An adequate supply of water to fill the unit at the same rate as backfilling.

Dewatering equipment as necessary.

Set of lifting straps of correct length and adequate SWL.

Please Note : The foul drain to the treatment plant MUST have a traditional open soil/vent pipe at the head of the drain run. Air admittance valves, tile or ridge vents are NOT acceptable.

Excavate to the CLF tank dimensions allowing a minimum clearance of 150mm between the unit and the excavation sides. Excavate to the appropriate depth for the installation ie. depth of the unit plus 150mm minimum concrete thickness (actual thickness to suit ground conditions). NOTE : The standard inlet invert depth of all Matrix CLF units is 600mm (unless a deeper inlet invert has been requested at time of order). If the invert of the inlet drain is deeper than this **Clenviro Ltd** must be made aware at time of order so that the unit can be manufactured to suit.
Lay and level the concrete base for the tank to a minimum of 150mm thickness.
Lift the tank into position using slings, taking care not to damage any external flanges or pipework. Ensure correct orientation of the inlet and outlet pipework. Check that the tank is level in all directions. Commence backfilling with concrete in 500mm lifts, and at the same time, **fill each tank compartment with water starting with the media bay section**, ensuring that the progressive concrete and water levels are approximately equal (never exceed a difference of 200mm max). The concrete must be evenly distributed around the unit, ensuring spigot connections are not covered at this stage. **Never partly or wholly fill the tank with water before surrounding it in concrete.**

Note: Do not use vibrating pokers to compact the concrete.

MECHANICAL INSTALLATION (continued) Section 3

Make all interconnecting pipework connections, ensuring a minimum pipe gradient of 1:70.

Continue placing the concrete in 500mm lifts, terminating at the shoulder of the unit. Allow an initial set of the concrete between lifts and wait at least 24 hours for the concrete to harden.

Ensure a duct (usually standard 110mm drain pipe) is laid from the 110mm 'Air Inlet Duct'connection on the neck of the treatment plant, to the desired position of the Blower unit. This is for the airline only (and discharge pump cables if fitted) and is to ensure complete protection of the airline. On models CLF1 to CLF4 a single 110mm airline duct connection is provided, directly facing the diffuser pipework connection inside the treatment plant, to allow the airline to be connected in a straight line.
The airline **MUST** be cut to length. **Do not** leave excess airline curled up in the treatment plant, this can be detrimental to efficient blower operation and will invalidate blower warranty.
On models CLF5 to CLF17 we provide a choice of airline duct connections (either side of the access upstand) to ensure the shortest and most direct connection of the airline from the blower to the diffuser connection. The airline duct connections are set back from the diffuser pipework connection to allow for a 'long radius' arc of the airline, which again **MUST** be cut to length.
Do not use short radius 90° bends on the airline duct. There are NO electrical components within the treatment plant unless you have requested the option of a pumped discharge.
Ensure the blanking cap (supplied) is fitted to the unused airline duct connection.

On all Matrix treatment plants which have a pumped discharge, a pump failure alarm is supplied as standard. On the 6, 9 and 12 person systems this consists of a high level alarm float in the final chamber which must be connected to the alarm box provided.
The alarm float and pump float have been factory set, **DO NOT,** under any circumstances, alter the position or length of these float switches.
On all other Matrix models the pumped discharge consistes of a full duty/standby twin pump set-up and the failure alarm is built into the auto changeover panel (with external beacon) supplied with the system.

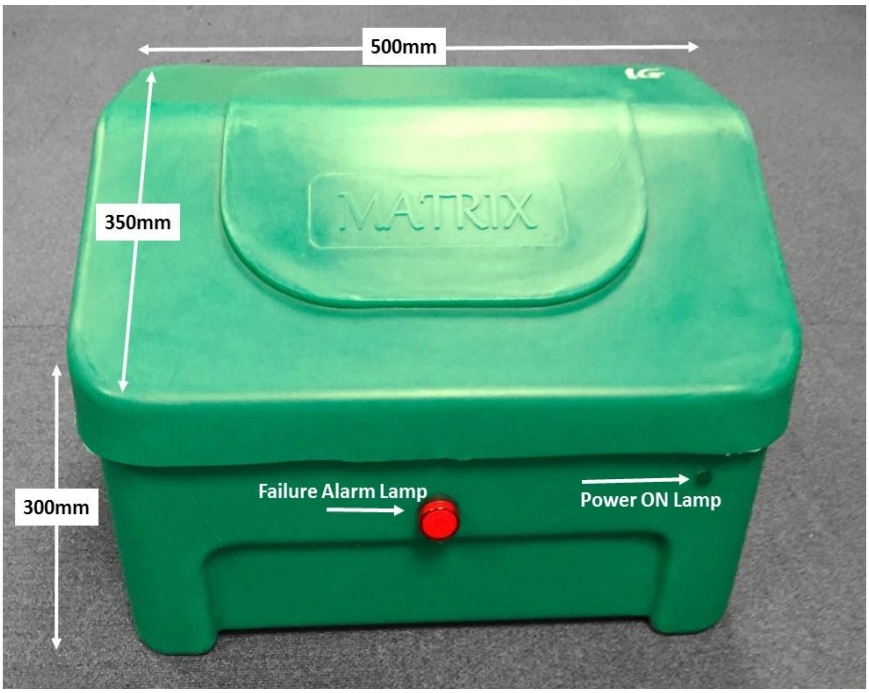
If the treatment plant is to be installed in a trafficked area, guidance should be sought from Clenviro Ltd before the treatment plant is ordered as an alternative method of manufacture is required.
Standard Matrix Treatment Systems are NOT suitable for vehicular applications.

The blower housings for models CLF1 to CLF5 should be positioned on 'soft landscaping' not paving slabs or hardstanding areas.
All other units will require a properly constructed housing plinth.

ELECTRICAL INSTALLATION (Blower Unit) Section 3

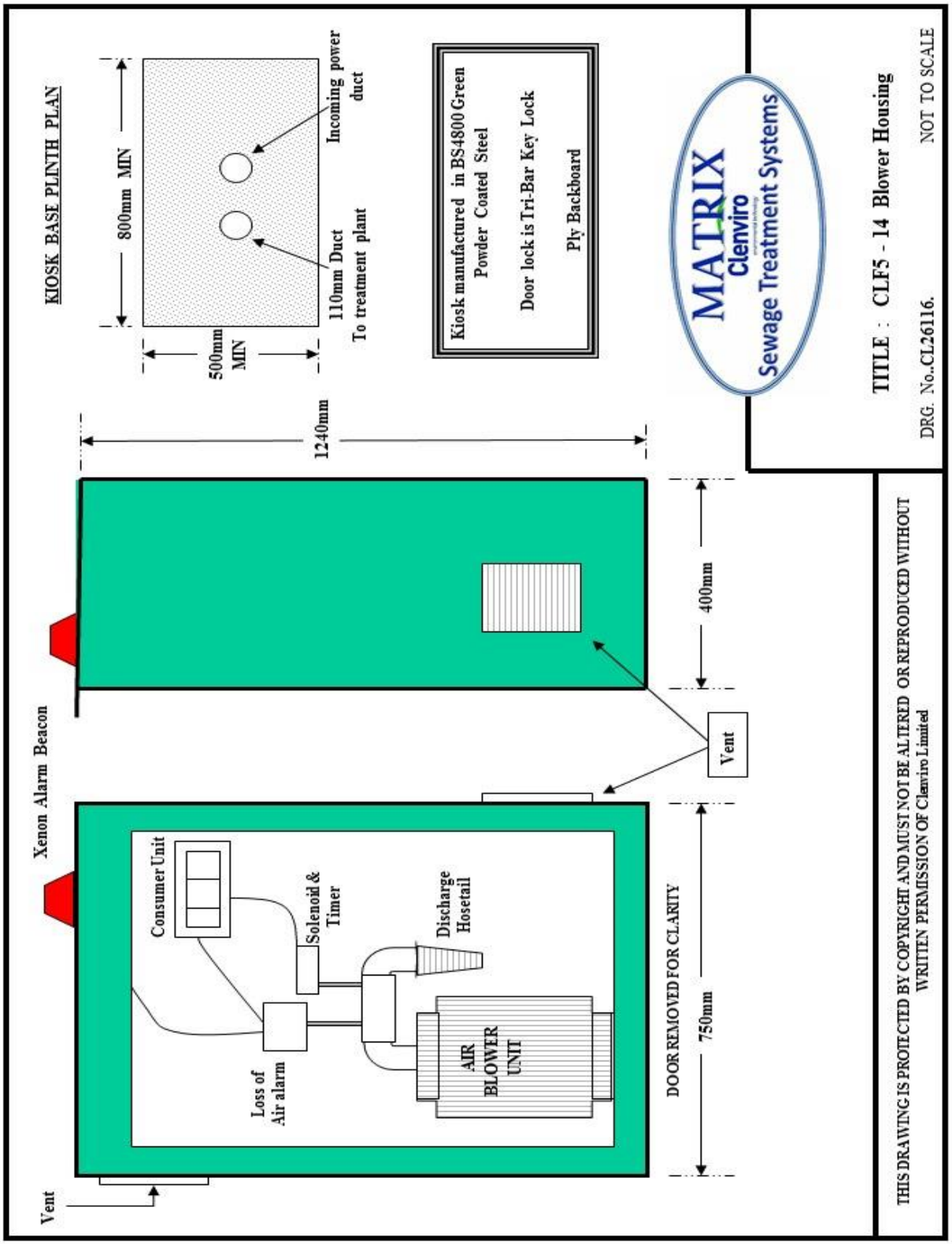
In order that you achieve a safe and cost effective installation, it is not possible to state a specific installation configuration that would suit all sites. The selection of current protection devices must remain the responsibility of the installer. It is imperative that electrical installation of this equipment is entrusted to a fully qualified electrician.
The blower unit can be positioned wherever is most convenient bearing in mind the need to get a power supply to it and the airline from it to the treatment plant.
If a pumped discharge has been requested on the treatment plant, the cable from the pump can be fed back up the airline duct to the blower unit within which is the electrical connection for the pump. Most pumps come complete with 10 meters of cable. The blower unit is supplied with 10 meters of airline as standard.
The airline duct MUST be sealed with expanding foam when installation is complete or the blower warranty will be invalidated.
When installing the electrical supply to the CLF blower unit, the following points should be considered:
The supply to the CLF unit should be by means of a dedicated circuit with isolation and protection devices consistent with the requirements for fixed equipment and in accordance with the latest regulations of the Institute of Electrical Engineers.

The supply to the CLF unit should be independent of all protection devices other than the supply authority's fuse and that provided specifically for the CLF power supply. In particular, earth leakage devices provided for normal domestic protection must **not** form part of the supply circuit to the CLF Unit.



CLF1 to CLF5 Blower Housing
See Technical Data Section for electrical connections and alarm wiring.

CLF 6 – 15 BLOWER HOUSING



OPERATING SEQUENCE

Section 4

The **MATRIX** Sewage treatment plant is specifically designed to treat domestic sewage and other biodegradable waste in a simple and compact system comprising three basic stages, namely:

Primary settlement

Biological Filtration

Final settlement

The **MATRIX** system utilizes microorganisms growing on the surface of the filter media to breakdown the sewage. It is very important that toxic chemicals such as those listed in the Introduction (section 2) do not enter the system and poison the microorganisms.

Raw sewage flowing to the CLF unit is received in the primary settlement zone. Here, gross solids (primary sludge) settle to the bottom of the tank, where they remain until the tank is desludged as described in the Maintenance Schedule, section 6 of this manual. The settled sewage displaced from the primary zone then flows into the submerged filter zone, passing under a scum baffle.

Flow circulation in the submerged filter zone is generated by the hydraulic effect of the outlet air diffuser. This causes settled sewage entering the filter zone at high level to be drawn down through the media, aerating the sewage in the process. The flow circulation ensures that the influent sewage receives several passes through the filter bed at low flow.

In the filter zone, as the sewage passes over the filter media it is purified by micro-organisms growing on the surface of the media. Growth of these micro-organisms results in an excess which is shed as solid particles known as humus solids. Humus solids settling at the bottom of the filter zones are recirculated with the flow of incoming sewage and are deposited on the top of the primary settlement zone.

Sewage displaced from the submerged filter zone flows via a DIP pipe into the humus settlement zone. Liquid displaced from the humus zone has now been fully treated and is known as final effluent. It is suitable for discharge to a watercourse or soakaway as defined in the consent to discharge issued by the Environment Agency.

Humus solids from the final settlement tank are recirculated to the primary tank via the recirculation pipework. This helps reduce the sludge build up in the humus tank and prevents stagnation during very low inflow.

PLANT START UP / SHUTDOWN PROCEDURE

PLANT START-UP

1. Fill the plant with clean water until there is a discharge from the outlet.

2. Connect the airline from the blower unit to the receiving hosetail inside the neck of the treatment plant and ensure the connections are airtight

3. Check the blower ventilation is unobstructed.

4. Turn on the main power supply to the blower unit.

5. Turn the isolator switch inside the blower housing to the on position. This will start the blower running.

6. It will take a minute or so for the pressure to build up in the system depending on the distance of the blower from the treatment plant.

7. Check that bubbles are breaking the surface in the filter media section of the treatment plant.

8. Where installed the flow regulator tap (green) on the airlft recycle is factory set to achieve an effluent return rate of not quite a constant flow. This may need adjustment due to temperature conditions or distance of blower from the treatment plant.

NOTE: It will take about a minute between adjustments for a change in flowrate. The desired setting is where the flow only just 'spitting' back. **Under no circumstances must this tap be fully open or the flow constant, as this will detrimentally affect the process performance of the treatment plant.**

9. If a discharge pump is fitted, check for operation.

10. Fit the manhole cover and lock if necessary.

The CLF Unit is now in an operational state. However, the treatment process relies on the growth of microorganisms on the filter media. The time taken for these naturally occurring organisms to develop is dependent on temperature and may take up to six weeks in winter. Until the biomass is fully developed, the treatment process will be incomplete. During this time do not allow any strong cleaning agents or bleaches to enter the system.

PLANT SHUTDOWN Section 5

Temporary absence of flow to the plant will not be detrimental as the air lift will continue to recycle sewage within the system. However, if the flow of sewage to the plant will be interrupted for more than two months, the following procedure should be completed:

1. Desludge the primary and humus tank compartments in accordance with the instructions in the Maintenance, section 6 of this manual.

2. Refill the plant with clean water.

3. Fit the manhole cover and lock if necessary.

4. Stop the blower by turning the isolator switch to off.

5. Switch off the power supply to the blower enclosure.

MAINTENANCE Section 6

OWNER RESPONSIBILITY

The owner of the sewage treatment plant is entirely responsible for the operation of the plant and for ensuring that the quality of the effluent does not breach the Environmental Permit Standards issued by the Environment Agency
Matrix Treatment Systems only require minmal maintenance but like anything, if it is going to fail it will only do so on a Sunday or Bank Holiday. Most of our maintenance recommendations are purely a visual inspection.

You are reminded that the existence of a service agreement does not transfer responsibility for general maintenance, which must be conducted in accordance with the accompanying instructions.

Soakaways, drains and the emptying of primary tanks remain the responsibility of the treatment plant owner.

If the plant appears not to be operating correctly, refer to the Fault Finding, section 7 of this manual or contact **Clenviro Ltd** for advice

MAINTENANCE SCHEDULE

WEEKLY

1. Check the operation of the blower. If the blower has failed for any reason other than a mains power failure the warning beacon will be flashing

MONTHLY
Carry out the weekly check plus:

1. Check the operation of the diffusers (bubbles rising in the Biological zone).

2. Check the recycle flow into the inlet zone if fitted.
   Look at the liquor being returned, it should run clear by the end of its cycle.

4. Check the inlet and outlet stilling zones are clear of debris.(remove any obstructions)

5. Check the blower ventilation is un-obstructed

6. Check the biomass growth on the filter media. The biomass should be a light brown colour, not white or grey. The odour in the plant should be 'earthy'. There should not be a noticeable 'rotten eggs' smell.

7. Check the final effluent. If this is cloudy or contains many suspended particles, then the humus tank is likely to require desludging.

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MAINTENANCE SCHEDULE (continued) Section 6

6 MONTHLY / ANNUALLY

Carry out the weekly and monthly checks plus:

1. Check the primary settlement tank with a probe , the top floating crust blanket should not exceed 200mm thick, arrange desludge if required

2. Desludge the primary and final tank every 12 months* and desludge the biozone every 24 months*. This should be done by an experienced local waste disposal tankering company. * This applies to CLF units 1, 1A, 2, 3 & 4. Larger systems will require de-sludging more frequently depending on loading and type of application.

3. The tanker suction hose should be carefully lowered into the primary and final chambers ensuring all settled sludge is removed.

4. When desludging the biozone carefully lower the suction hose down the triangular section (rectangular in larger units) where the air diffuser pipework goes down making sure not to damage the pipework. Ensure the hose is down to the base of the tank so that all settled biomass sludge can be removed.

5. After desludging each compartment, it is essential that the unit is filled up with water. This can be done by using a hosepipe or by running several taps in the household(s).

6. Remove air filter from the blower unit (remove top cover to access filter), clean and replace.

7. It is the manufacturers recommendation that the diaphragms in the small blower units are replaced every 18-24 months.

See general layout drawings ‘CLF1-17 Desludge’ in the technical data section for desludge points

Repeat the Plant Start-up Procedure, section 5 of this manual.

1. THE BLOWER IS NOT RUNNING

	Cause	Remedy
1.1	Power cut.	If temporary do nothing. When the power is restored the system will restart automatically
1.2	Power supply RCD has tripped.	Switch off the power and reset the RCD, Switch on and the blower should restart automatically. If it doesn't, switch off the power supply and call an electrician, on 3 phase supply check correct rotation.
1.3	Blower runs Intermittently	Check air vents are clear and the airline is not kincked as overheating in the enclosure will cause the high temperature trip to switch of the power until cool.

2. AIR BUBBLES ARE NOT RISING FROM THE DIFFUSER

	Cause	Remedy
2.1	Blower is not running.	Refer to fault condition 1.
2.2	Blower running	Check all valves open, and all air lines are not broken or leaking.

3. THERE IS NO RECIRCULATION FLOW FROM THE HUMUS TANK COMPARTMENT

	Cause	Remedy
3.1	Blower fault.	Refer to fault conditions 1 & 2.
3.2	Recirculation pipework is blocked	Use a wooden pole to agitate any sludge which has settled around the bottom of the recirculation pipework in the humus tank. If there is a substantial level of sludge, then desludge the humus tank as described in the Maintenance Schedule, section 6 of this manual.
3.3	The air control jet is blocked	Remove and clean the jet. In cleaning the jet ensure the orifice is not enlarged.

TECHNICAL DATA

Model No	CLF1 (6pe)	CLF1A (9pe)	CLF2 (12pe)	CLF3 (18pe)
Max Daily Flow	0.9m3/day	1.35m3/day	1.8m3/day	2.7m3/day
Total BOD Load	0.36kg/day	0.54kg/day	0.72kg/day	1.08kg/day
Population Equivalent	6	9	12	18
Overall Depth (std)	1956mm	1959mm	1959mm	1962mm
Diameter	1500mm	1700mm	1900mm	2200mm
Inlet Invert (Std)	600mm	600mm	600mm	600mm
Outlet Invert	650mm	650mm	650mm	650mm
Cover Size	900mm2	900mm2	900mm2	2 x 900mm2
Blower Rating	60w/240v	60w/240v	80w/240v	120w/240v
Discharge Pump rating (optional)	0.2kw/240v	0.2kw/240v	0.2kw/240v	0.2kw/240v
Desludge Frequency* (Based on full load)	180 days	180 days	180 days	180 days
Inlet Connection	110mm	110mm	110mm	110mm
Outlet Connection (Gravity)	110mm	110mm	110mm	110mm
Outlet Connection (pumped discharge)	50mmMDPE	50mmMDPE	50mmMDPE	50mm MDPE
Weight (empty)	200kgs	250kgs	300kgs	400kgs

*Desludge frequency assumes residential application with full daily design loading

Model No	CLF4 (25pe)	CLF5 (30pe)	CLF6 (40pe)	CLF7 (50pe)
Max Daily Flow	3.75m3/day	4.5m3/day	6.0m3/day	7.5m3/day
Total BOD Load	1.50kg/day	1.80kg/day	2.40kg/day	3.00kg/day
Population Equivalent	25	30	40	50
Overall Depth (std)	1912mm	1912mm	1912mm	1912mm
Width (inc ribs)	2500mm Diameter	1624mm	1624mm	2124mm
Length (inc. ribs)	N / A	4100mm	4500mm	5100mm
Inlet Invert (Std)	600mm	600mm	600mm	600mm
Outlet Invert	650mm	700mm	700mm	700mm
Blower Rating	120w/240v	200w/240v	0.37Kw/240v	0.70Kw/240v
Discharge Pump rating (optional)	0.2kw/240v	0.2kw/240v	0.2kw/240v	0.2kw/240v
Desludge Frequency* (Based on full load)	180 days	180 days	180 days	180days
Inlet Connection	160mm	160mm	160mm	160mm
Outlet Connection (Gravity)	160mm	160mm	160mm	160mm
Outlet Connection (pumped discharge)	50mm MDPE	50mm MDPE	50mm MDPE	50mm MDPE
Weight (empty)	750kgs	1200kgs	1400kgs	1700kgs

*Desludge frequency assumes residential application with full daily design loading.

Model No	CLF8 (60pe)	CLF9 (70pe)	CLF10 (80pe)	CLF11 (90pe)	CLF12 (100pe)
Max Daily Flow	9m3	10.5m3	12m3	13.5m3	15m3
Total BOD load	3.60kg/day	4.20kg/day	4.80kg/day	5.40kg/day	6.00kg/day
Population Equivalent	60	70	80	90	100
Overall Depth (std)	1912mm	1912mm	1912mm	1912mm	1912mm
Width (inc. ribs)	2124mm	2124mm	2124mm	2124mm	2524mm
Length (inc ribs)	5600mm	6000mm	6600mm	7500mm	7500mm
Inlet Invert (Std)	600mm	600mm	600mm	600mm	600mm
Outlet Invert	700mm	700mm	700mm	700mm	700mm
Blower Rating	0.70kw	0.70kw	0.70kw	0.70kw	0.70kw
Desludge Frequency *	120 days	120 days	120 days	120 days	120 Days
Inlet Connection	160mm	160mm	160mm	160mm	160mm
Outlet Connection	160mm	160mm	160mm	160mm	160mm
Outlet (pumped)	50mm MDPE	50mm MDPE	50mm MDPE	50mm MDPE	63mm MDPE
Weight Empty	2000kg	2200kg	2400kg	2600kg	2900kg

*Desludge frequency assumes residential application with full daily design load

Model No	CLF13 (125pe)	CLF14 (150pe)	CLF15 (200pe)	CLF16 (250pe)	CLF17 (300pe)
Max Daily Flow	18.75m3	22.5m3	30m3	37.5m3	45m3
Total BOD	7.50kg/day	9.00kg/day	12.00kg/day	15.00kg/day	18.00kg/day
Population Equivalent	125	150	200	250	300
Overall Depth	1912mm	1912mm	1912mm	2412mm	2612mm
Width (inc. ribs)	2524mm	2524mm	2524mm	2524mm	2524mm
Length (inc ribs)	9000mm	10500mm	12000mm	12000mm	12000mm
Inlet Invert (Std)	600mm	600mm	600mm	600mm	600mm
Outlet Invert	700mm	700mm	700mm	700mm	700mm
Blower Rating	0.75kw (240v)	1.1kw (240v)	1.1kw (240v)	1.5kw (415v)	2.2kw (415v)
Desludge Frequency*	120 days	120 days	120 days	120 days	90 Days
Inlet Dia	160mm	160mm	160mm	160mm	160mm
Outlet Dia	160mm	160mm	160mm	160mm	160mm
Outlet (pumped)	63mm MDPE	63mm MDPE	63mm MDPE	63mm MDPE	63mm MDPE
Weight Empty	3100kg	3300kg	3500kg	3700kg	3900kg

*Desludge frequency assumes residential application with full daily design load.

MATRIX PACKAGE SEWAGE TREATMENT PLANT

PROCESS DESCRIPTION

INFLUENT DESIGN PARAMETERS.

DWF (Dry Weather Flow)	=	As data sheet
Peak Design Flow	=	3 x DWF
Organic Load	=	As data sheet
Nature of Influent	=	CRUDE SEWAGE
PH Range	=	6 – 8
Standard Effluent Quality	=	20mg / L BOD : 30mg / L SS : 20mg/L NH4

ALL SURFACE WATER MUST BE EXCLUDED. – NO WASTE DISPOSAL UNITS IN USE
AN EFFECTIVE GREASE TRAP MUST BE INSTALLED ON ANY COMMERCIAL KITCHEN DRAINS eg.: HOTELS / RESTAURANTS

The "Matrix" treatment plant is of unitank design and incorporates Primary Settlement (PST) Biological Treatment (Biozone), and Final Settlement (FST) within the same structure, allowing delivery to site as a complete unit to provide for a simple and straightforward installation. No other tanks are required except for larger applications (over 300 p.e.) where a modular system is provided or where additional treatment may be required to achieve more stringent effluent quality standards or where effluent re-use is proposed.
The "Matrix" Treatment plant has been designed to optimize the aesthetic qualities of the final installation by ensuring that there is minimum visual impact. The "Matrix" process is designed in accordance with the requirements of BS 6297 and certified to BSEN 12566 – Pt3 achieving an average final effluent quality of 11mg/litre BOD : 16mg/litre SS : 6mg/litre NH4.

PRIMARY SETTLEMENT TANK

The primary settlement tank is a two stage tank designed to maximize the removal of gross and suspended solids prior to transfer of the settled effluent to the biozone for treatment. The primary settlement tank also incorporates for a sludge storage volume (based on full load) depending on the desludge periods as identified for individual applications.

BIOZONE

The biological treatment phase utilizes BAF technology (biological aerated filter) which incorporates two proven principles of biological process in the form of a fixed film reactor for process stability and a suspended floc dispersed growth system for high transfer rates and operational control, to ensure a stable treatment process which is largely unaffected by shock loads.

The process incorporates a submerged, high rate, plastic media on which a fixed film of biomass is grown. This film takes nutrition from the incoming settled effluent and is provided with oxygen by means of a small blower unit which aerates the media through HDPE membrane diffusers to provide fine bubble aeration.

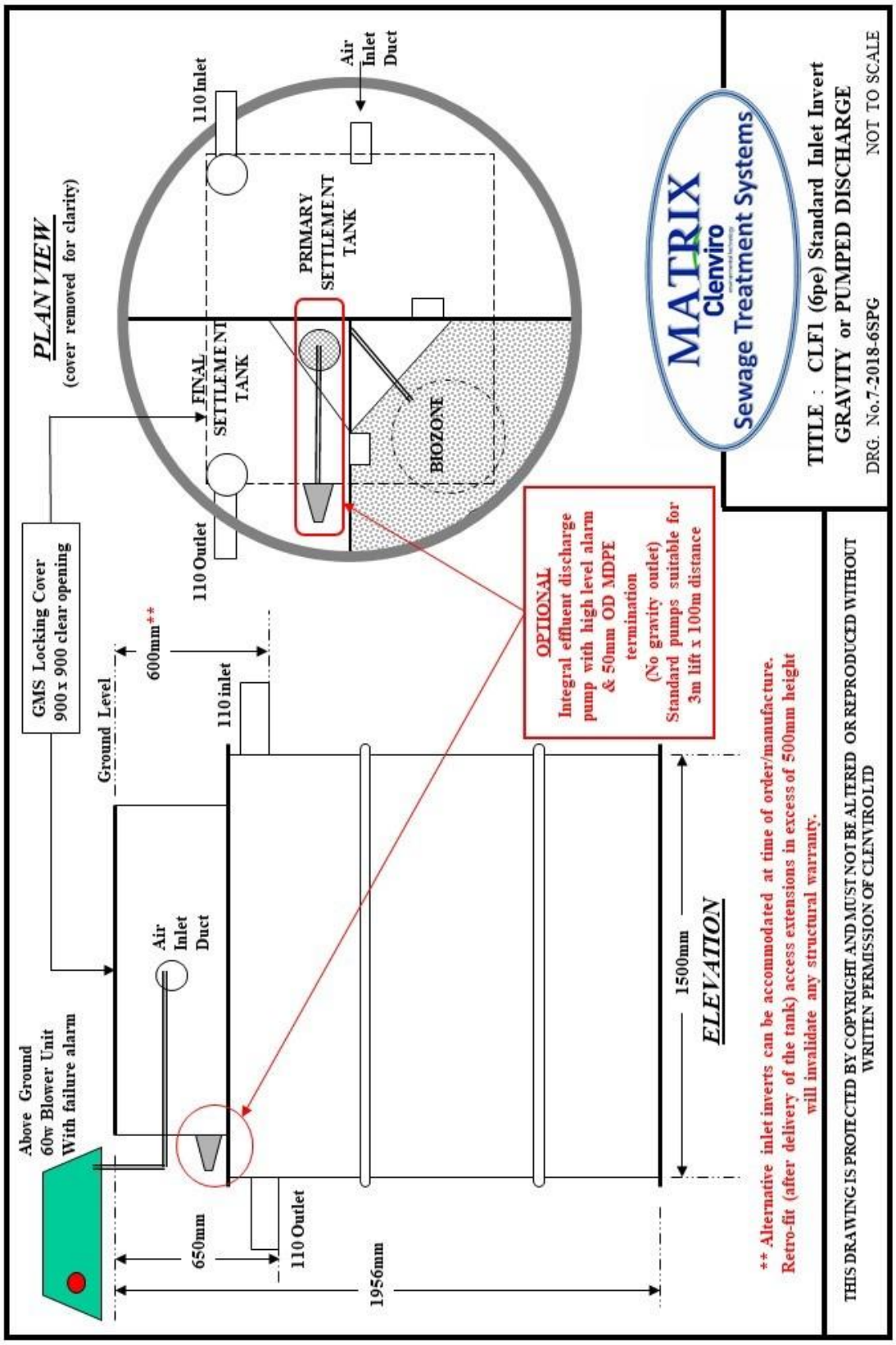
The action of the fine bubble aeration is carefully controlled to provide optimum oxygen transfer rates and to provide a scouring action to slough off excess biomass to keep the thickness of the fixed biological film at optimum levels, thereby preventing the production of anaerobic bacteria and ensuring maximum process efficiency.
The fact that the media remains submerged allows for an element of suspended floc dispersed growth which basically means that there will be biomass which is "unfixed" to the media but achieves treatment through suspended aeration.

The biozone incorporates a two stage process as standard that allows for constant mixing of incoming settled effluent to provide optimum treatment stability and to avoid any "short-circuiting."
The use of a two stage biozone ensures a high degree of process efficiency to not only reduce B.O.D. levels to that required, but will also achieve reductions in ammoniacal nitrogen in excess of standard requirements.

FINAL SETTLEMENT TANK

The final settlement tank is designed in accordance with the requirements of BS 6297 to ensure relevant surface areas and rise rates are achieved to provide maximum settlement of any suspended solids prior to discharge.
The **"Matrix"** system also incorporates continuous and automatically timed humus sludge return systems to return humus sludge from both the final settlement tank and each biozone, back to the primary settlement tank.
Additionally this system also provides for continuous recycling of treated effluent back to the P.S.T. to not only provide dilution of incoming settled effluent but to also ensure continuous flow during periods of low or no flow, thereby keeping the biomass in prime condition.

To maximize efficiency and to minimize maintenance requirements and potential problems, there are NO mechanical or moving parts contained within the treatment plant.


PLAN VIEW
(cover removed for clarity)
110 Inlet
Air Inlet Duct
PRIMARY SETTLEMENT TANK
FINAL SETTLEMENT TANK
BIOZONE
110 Outlet
GMS Locking Cover 900 x 900 clear opening
600mm**
Ground Level
110 inlet
Air Inlet Duct
Above Ground 60w Blower Unit With failure alarm
650mm
110 Outlet
1956mm
1500mm
ELEVATION
OPTIONAL
Integral effluent discharge pump with high level alarm & 50mm OD MDPE termination
(No gravity outlet)
Standard pumps suitable for 3m lift x 100m distance
** Alternative inlet inverts can be accommodated at time of order/manufacture.
Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF1 (6pe) Standard Inlet Invert
GRAVITY or PUMPED DISCHARGE
DRG. No.7-2018-6SPG
NOT TO SCALE
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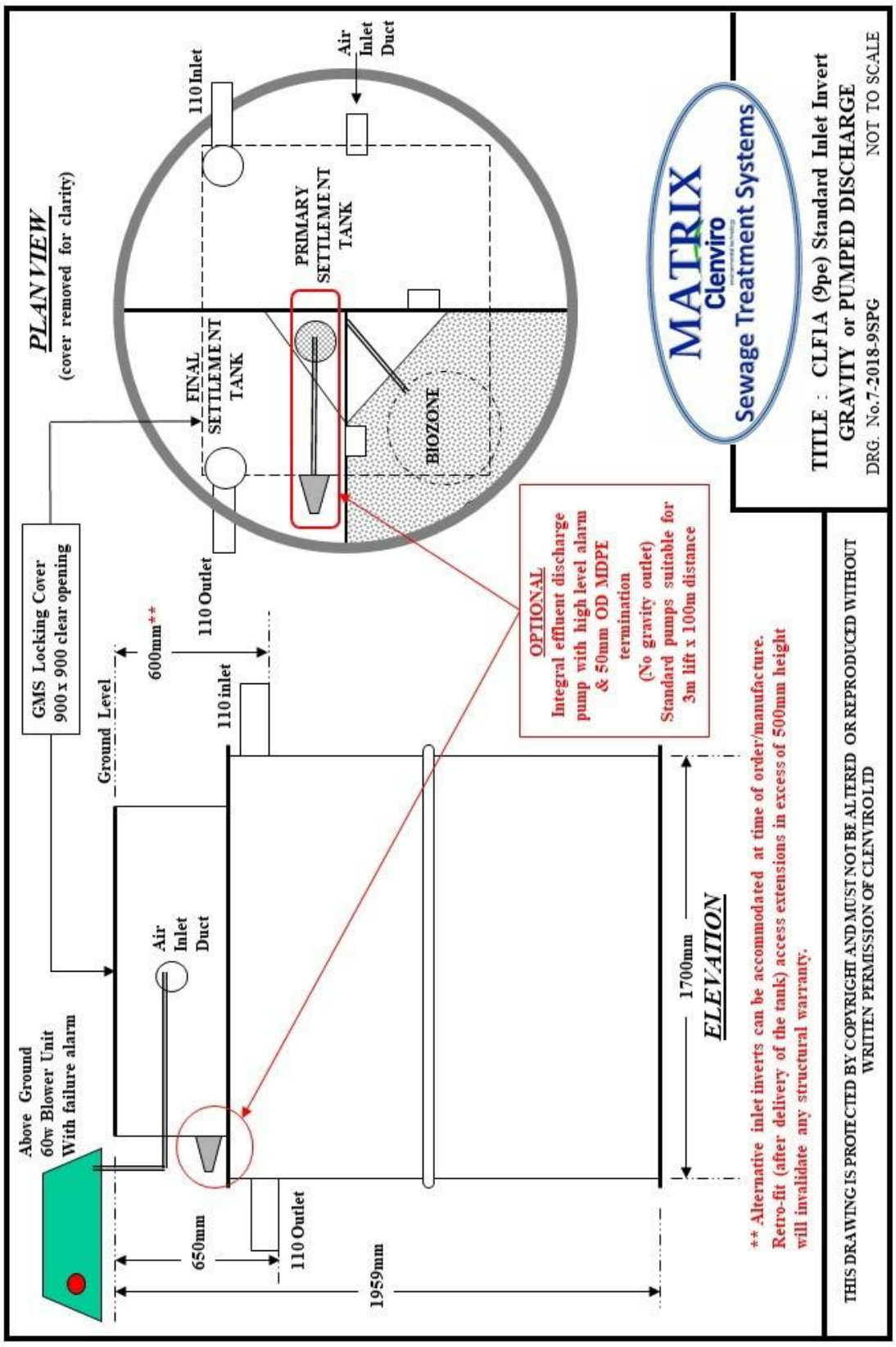
PLAN VIEW
(cover removed for clarity)
110 Inlet
Air Inlet Duct
PRIMARY SETTLEMENT TANK
FINAL SETTLEMENT TANK
BIOZONE
110 Outlet
GMS Locking Cover
900 x 900 clear opening
600mm**
110 inlet
Ground Level
Air Inlet Duct
Above Ground
60w Blower Unit
With failure alarm
650mm
110 Outlet
1959mm
1700mm
ELEVATION
OPTIONAL
Integral effluent discharge pump with high level alarm & 50mm OD MDPE termination
(No gravity outlet)
Standard pumps suitable for 3m lift x 100m distance
** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF1A (9pe) Standard Inlet Invert GRAVITY or PUMPED DISCHARGE
DRG. No.7-2018-9SPG
NOT TO SCALE
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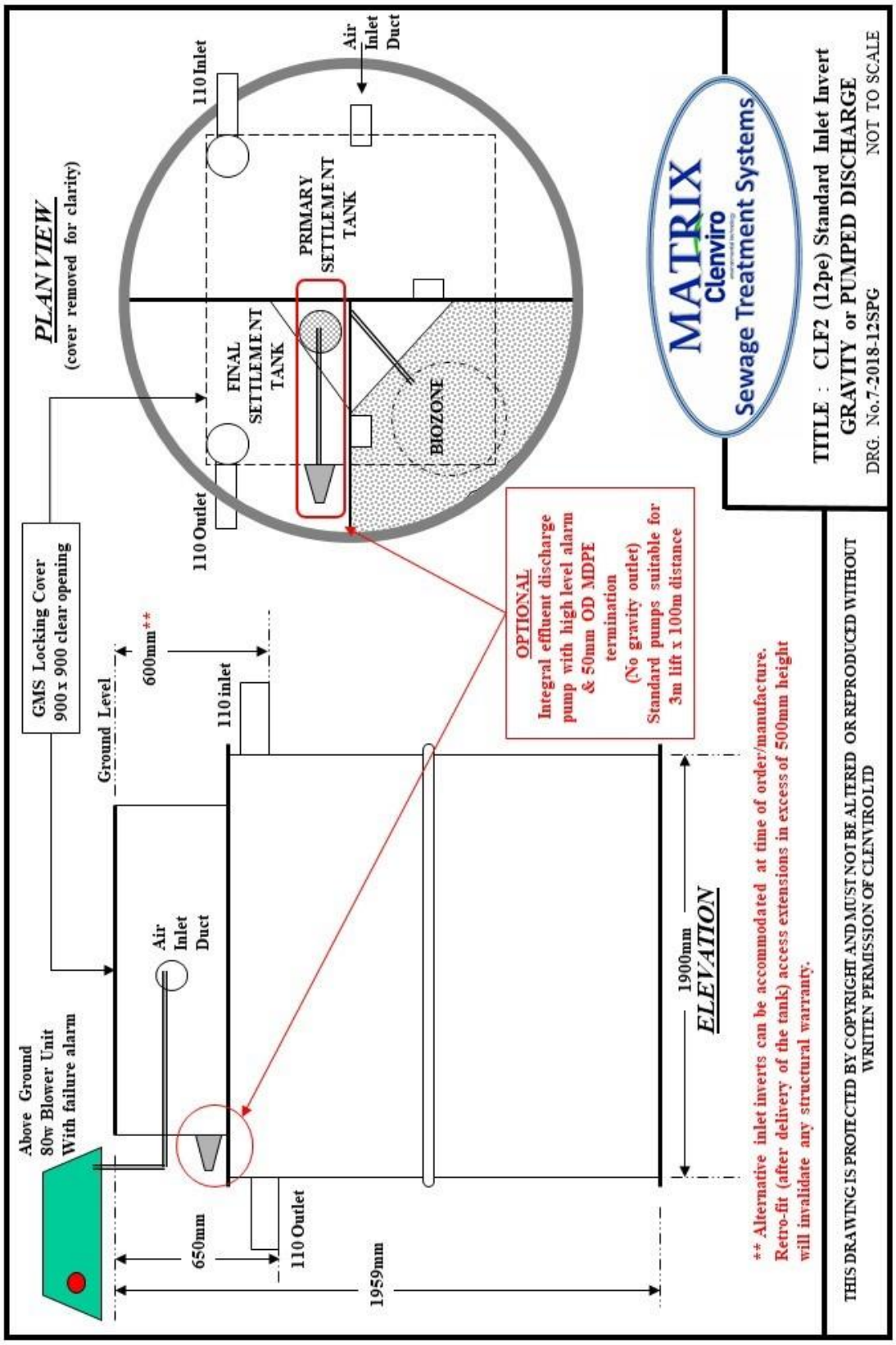
PLAN VIEW
(cover removed for clarity)
110 Inlet
Air Inlet Duct
PRIMARY SETTLEMENT TANK
FINAL SETTLEMENT TANK
BIOZONE
110 Outlet
GMS Locking Cover 900 x 900 clear opening
600mm**
Ground Level
110 inlet
Air Inlet Duct
Above Ground 80w Blower Unit With failure alarm
650mm
110 Outlet
1959mm
OPTIONAL
Integral effluent discharge pump with high level alarm & 50mm OD MDPE termination
(No gravity outlet)
Standard pumps suitable for 3m lift x 100m distance
1900mm
ELEVATION
** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF2 (12pe) Standard Inlet Invert
GRAVITY or PUMPED DISCHARGE
DRG. No.7-2018-12SPG
NOT TO SCALE
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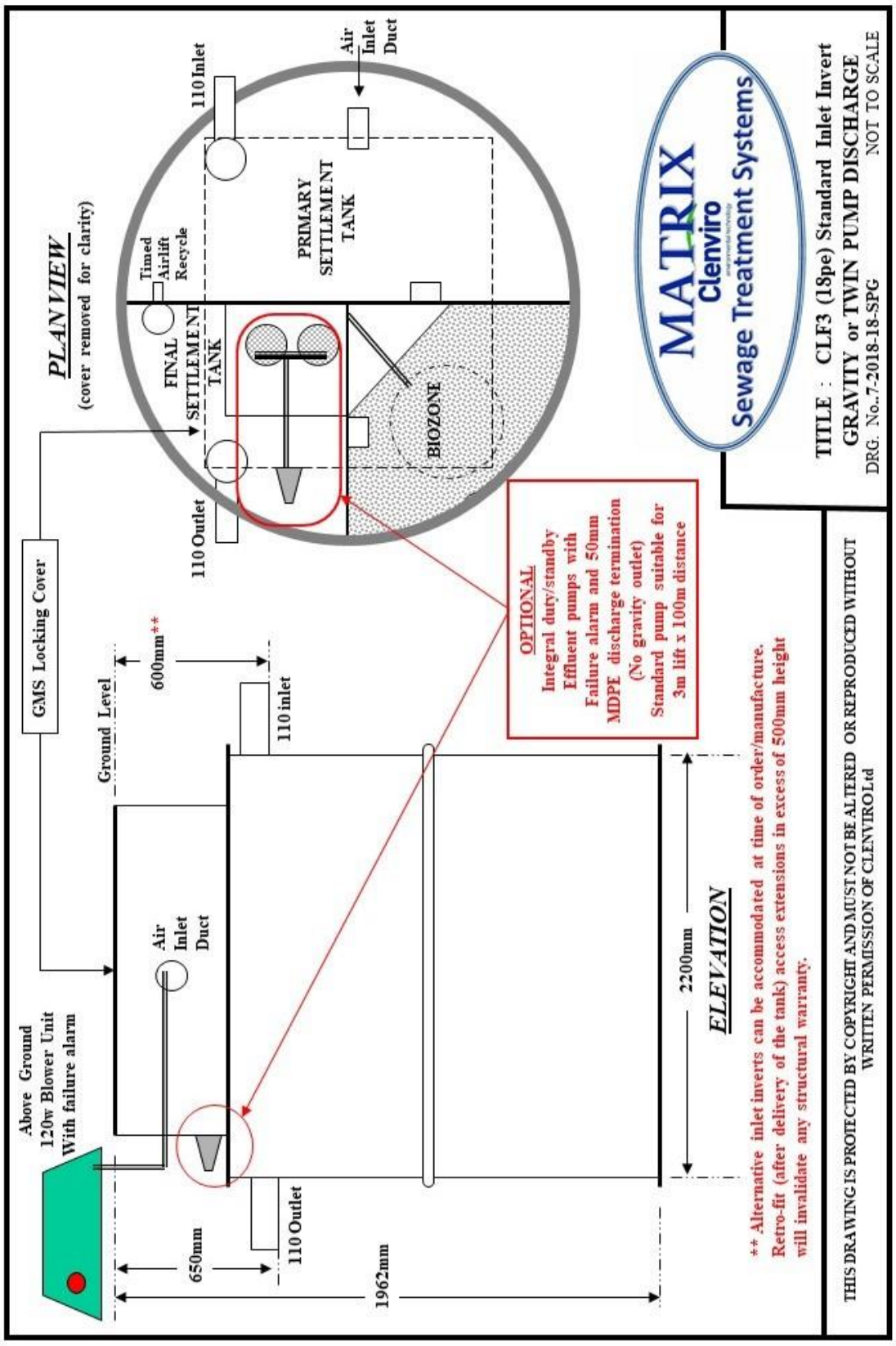
PLAN VIEW
(cover removed for clarity)
110 Inlet
Air Inlet Duct
Timed Airlift Recycle
PRIMARY SETTLEMENT TANK
FINAL SETTLEMENT TANK
BIOZONE
110 Outlet
GMS Locking Cover
Ground Level
600mm**
110 inlet
Air Inlet Duct
Above Ground 120w Blower Unit With failure alarm
650mm
110 Outlet
1962mm
2200mm
ELEVATION
OPTIONAL
Integral duty/standby Effluent pumps with Failure alarm and 50mm MDPE discharge termination (No gravity outlet) Standard pump suitable for 3m lift x 100m distance
** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF3 (18pe) Standard Inlet Invert GRAVITY or TWIN PUMP DISCHARGE
DRG No.7-2018-18-SPG
NOT TO SCALE
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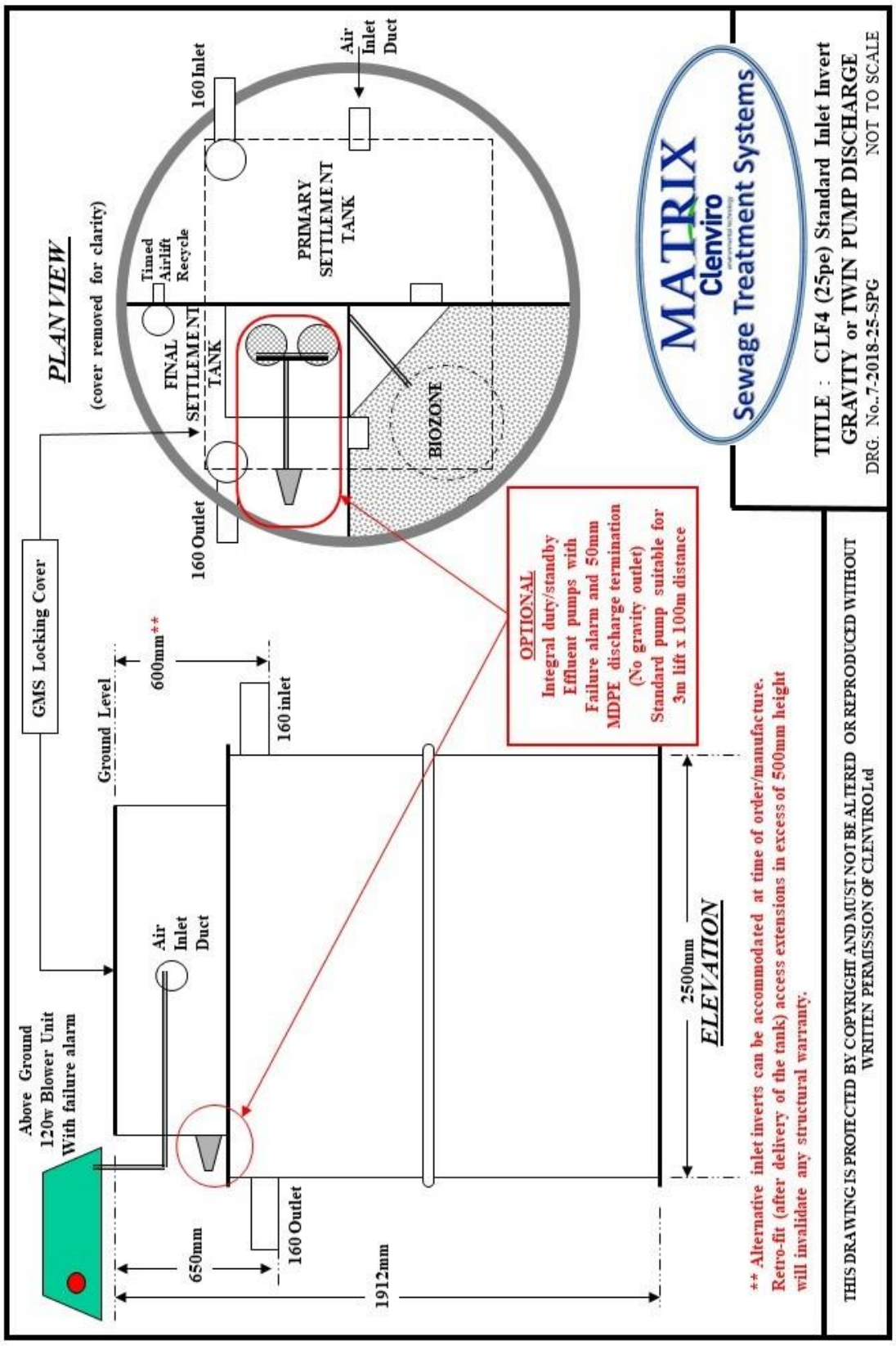
PLAN VIEW
(cover removed for clarity)
160 Inlet
Air Inlet Duct
PRIMARY SETTLEMENT TANK
Timed Airlift Recycle
FINAL SETTLEMENT TANK
BIOZONE
160 Outlet
GMS Locking Cover
Above Ground 120w Blower Unit With failure alarm
Ground Level
600mm**
160 inlet
Air Inlet Duct
OPTIONAL
Integral duty/standby Effluent pumps with Failure alarm and 50mm MDPE discharge termination (No gravity outlet) Standard pump suitable for 3m lift x 100m distance
2500mm
ELEVATION
650mm
160 Outlet
1912mm
** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
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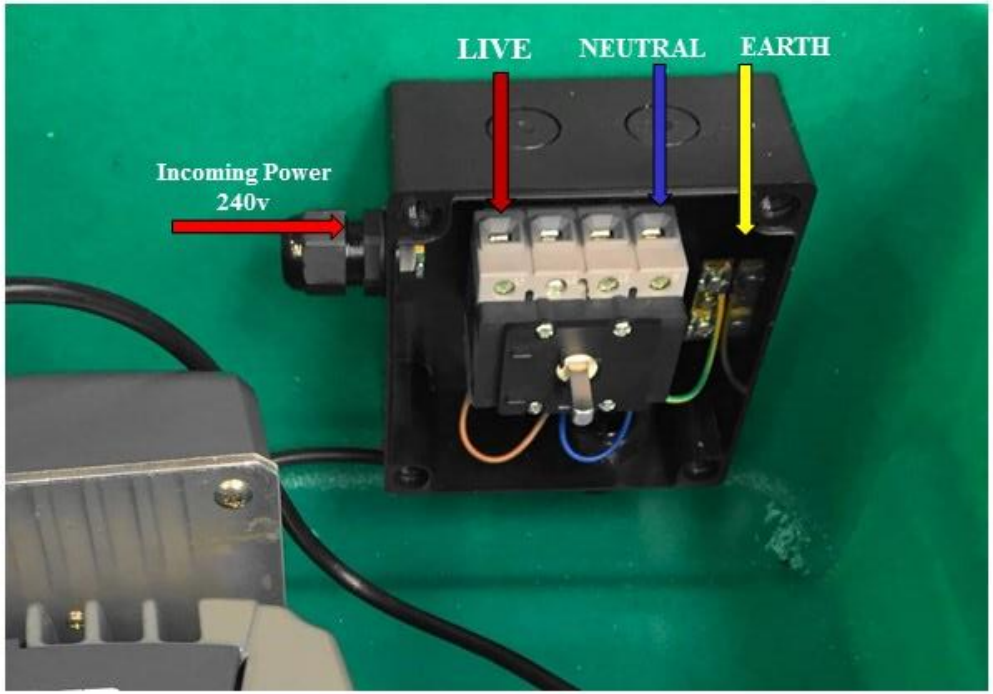
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF4 (25pe) Standard Inlet Invert GRAVITY or TWIN PUMP DISCHARGE
DRG. No.7-2018-25-SPG
NOT TO SCALE



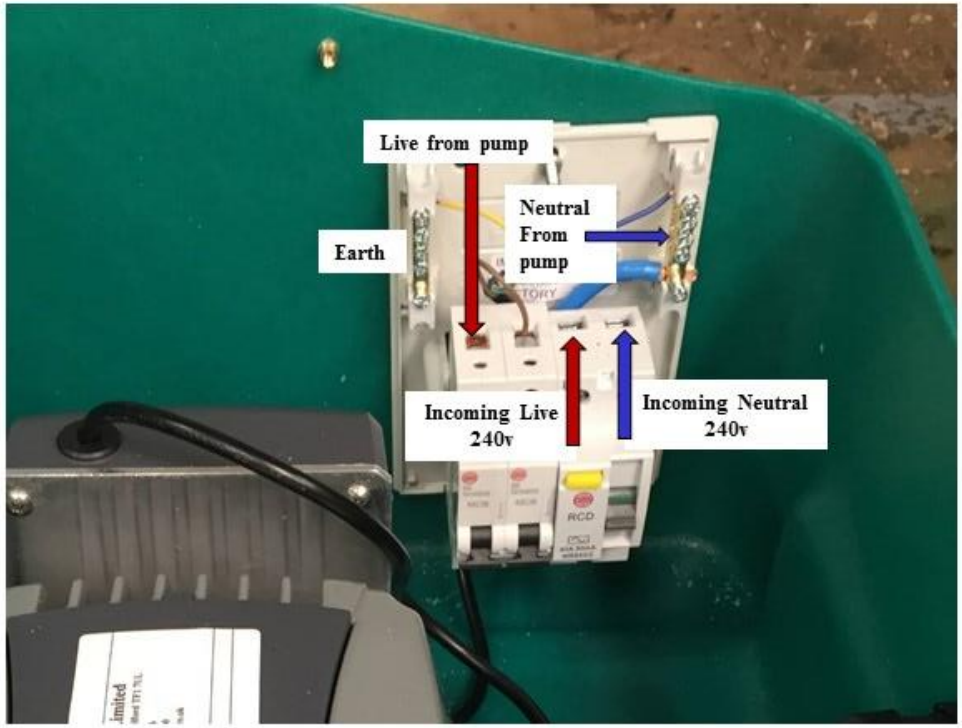
Note : Blower – Alarm & 'Power On' lamp are factory pre-wired.

MATRIX
Clenviro
Sewage Treatment Systems

TITLE : **CLF1-CLF1A - CLF2- CLF3 – CLF4**
Gravity Discharge Models
Electric Connection

DRG. No.**26815-B** NOT TO SCALE

Clenviro
environmental technology



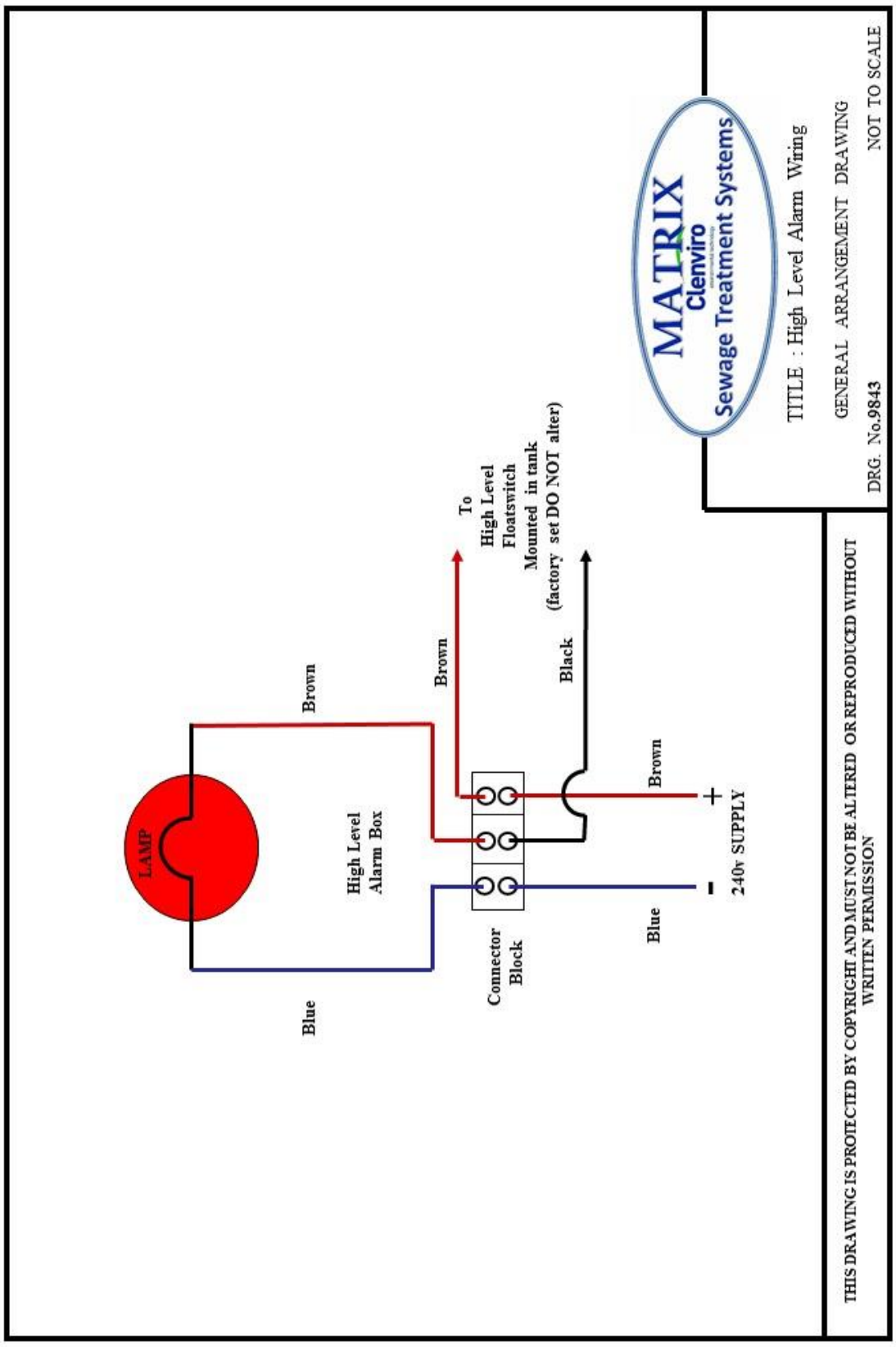
Note: Blower – Alarm & 'Power On' lamp are factory pre-wired

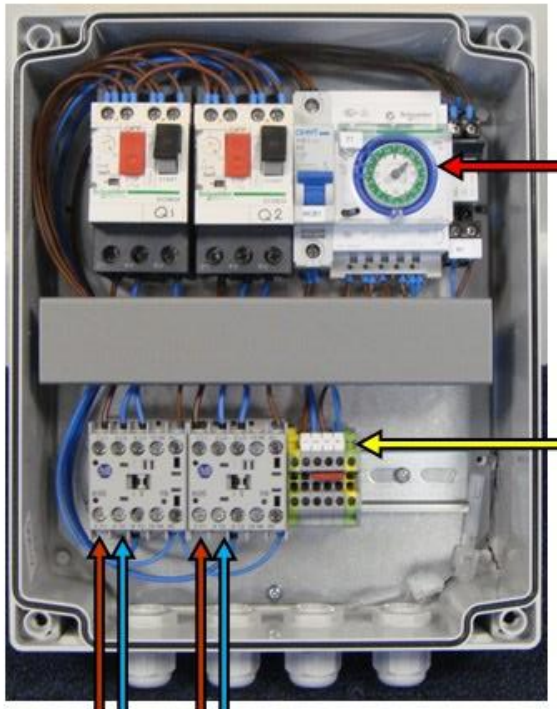
MATRIX
Clenviro
Sewage Treatment Systems

TITLE : **CLF1-CLF1A - CLF2**
Pumped Discharge Models
Electric Connection

DRG. No.**26815-A** NOT TO SCALE

Clenviro
environmental technology


MATRIX
Clenviro
Sewage Treatment Systems
TITLE : High Level Alarm Wiring
GENERAL ARRANGEMENT DRAWING
DRG. No.9843
NOT TO SCALE
THIS DRAWING IS PROTECTED BY COPYRIGHT AND MUST NOT BE ALTERED OR REPRODUCED WITHOUT WRITTEN PERMISSION
LAMP
High Level Alarm Box
Brown
Blue
Brown
To High Level Floatswitch Mounted in tank (factory set DO NOT alter)
Black
Brown
Blue
Connector Block
+
-
240v SUPPLY

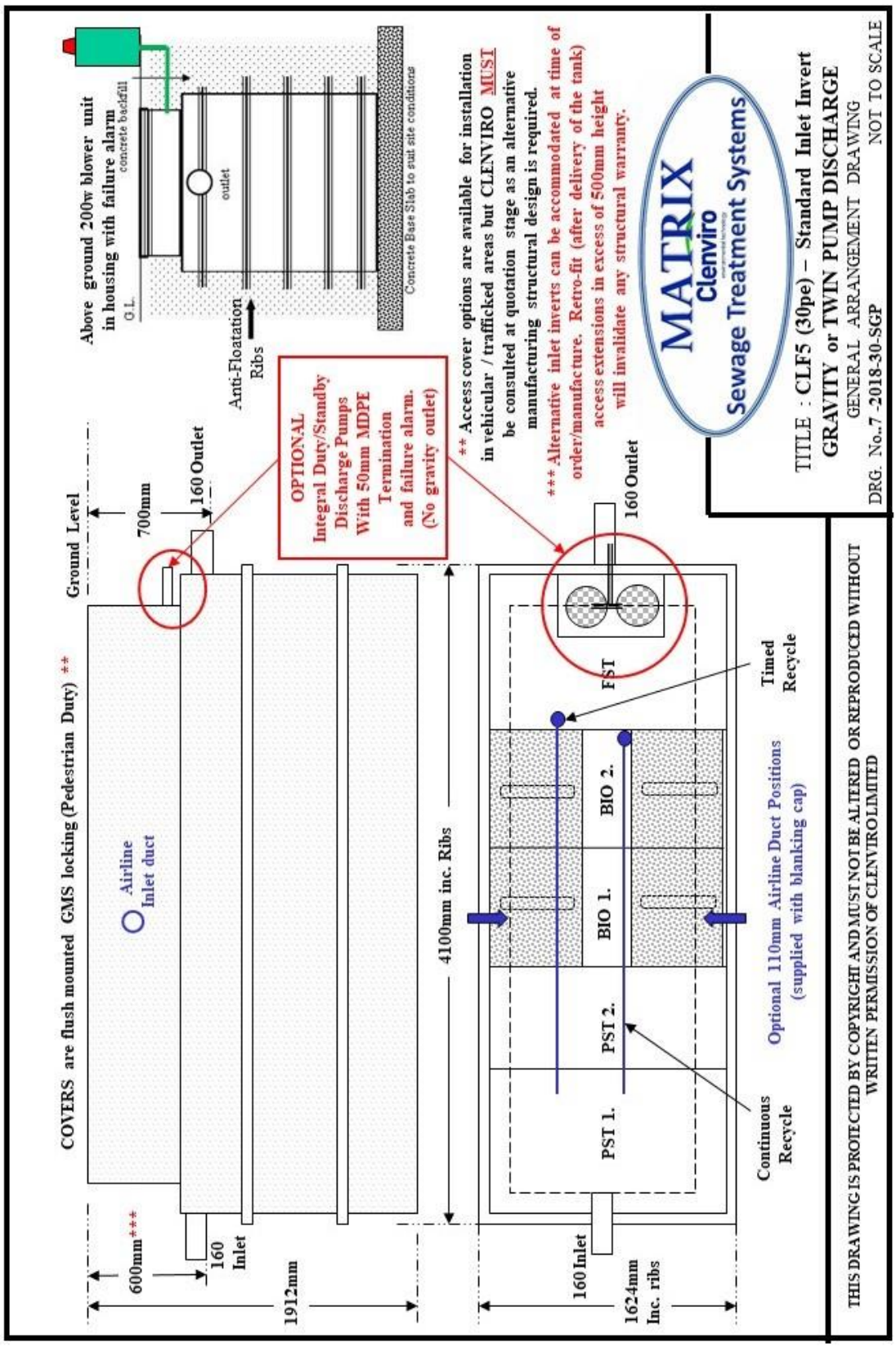


MATRIX
Clenviro
Sewage Treatment Systems

TITLE : Twin Pump Relay Panel
Connection Detail
GENERAL ARRANGEMENT DRAWING

DRG. No..**FPD-4-12** NOT TO SCALE

Clenviro
environmental technology


Above ground 200w blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 50mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF5 (30pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-30-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
4100mm inc. Ribs
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
600mm***
160 Inlet
1912mm
160 Inlet
1624mm Inc. ribs
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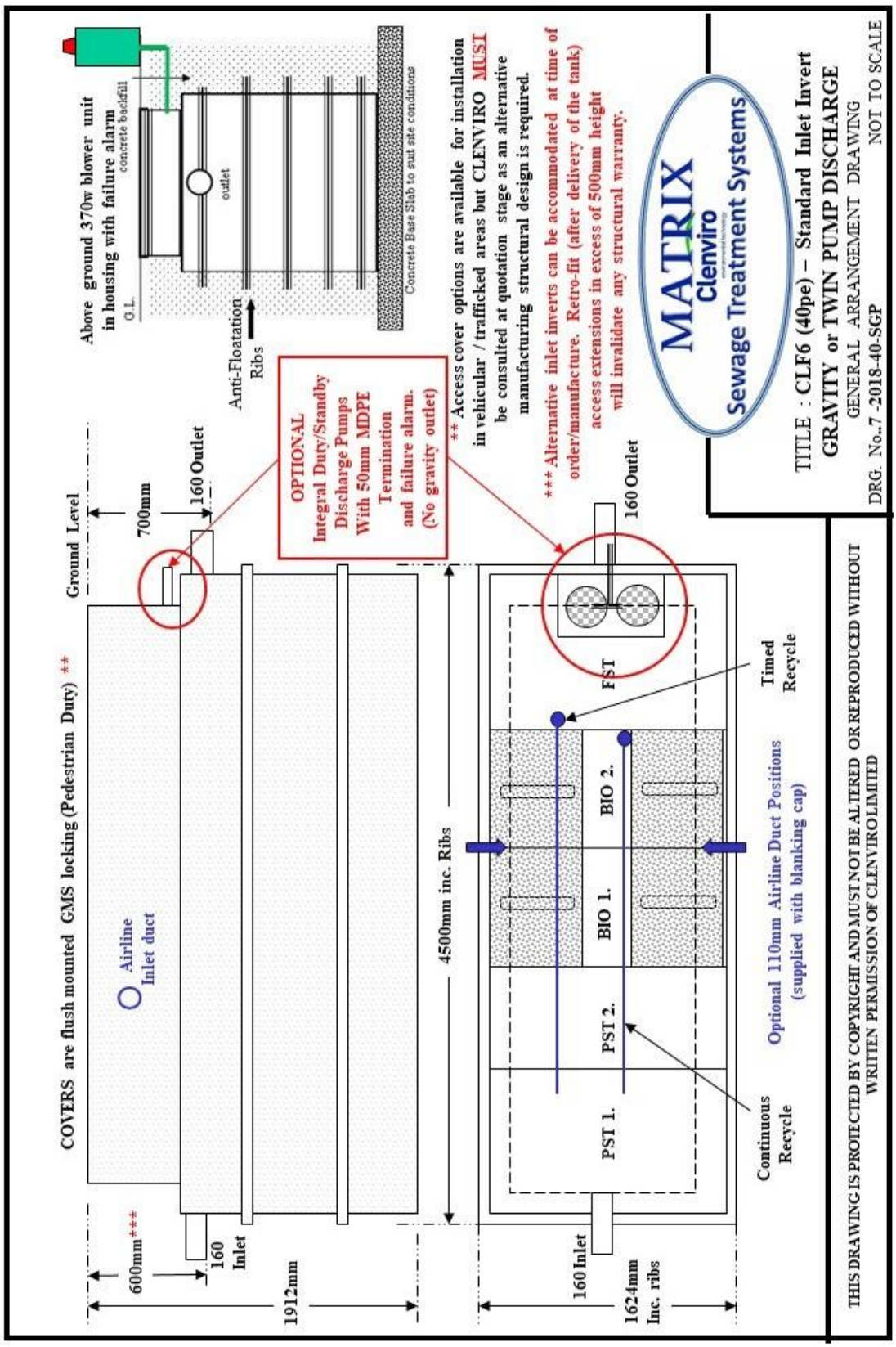
Above ground 370w blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 50mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF6 (40pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-40-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline Inlet duct
600mm***
160 Inlet
1912mm
4500mm inc. Ribs
160 Outlet
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
160 Inlet
1624mm Inc. ribs
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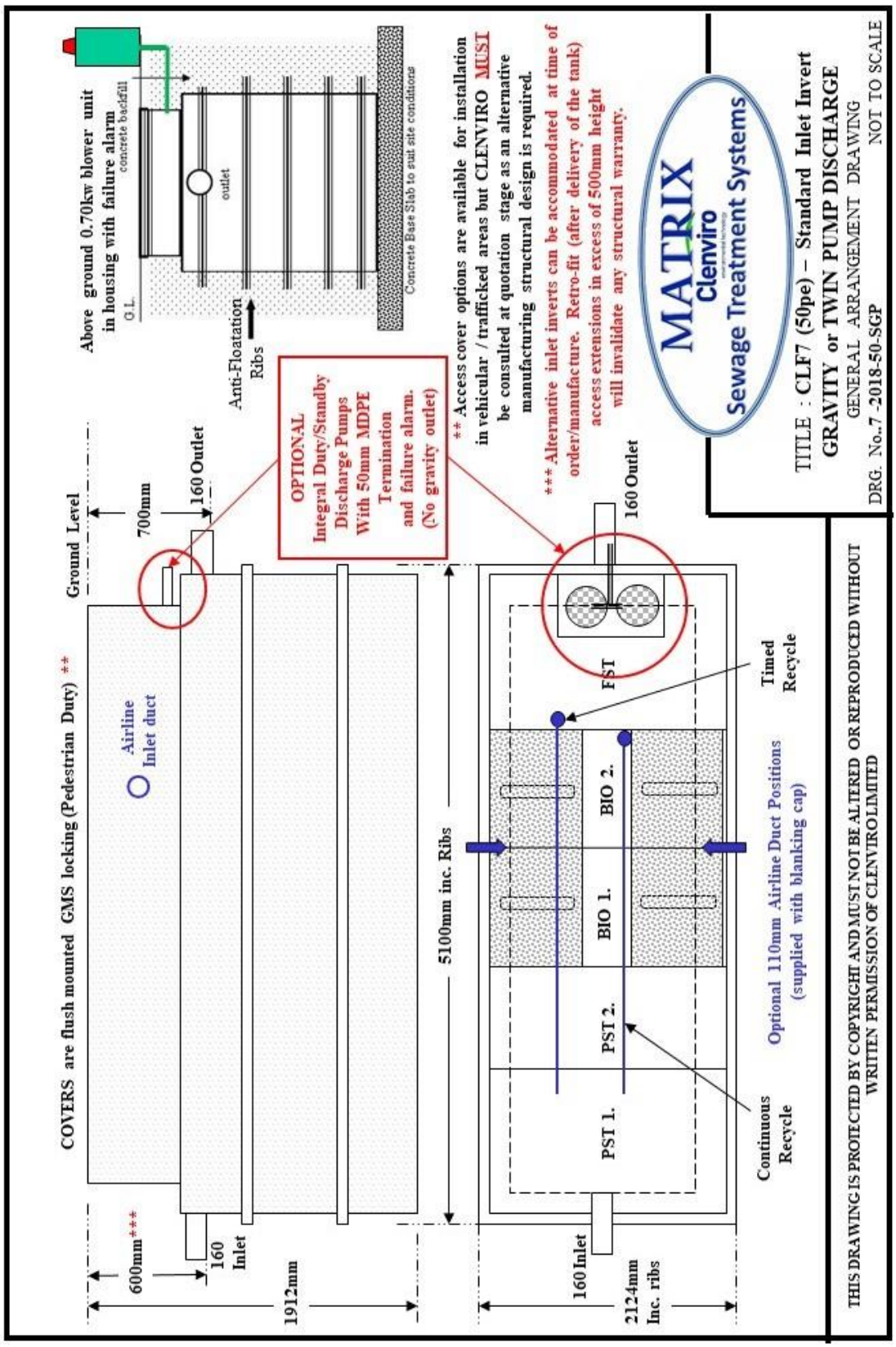
Above ground 0.70kw blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 50mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF7 (50pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-50-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
600mm***
160 Inlet
1912mm
5100mm inc. Ribs
160 Outlet
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
160 Inlet
2124mm Inc. ribs
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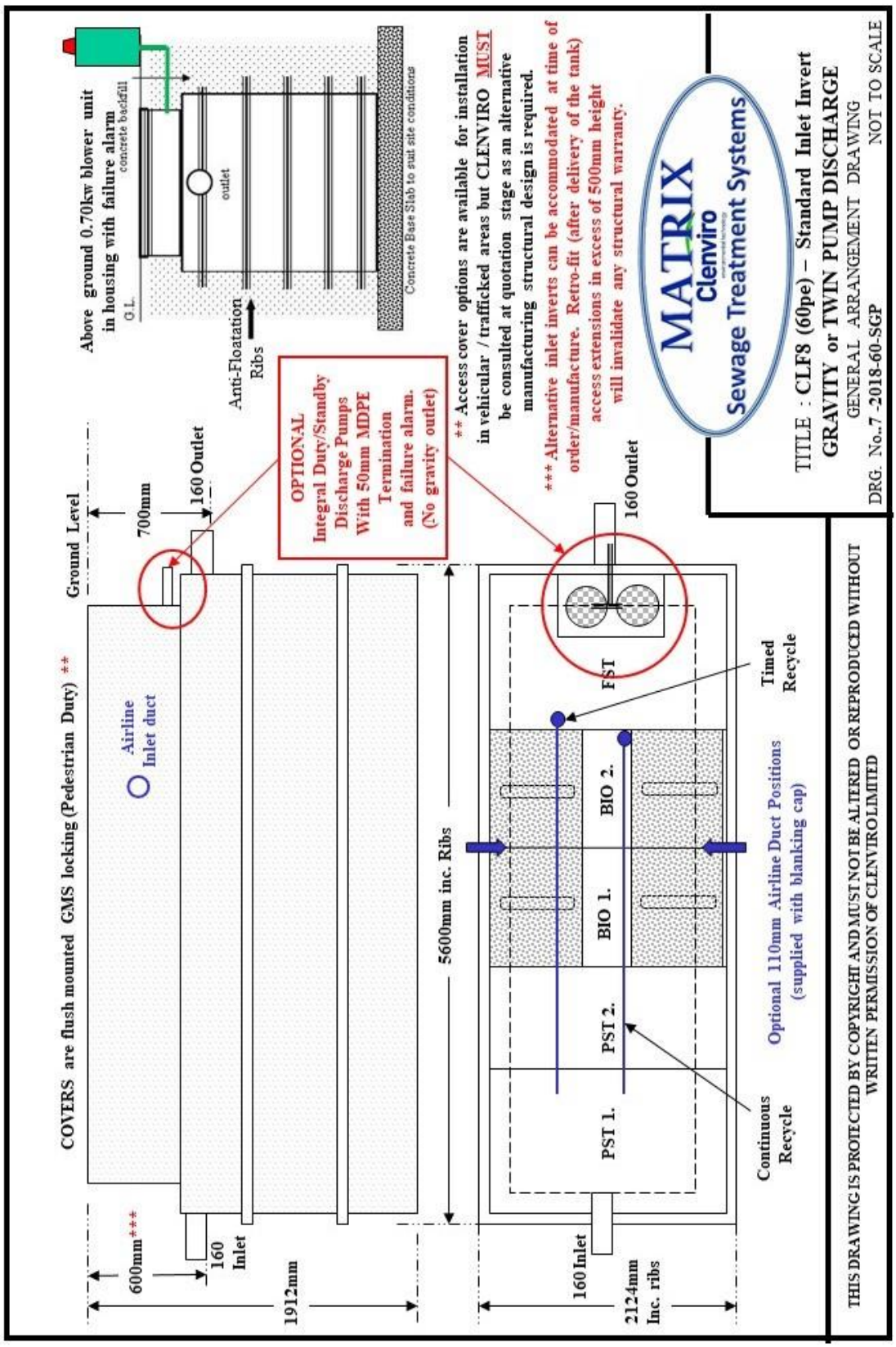
Above ground 0.70kw blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 50mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF8 (60pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-60-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline Inlet duct
600mm***
160 Inlet
1912mm
5600mm inc. Ribs
160 Outlet
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
160 Inlet
2124mm Inc. ribs
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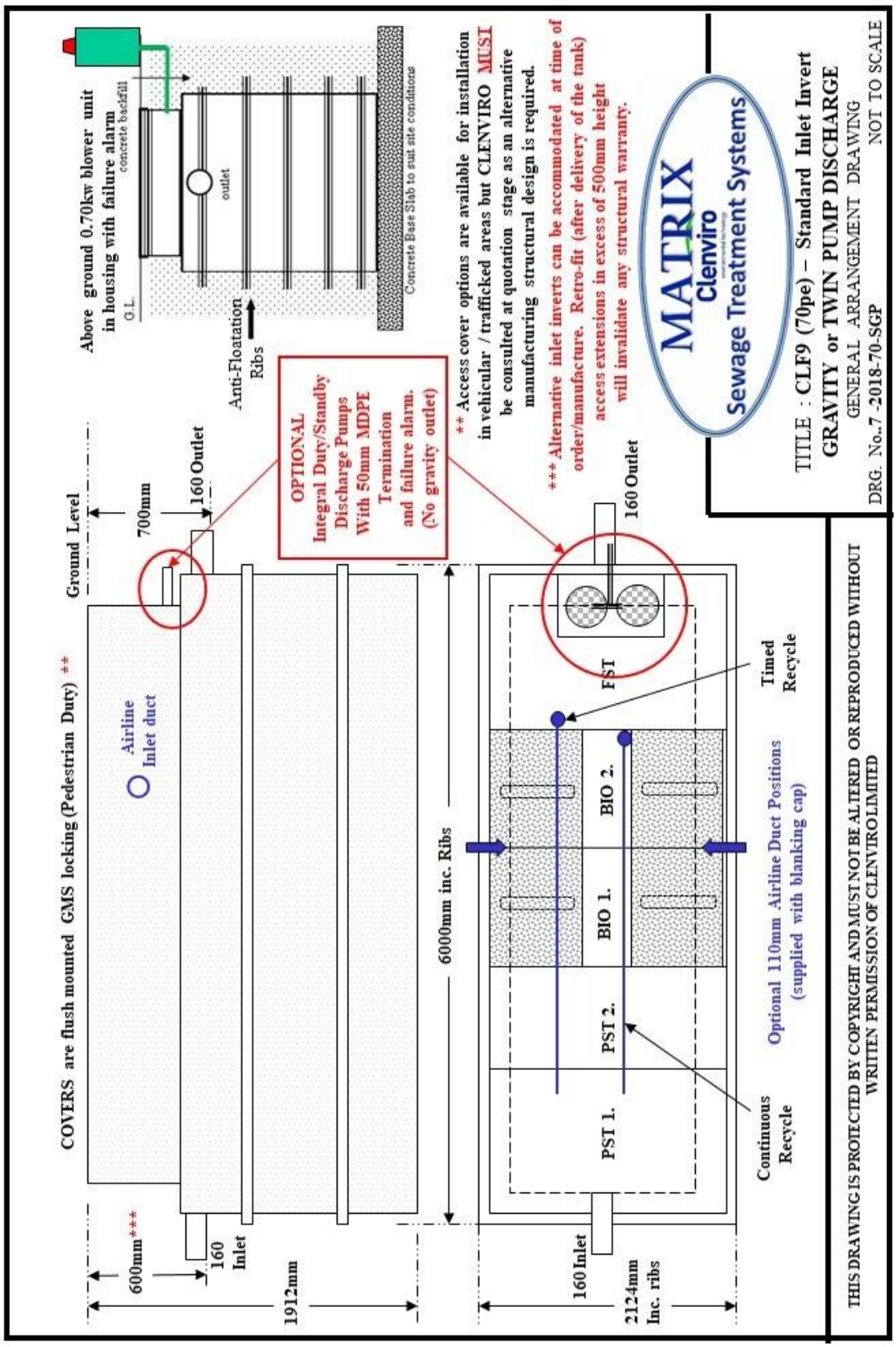
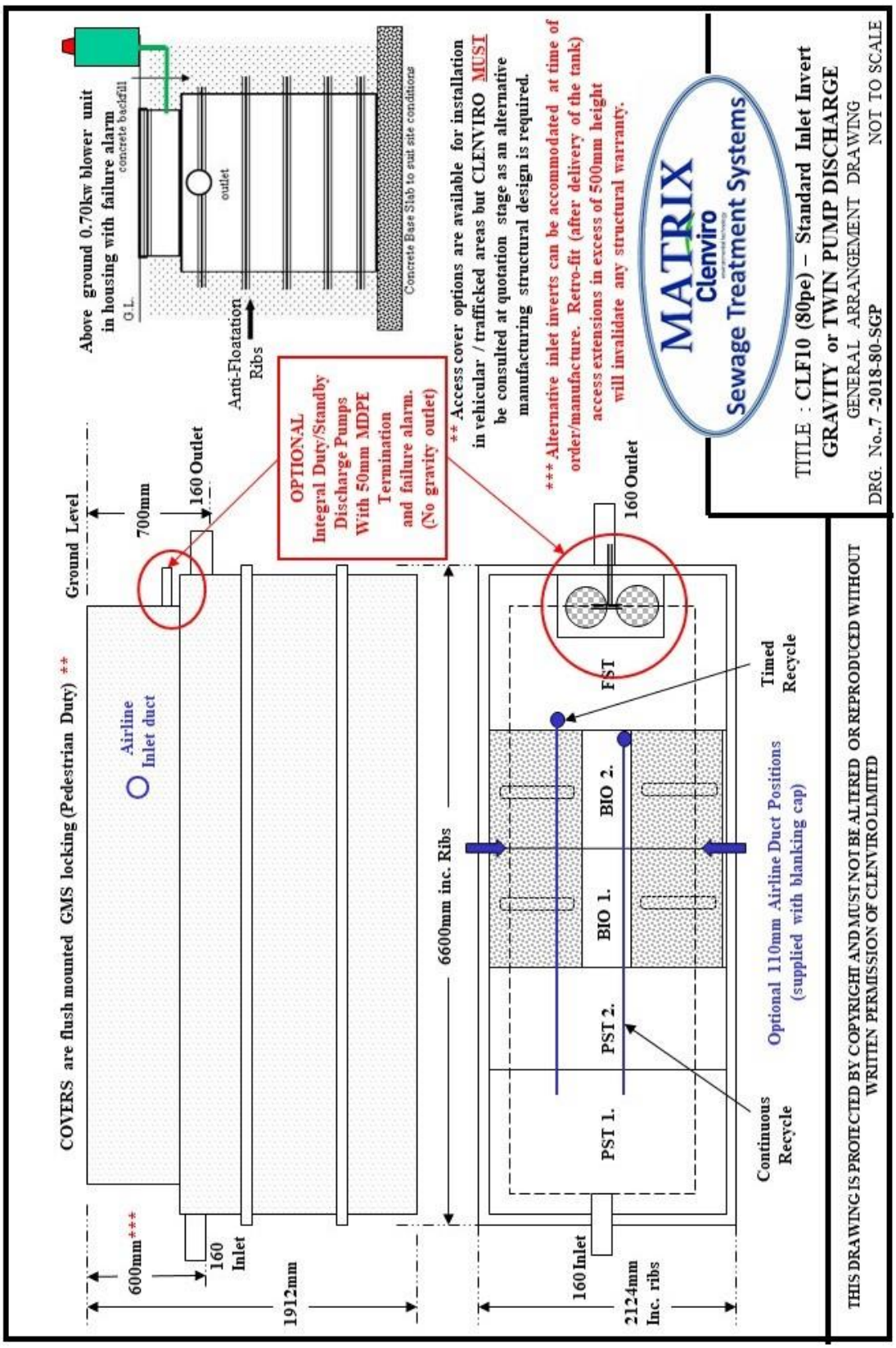

Above ground 0.70kw blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 50mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF9 (70pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-70-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
6000mm inc. Ribs
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
600mm***
160 Inlet
1912mm
160 Inlet
2124mm Inc. ribs
THIS DRAWING IS PROTECTED BY COPYRIGHT AND MUST NOT BE ALTERED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF CLENVIRO LIMITED


Above ground 0.70kw blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 50mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF10 (80pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No..7 -2018-80-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
160 Outlet
Airline
Inlet duct
FST
Timed Recycle
6600mm inc. Ribs
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
600mm***
160 Inlet
1912mm
160 Inlet
2124mm Inc. ribs
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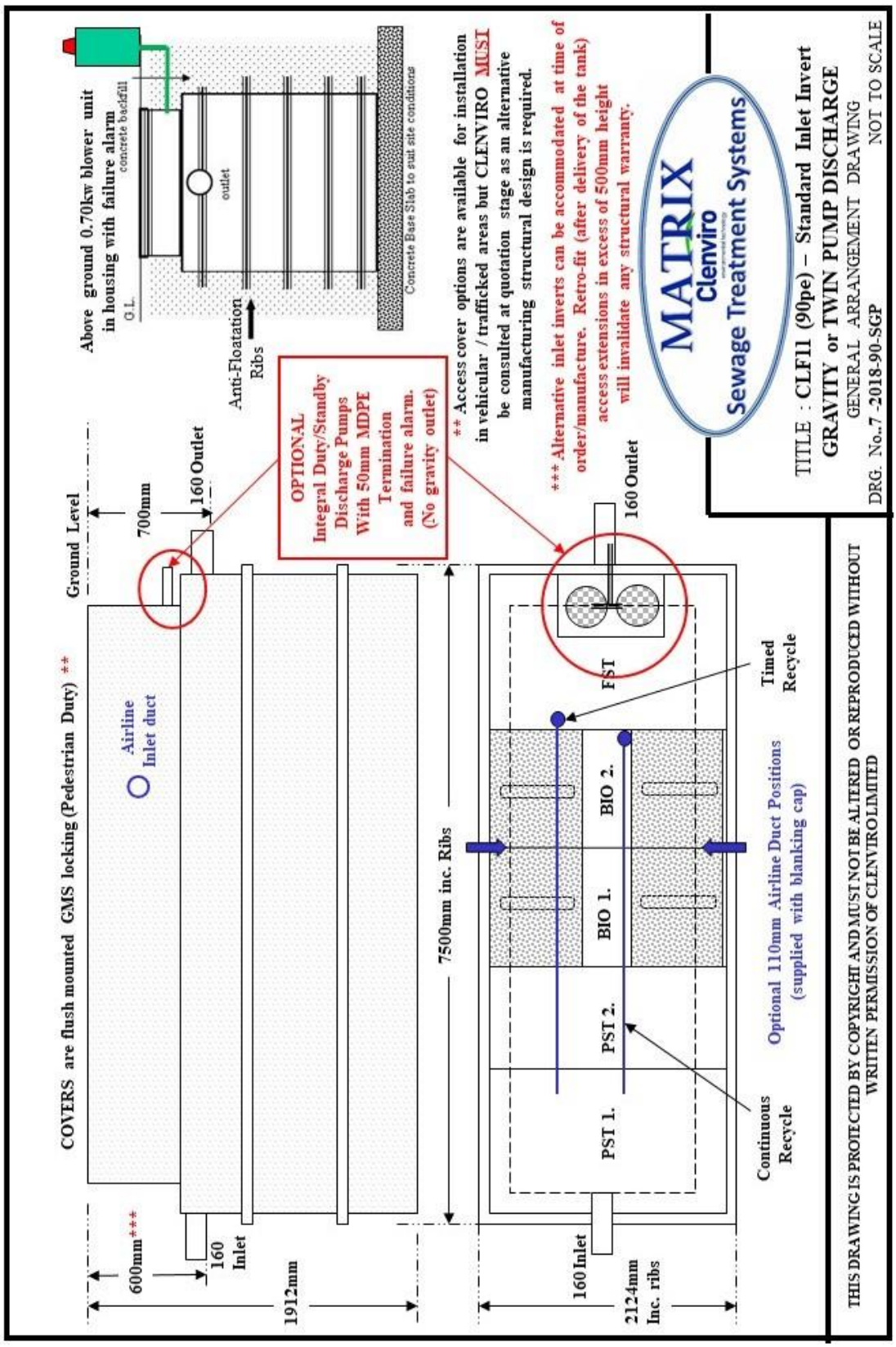
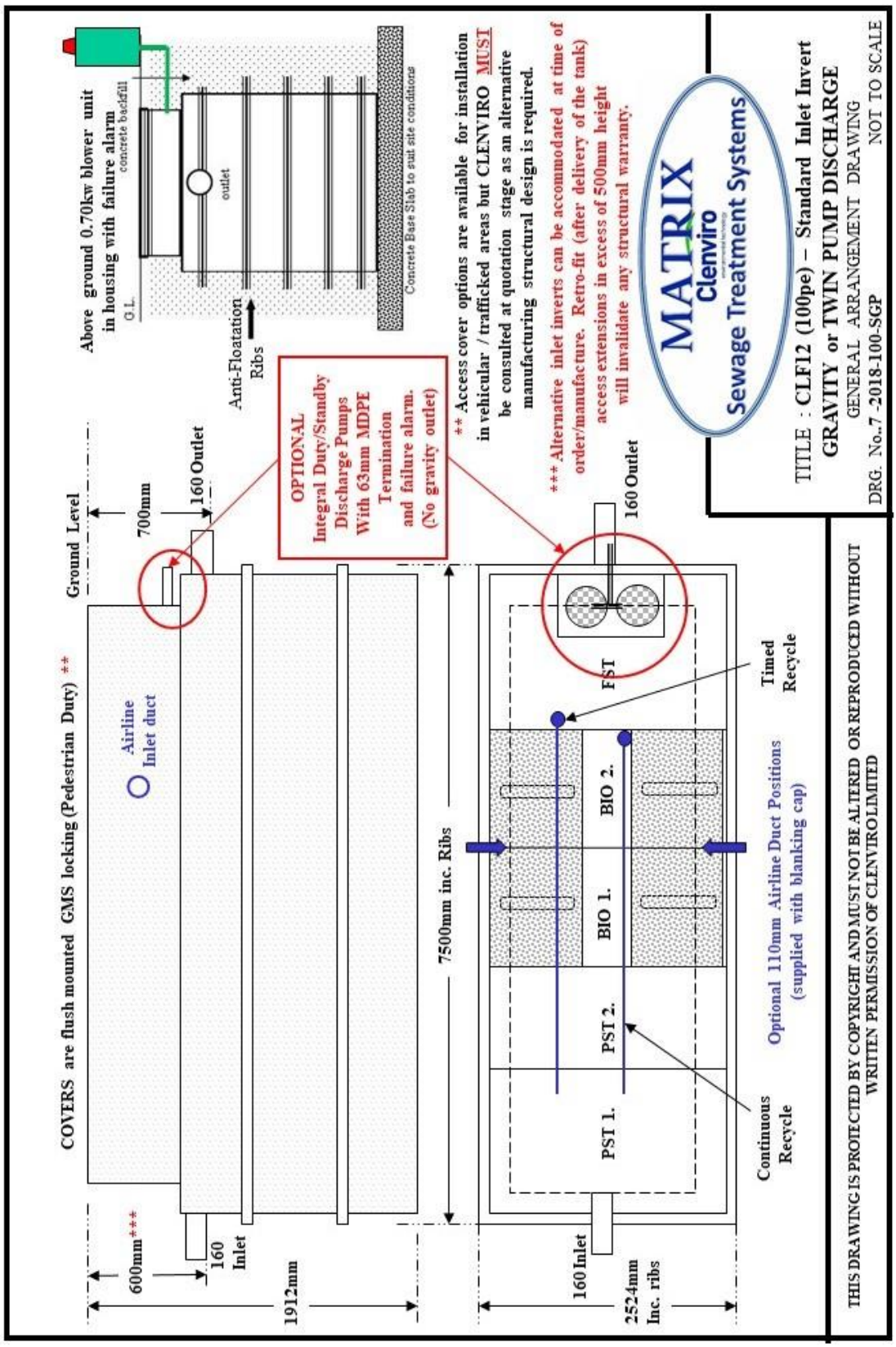
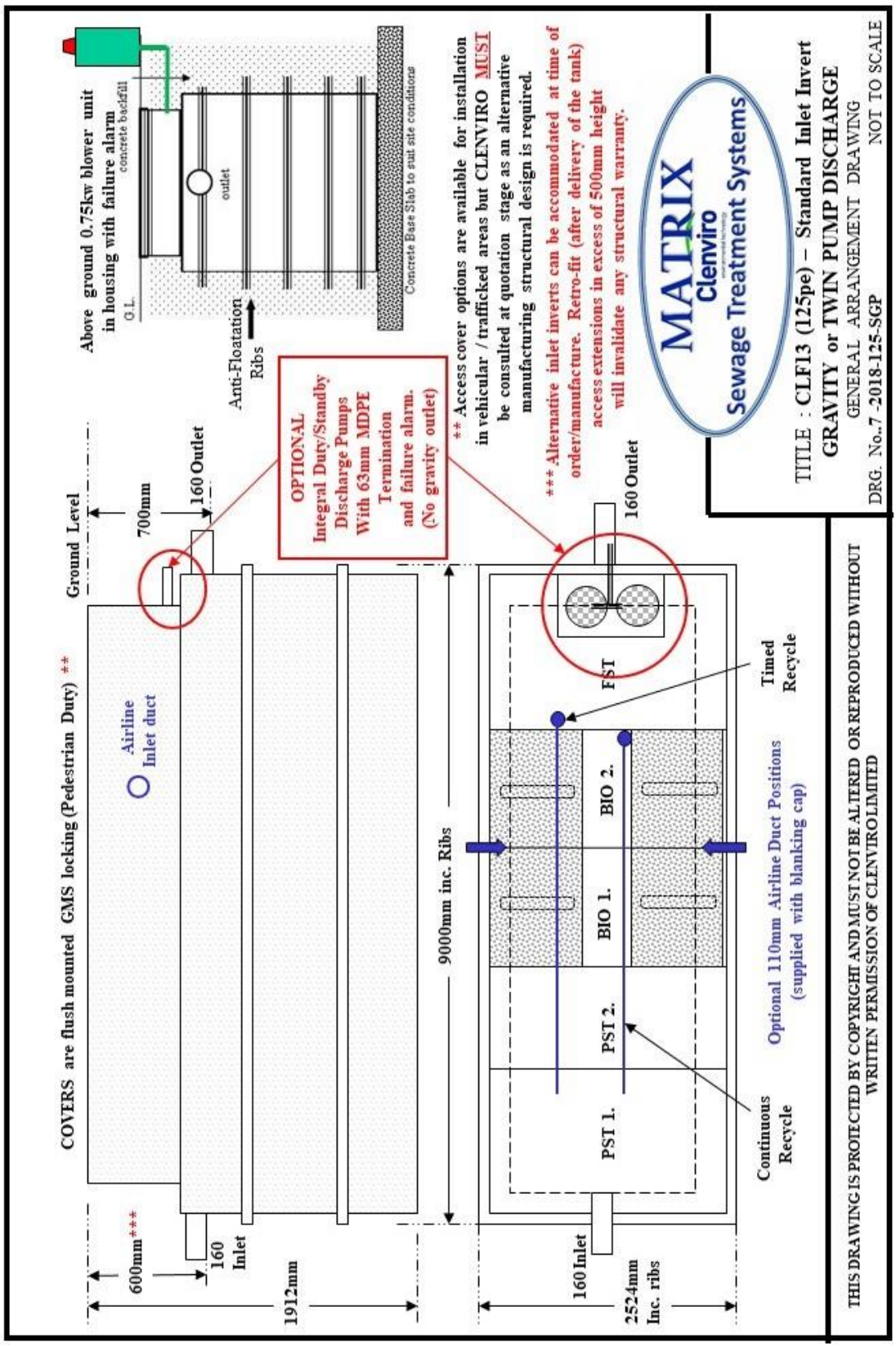

Above ground 0.70kw blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 50mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF11 (90pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-90-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
600mm***
160 Inlet
1912mm
7500mm inc. Ribs
160 Outlet
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
160 Inlet
2124mm Inc. ribs
THIS DRAWING IS PROTECTED BY COPYRIGHT AND MUST NOT BE ALTERED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF CLENVIRO LIMITED


Above ground 0.70kw blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 63mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF12 (100pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-100-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
600mm***
160 Inlet
1912mm
7500mm inc. Ribs
160 Outlet
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
160 Inlet
2524mm Inc. ribs
THIS DRAWING IS PROTECTED BY COPYRIGHT AND MUST NOT BE ALTERED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF CLENVIRO LIMITED


Above ground 0.75kw blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 63mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF13 (125pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-125-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
9000mm inc. Ribs
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
600mm***
160 Inlet
1912mm
160 Inlet
2524mm Inc. ribs
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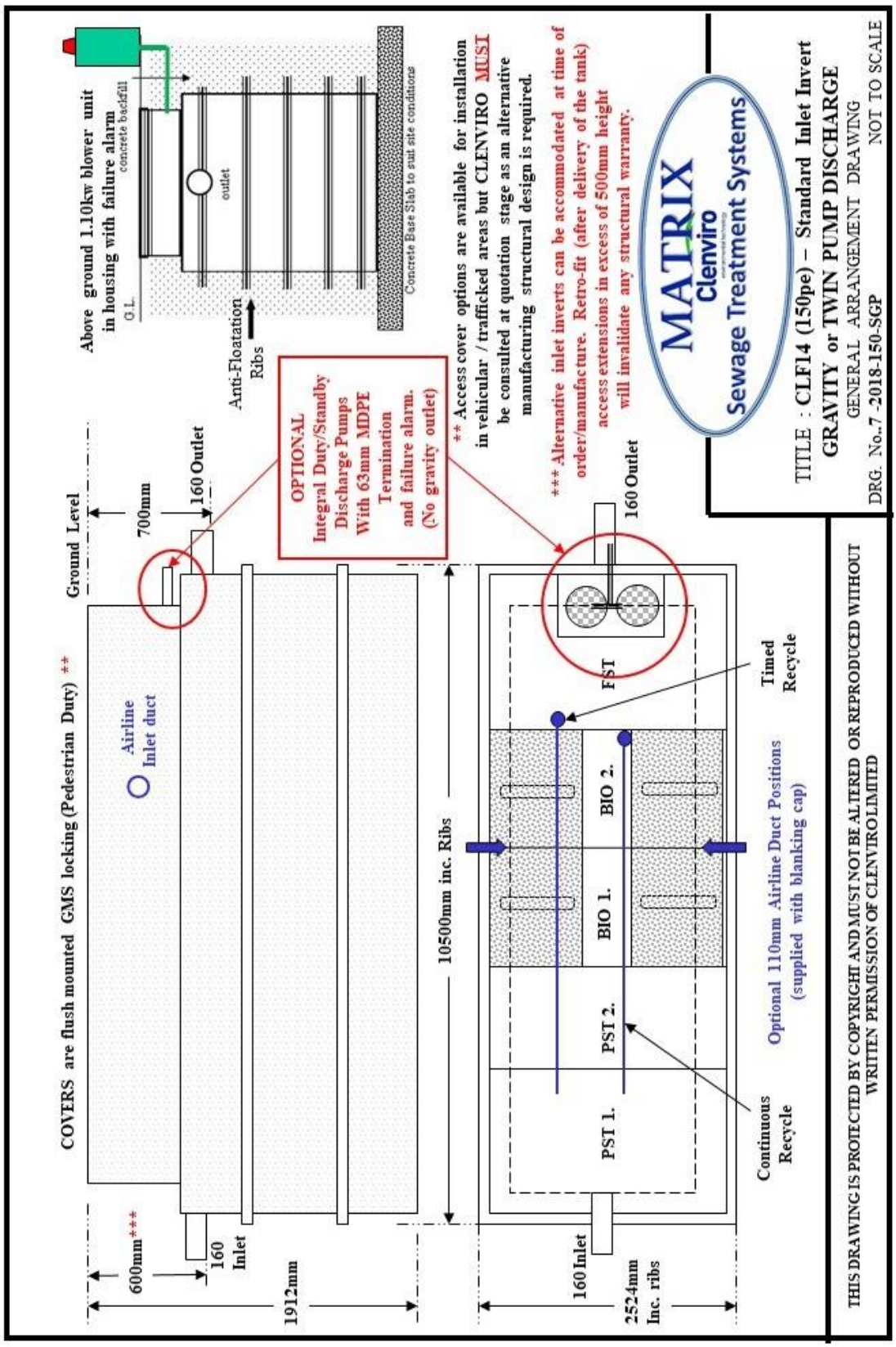
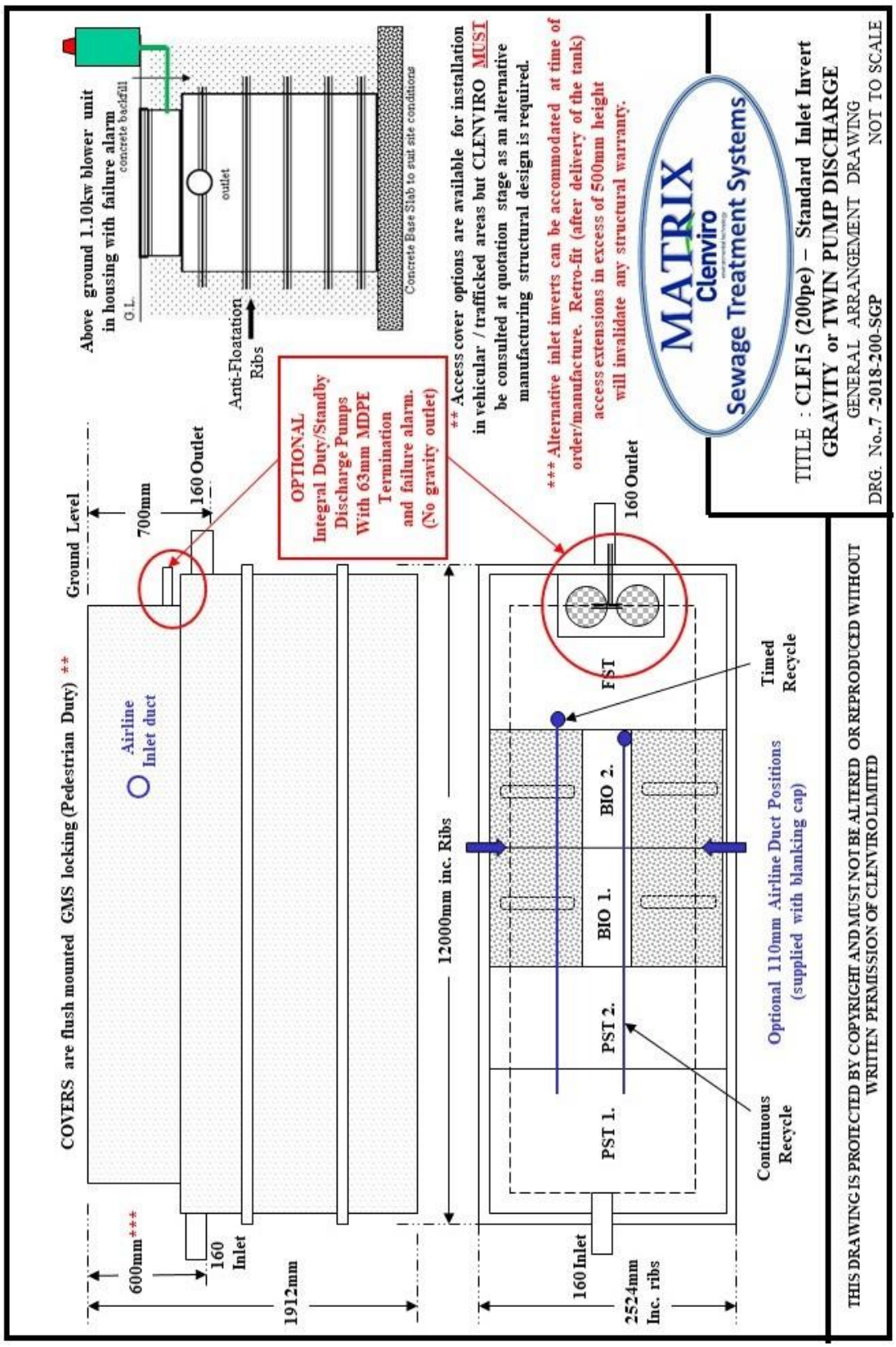

Above ground 1.10kw blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 63mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF14 (150pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-150-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
10500mm inc. Ribs
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
600mm***
160 Inlet
1912mm
160 Inlet
2524mm Inc. ribs
THIS DRAWING IS PROTECTED BY COPYRIGHT AND MUST NOT BE ALTERED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF CLENVIRO LIMITED


Above ground 1.10kw blower unit in housing with failure alarm
concrete backfill
G.L.
outlet
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL Integral Duty/Standby Discharge Pumps With 63mm MDPE Termination and failure alarm. (No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF15 (200pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-200-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
600mm***
160 Inlet
1912mm
12000mm inc. Ribs
160 Outlet
FST
Timed Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions (supplied with blanking cap)
Continuous Recycle
160 Inlet
2524mm Inc. ribs
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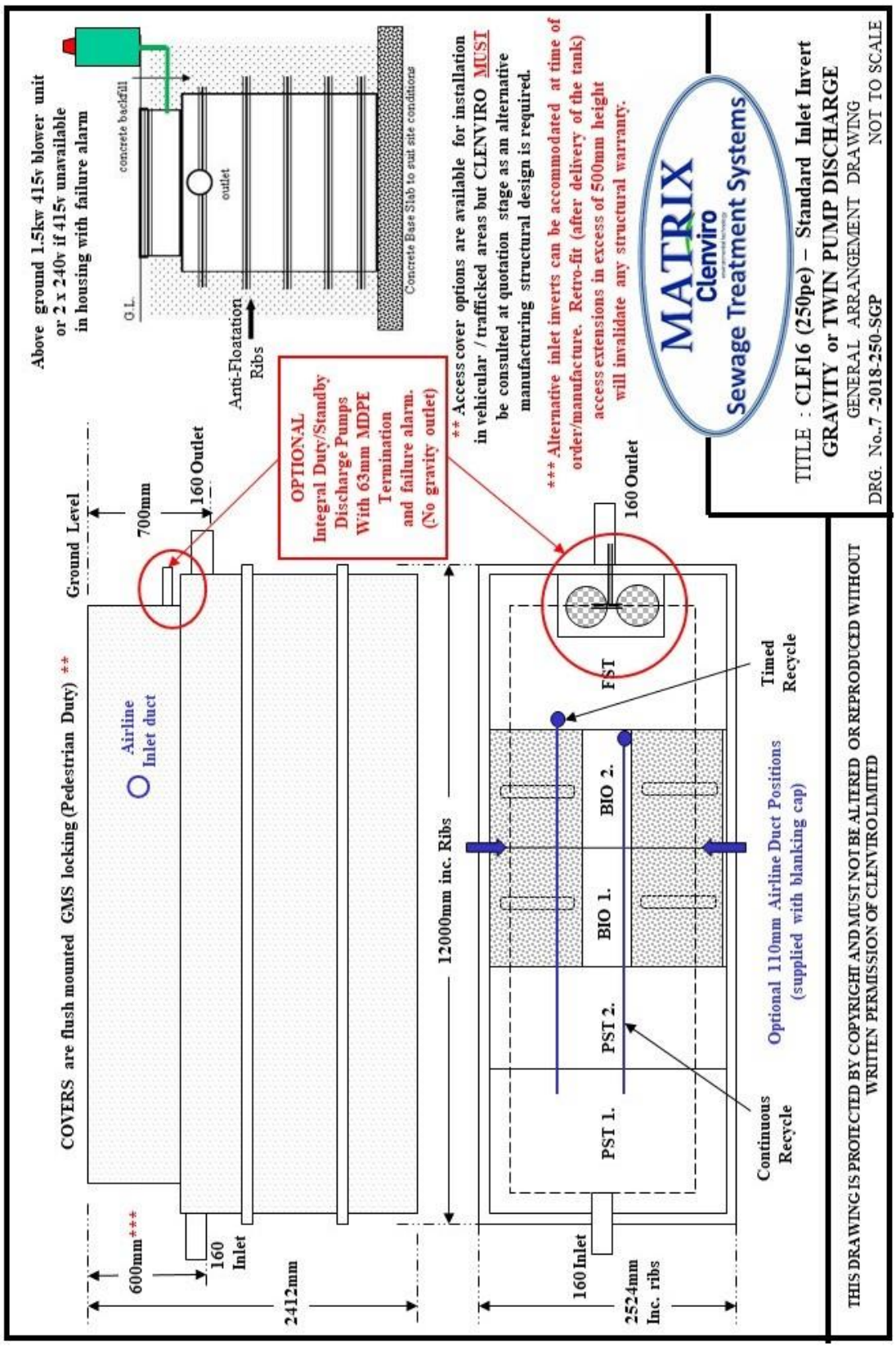
Above ground 1.5kw 415v blower unit
or 2 x 240v if 415v unavailable
in housing with failure alarm
concrete backfill
outlet
G.L.
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL
Integral Duty/Standby
Discharge Pumps
With 63mm MDPE
Termination
and failure alarm.
(No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF16 (250pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-250-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
600mm***
160
Inlet
2412mm
12000mm inc. Ribs
160 Outlet
FST
Timed
Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions
(supplied with blanking cap)
Continuous
Recycle
160 Inlet
2524mm
Inc. ribs
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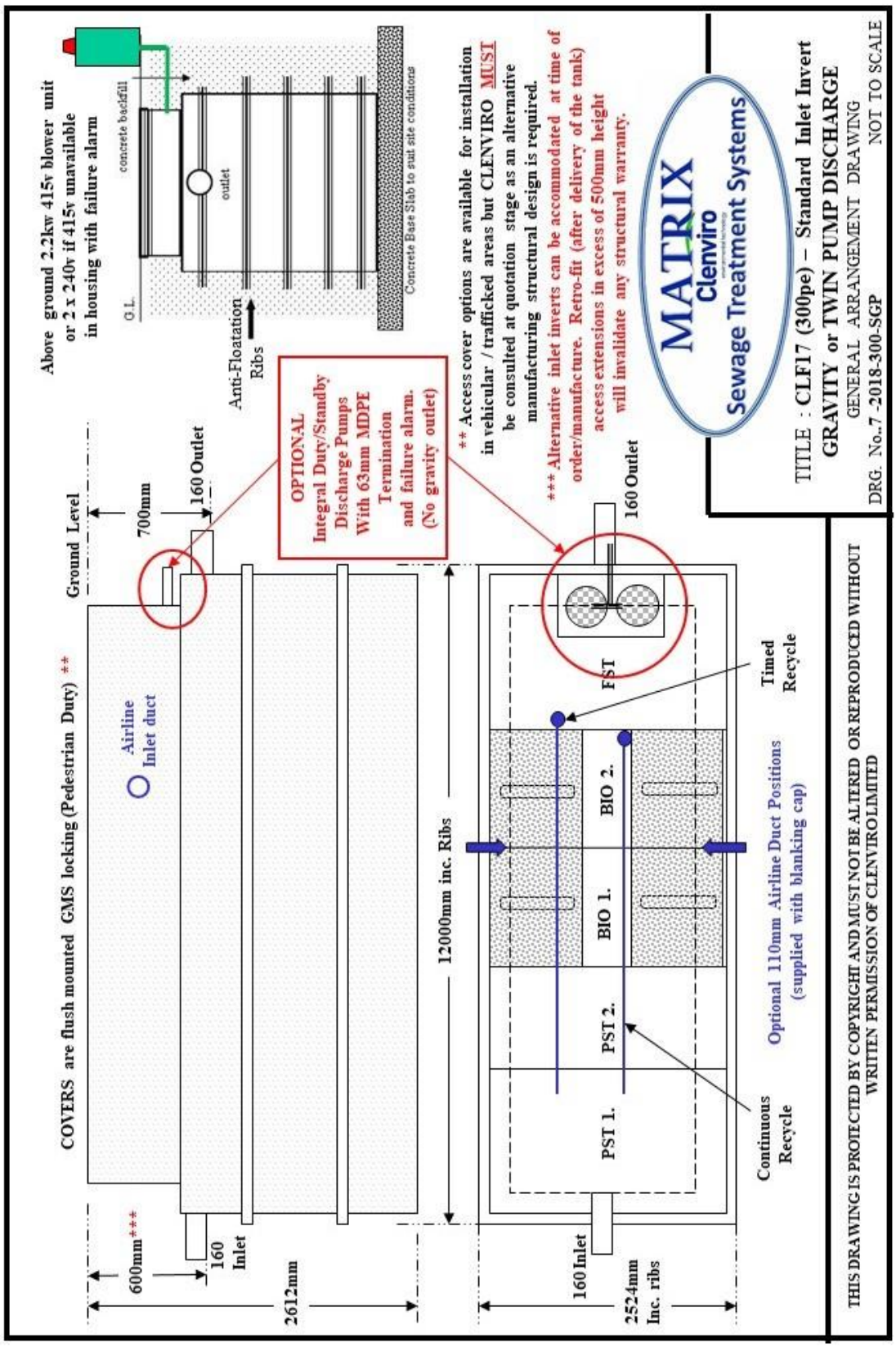
WRITTEN PERMISSION OF CLENVIRO LIMITED


Above ground 2.2kw 415v blower unit
or 2 x 240v if 415v unavailable
in housing with failure alarm
concrete backfill
outlet
O.L.
Concrete Base Slab to suit site conditions
Anti-Floatation Ribs
OPTIONAL
Integral Duty/Standby
Discharge Pumps
With 63mm MDPE
Termination
and failure alarm.
(No gravity outlet)
** Access cover options are available for installation in vehicular / trafficked areas but CLENVIRO MUST be consulted at quotation stage as an alternative manufacturing structural design is required.
*** Alternative inlet inverts can be accommodated at time of order/manufacture. Retro-fit (after delivery of the tank) access extensions in excess of 500mm height will invalidate any structural warranty.
MATRIX
Clenviro
Sewage Treatment Systems
TITLE : CLF17 (300pe) – Standard Inlet Invert
GRAVITY or TWIN PUMP DISCHARGE
GENERAL ARRANGEMENT DRAWING
DRG. No.7 -2018-300-SGP
NOT TO SCALE
COVERS are flush mounted GMS locking (Pedestrian Duty) **
Ground Level
700mm
160 Outlet
Airline
Inlet duct
600mm***
160
Inlet
2612mm
12000mm inc. Ribs
160 Outlet
FST
Timed
Recycle
BIO 2.
BIO 1.
PST 2.
PST 1.
Optional 110mm Airline Duct Positions
(supplied with blanking cap)
Continuous
Recycle
160 Inlet
2524mm
Inc. ribs
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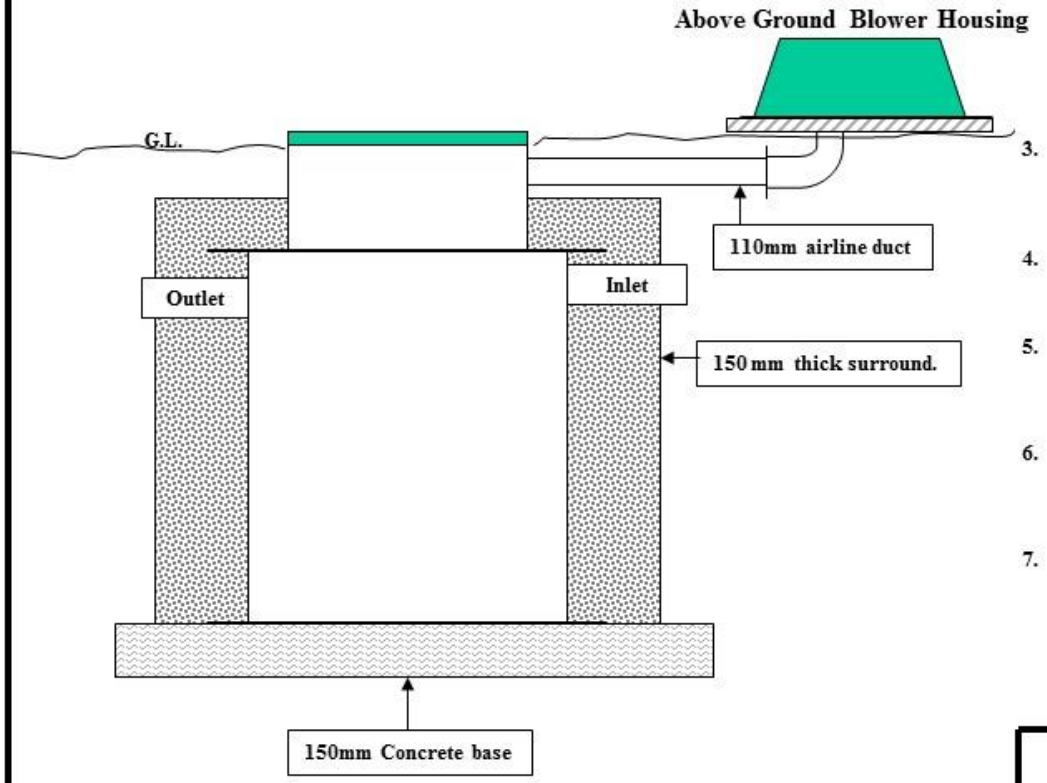
WRITTEN PERMISSION OF CLENVIRO LIMITED



1. Tank to be positioned on a flat level concrete base 150 mm thick.
2. In dry stable ground conditions the tank may be backfilled with free flowing granular material such as peashingle ONLY if the water table will NEVER rise above the base of the tank.
   In wet, heavy ground a lean mix or mass concrete surround must be used dependant on the water table conditions.
3. The tank should be filled with clean water at the same rate as the backfill ensuring all compartments maintain an equal level. Water may be left in the unit.
4. Provide & install 110mm duct from tank to point of blower position, remembering to install draw cord.
5. Connect clear airline to blower hosetail with clip provided and pass through duct to connect to hosetail within treatment plant, ensuring that the hose is not kinked or twisted.
6. Connect 8mm opaque airline (where present) to solenoid push-fit connecter and pass through duct to similar connector within treatment plant. (Not applicable to CLF1, 1A & CLF2 units).
7. Ensure airline duct is sealed with expanding foam. Complete mains power connection to blower unit and turn on.

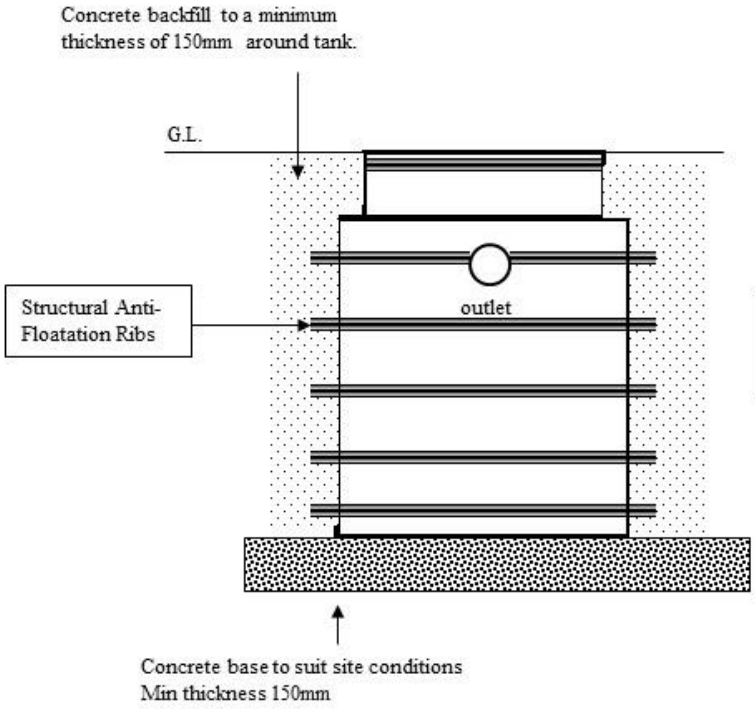
Special instructions will apply where units are installed that may be subject to imposed loadings from vehicles. – Please contact Clenviro Ltd.

MATRIX
Clenviro
Sewage Treatment Systems

TITLE : CLF - **INSTALL**
GENERAL ARRANGEMENT DRAWING

DRG. No.. 010815 NOT TO SCALE

Clenviro
environmental technology



Excavate hole to allow for 150mm bedding and surround. (see relevant drawing for tank dimensions)

Position tank on a flat level concrete base to suit tank size and prevailing ground conditions ensuring it is level in all planes

When backfilling tank ensure all internal chambers are filled with water to keep pace with the level of backfill.

Never let the level difference between the backfill and the water in the unit exceed 200mm.

In high water table conditions or trafficked areas please contact Clenviro Ltd for specific advice

NOTE : Standard inlet invert is 600mm - shaft extensions can be provided for deeper inlet depths.

Inlet and outlet orientations can be changed to suit site requirements

Integral sample and effluent pumping arrangements available on request

This drawing should be read in conjunction with the Operation & Maintenance manual.

MATRIX Clenviro Sewage Treatment Systems

Sewage Treatment Plant Installation

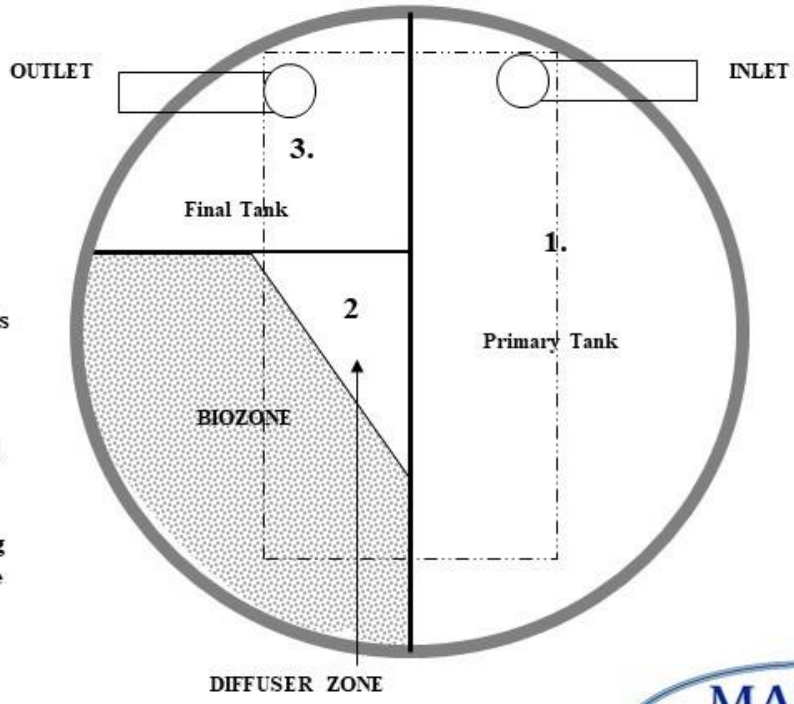
GENERAL ARRANGEMENT DRAWING

DRG. No.STPINSTALL NOT TO SCALE

CLF units should be de-sludged at least once a year ie. Solid matter removed from all chambers and taken away. Local Tanker companies are available for this.

Chambers 1 - 2 & 3 should be completely emptied ensuring that <u>all</u> solids and sludge are removed.

Care should be taken when removing sludge from section 2. Not to damage the diffuser and pipework.

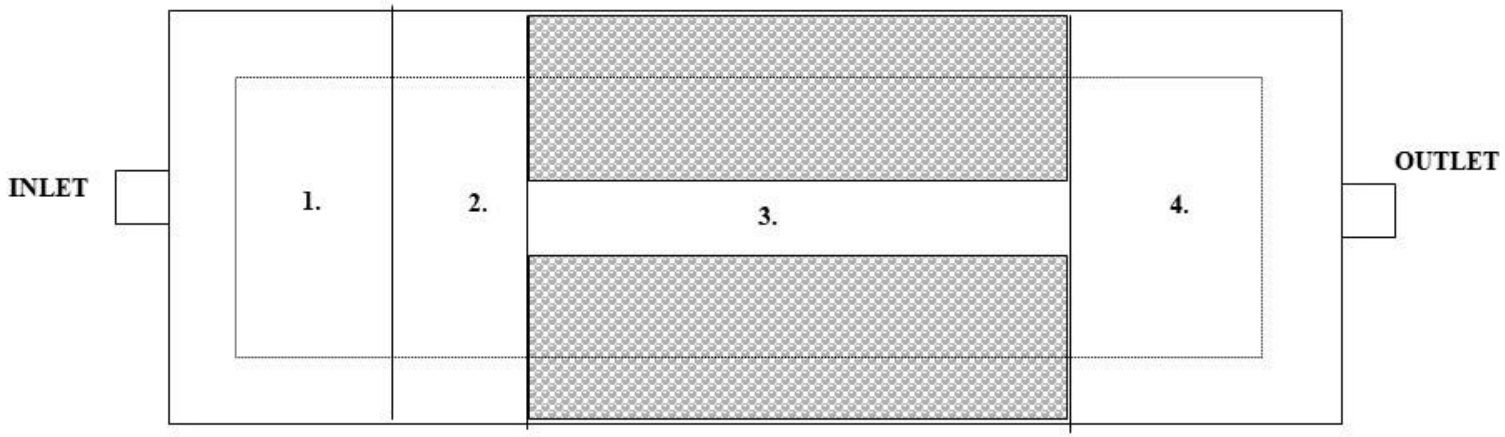


MATRIX
Clenviro
Sewage Treatment Systems

TITLE : **CLF1, 1A, 2, 3 & 4 DESLUDGE**
GENERAL ARRANGEMENT DRAWING

DRG. No..CL030706-1/TC NOT TO SCALE

Clenviro
environmental technology



Under full load conditions CLF units should be de-sludged at least once every 6 months ie. Solid matter removed from all chambers and taken away.
Local Tanker companies are available for this.

Chambers 1 - 2 – 3 & 4 should be completely emptied ensuring that <u>all</u> solids and sludge are removed.

Care should be taken when removing sludge from section 3, Not to damage the diffuser and pipework.

MATRIX
Clenviro
Sewage Treatment Systems

TITLE : **CLF5 - 17 DESLUDGE**
GENERAL ARRANGEMENT DRAWING
DRG. No..**CLF310109-1A** NOT TO SCALE

Clenviro
environmental technology

CE

Clenviro Limited
Unit 1C Queensway Business Park
Telford
Shropshire
TF1 7UL

09

EN 12566 - 3

Matric CLF Sewage Treatment Plant

Hydraulic Daily Load	1.2 – 10m3/day
Material of Construction	Polypropylene
Watertightness (Water Test)	Pass
Crushing Resistance (dry ground)	Pass
Crushing Resistance (wet ground)	Pass
Treatment Efficiency	COD : 91.4%
	BOD : 96.2%
	SS : 95.5%
	NH-4N : 83.3%
Electrical Consumption	1.4Kwh/d

Clenviro Limited
Unit 1C Queensway Business Park
Telford
Shropshire
TF1 7UL

Tel : +44 (0) 1952 676666 **Fax : +44 (0) 1952 677760**

Freephone : 0800 32 888 52

Email : info@clenviro.co.uk

Website : www.clenviro.co.uk

MAINTENANCE Section 6

OWNER RESPONSIBILITY

The owner of the sewage treatment plant is entirely responsible for the operation of the plant and for ensuring that the quality of the effluent does not breach the Environmental Permit Standards issued by the Environment Agency
Matrix Treatment Systems only require minmal maintenance but like anything, if it is going to fail it will only do so on a Sunday or Bank Holiday. Most of our maintenance recommendations are purely a visual inspection.

You are reminded that the existence of a service agreement does not transfer responsibility for general maintenance, which must be conducted in accordance with the accompanying instructions.

Soakaways, drains and the emptying of primary tanks remain the responsibility of the treatment plant owner.

If the plant appears not to be operating correctly, refer to the Fault Finding, section 7 of this manual or contact **Clenviro Ltd** for advice

MAINTENANCE SCHEDULE

WEEKLY

1. Check the operation of the blower. If the blower has failed for any reason other than a mains power failure the warning beacon will be flashing

MONTHLY
Carry out the weekly check plus:

1. Check the operation of the diffusers (bubbles rising in the Biological zone).

2. Check the recycle flow into the inlet zone if fitted.
   Look at the liquor being returned, it should run clear by the end of its cycle.

4. Check the inlet and outlet stilling zones are clear of debris.(remove any obstructions)

5. Check the blower ventilation is un-obstructed

6. Check the biomass growth on the filter media. The biomass should be a light brown colour, not white or grey. The odour in the plant should be 'earthy'. There should not be a noticeable 'rotten eggs' smell.

7. Check the final effluent. If this is cloudy or contains many suspended particles, then the humus tank is likely to require desludging.

.

MAINTENANCE SCHEDULE (continued) Section 6

6 MONTHLY / ANNUALLY

Carry out the weekly and monthly checks plus:

1. Check the primary settlement tank with a probe , the top floating crust blanket should not exceed 200mm thick, arrange desludge if required

2. Desludge the primary and final tank every 12 months* and desludge the biozone every 24 months*. This should be done by an experienced local waste disposal tankering company. * This applies to CLF units 1, 1A, 2, 3 & 4. Larger systems will require de-sludging more frequently depending on loading and type of application.

3. The tanker suction hose should be carefully lowered into the primary and final chambers ensuring all settled sludge is removed.

4. When desludging the biozone carefully lower the suction hose down the triangular section (rectangular in larger units) where the air diffuser pipework goes down making sure not to damage the pipework. Ensure the hose is down to the base of the tank so that all settled biomass sludge can be removed.

5. After desludging each compartment, it is essential that the unit is filled up with water. This can be done by using a hosepipe or by running several taps in the household(s).

6. Remove air filter from the blower unit (remove top cover to access filter), clean and replace.

7. It is the manufacturers recommendation that the diaphragms in the small blower units are replaced every 18-24 months.

See general layout drawings ‘CLF1-17 Desludge’ in the technical data section for desludge points

Repeat the Plant Start-up Procedure, section 5 of this manual.

Application for an environmental permit: Part B6.5 Discharging treated domestic sewage effluent of up to 15 cubic metres a day into ground or up to 20 cubic metres a day onto surface water

About you

Please give details of the individual, or where relevant for groups or organisations of individuals, the main representative.

Title: Mr

First name: Carl

Last name: Beddis

Who will be named on the permit?

East Croft Close management Company Ltd 14257336

A registered company or other corporate body

Please provide details below:

Company name East Croft Close management Company Ltd

Company registration number 14257336

Date of registration (DD/MM/YYYY) 09/04/2020

L

Contact name for the company

Title Mr

First name Carl

Last name Beddis

Your address

For companies this must be the address on record at Companies House.

Address	Galwad-y-mor
	Kiln park, Burton
	Milford Haven
Postcode	SA73 1NY
Telephone - mobile	07966548723
Telephone - office	07966548723
E-mail address	qcicontracting@googlemail.com

Agent or others acting on behalf of the applicant

If you want us to contact an agent or another person not named above, their details must be provided below. This can be someone acting as a consultant or an ‘agent’ for you.

Title	Mr
First name	Carl
Last name	Beddis
Address	Galwad-y-mor
	Kiln park, Burton
	Milford Haven
Postcode	SA73 1NY
Telephone - mobile	07966548723
Telephone - office	07966548723
E-mail address	qcicontracting@googlemail.com

About this application

Have you spoken to us already about this application?

If you have had discussions with us before your application, give us the case reference or details.

NRW-WQE075558 AND NRW-WQE075559 ADVISED TO APPLY FOR WHOLE SITE PERMIT

Contact for application Terry Gulliford who as assisted me
Application Ref : PAN- 018578

About your sewage treatment facility:

The term ‘sewage treatment facility’ is used throughout this application form. That term is explained in more detail in the guidance document that accompanies this application form.

Where is the sewage treatment facility?

Address	UPPERNASH DEVELOPMENT
	UPPER NASH
	LAMPHEY ,PEMBROKE
Postcode	SA715AF
Telephone - mobile	- 07966548723
Telephone - office	-
E-mail address	- qcicontracting@googlemail.com

National Grid Reference for the centre of your sewage treatment facility (12 digit)

Attached document showing 8 individual NGR’s of discharge points

Your management system

Your permit requires you (as the operator) to ensure that you manage and operate your activities in accordance with a written management system. You can find guidance on management systems in the guidance notes to part B6.5 and on our website. Please tick the box below to confirm this.

I confirm that I have read the application form guidance and that my management system will meet NRW requirements.

About your discharge

What type of premises does your sewage treatment facility serve?

For example, the number of houses or a description such as a pub, café, restaurant, office and so on.

8 DETACHED RESIDENTIAL HOUSES WITH SEPERATE TREATMNET PLANTS TO EACH PROPERTY

Each treatment plant to have it own separate drainage field as drawing and information attached

When did your discharge start? (New or existing)

On or after 1 April 2010 - New

If existing, when was it built (DD/MM/YYYY)?
NEW DEVELOPMENT

Required ASAP

New discharges only

How far away is the nearest foul sewer from the boundary of the premises (in metres)?

Foul sewer means public or private foul sewer.
You will need to check this with your sewerage undertaker (usually your local water company) and you may also need to check if it is possible to connect to a private sewer.

THERE IS NO PUBLIC SEWER IN THE VILLAGE ALL PRIVATE THE NEAREST IS 30M FROM THE NEAREST NEW TANK

To assess if it is reasonable to discharge your effluent to foul sewer:

Discharges from domestic properties
Multiply the number of properties served by the sewage treatment system by 30 metres.

	Number of properties served by the sewage treatment system	Multiplied by 30 (in metres)
Discharges from domestic properties	THIS IS A NEW SYSTEM NO OTHER PROPERTIES	-

Discharges from all other premises, for example a pub, cafe, restaurant or office

Divide the volume of the discharge (in cubic metres) by 0.75 and then multiply this figure by 30 metres

	Volume of the discharge (in cubic metres)	Divided by 0.75	Multiplied by 30 (in metres)
Discharges from all other premises	0	0	0

If your answer to the above question is greater than the distance to the nearest foul sewer, you must explain why you cannot discharge your effluent into the foul sewer.

Before you submit the application, you must explore the possibility of connecting to the foul sewer, and send us evidence that you have approached the sewerage undertaker, including their formal response regarding connection, if relevant. You must also show the extra cost of connecting to a sewer compared to the treatment system you propose, and details of any physical obstacles for example roads, railways, rivers or canals.

We will only agree to the use of private treatment systems within sewered areas if you can demonstrate that: the additional cost of connecting to the foul sewer would be unreasonable connection is not practically feasible, or the proposed private treatment system can be shown to significantly benefit the environment
We are unlikely to grant a permit for a discharge of treated domestic sewage in circumstances where a private sewerage system is being proposed due to a lack of capacity in the nearest public sewerage network. The guidance document which supports this application will help you understand what information you need to provide in order to answer this question.

Please provide your explanation below:

07966548723 CARL BEDDIS

What is the maximum volume of effluent you will discharge in a day (in cubic metres)?

There are two charges depending on volume of the discharge. Anything below 5 cubic metres costs £129 and over 5 cubic metres is £912.
What is the maximum volume of effluent you will discharge in a day (in m3)?

8

Show how you calculated the figure given in the box below.

Attached Document with Percolation test results and Vp Calculation to size individual drainage fields

Your sample and discharge points

What type of sewage treatment system will you be using to treat your effluent?

Package treatment plant that meets British Standard BS 12566

Sample Point location

This does not apply if you are discharging to ground up to 5 cubic metres (5m3) a day from an existing system.

You must provide a sample point where a sample of your discharge can be safely taken before it has mixed with any other discharges such as rainwater run off if you are making:
• an existing or new discharge to surface water
• an existing discharge to groundwater and the volume is more than 5 cubic metres (5m3) a day
• a new discharge to groundwater

You must also identify it on your plan.

Tell us where your sample point is:

Same as outlet point

National grid reference for sample point (12 digit)

As attached drawings with NGR

Discharge point location

Please give the national grid reference for the discharge point (12 digit)

NGR discharge points as drawings attached

Where will your treated effluent discharge to? If you are proposing to discharge multiple effluents, you must complete a separate application form for each effluent and submit the form, along with the correct application fee, for assessment.	
Into land (drainage field)	Individual drainage field calculated for each property

Discharges into land (drainage field)

Is your infiltration system new or existing?
Before 1 April 2010 (existing). Please answer as many of the next five questions as possible
If existing, when was it built? JULY 2022

Is your infiltration system designed and built to British Standard 6297:2007 + A1:2008?
Yes

On what date did you carry out a percolation test and dig a trial hole in line with British Standard 6297:2007 + A1:2008?
First test 8/8/2022 second test 9/8/2022

What is your percolation value (Vp) result (seconds per millimetre)?
As attached data provided for 8 properties

If known, mark on the plan you have provided the extent of the infiltration system. Please write on the plan the length and width of the sides in metres. Please tick below to indicate this is complete
As attached data sheet

Is any part of your infiltration system within 50 metres of a well, spring or borehole?
No (please skip the next question)

Is the well spring or borehole you have identified used to supply water?
No

Is any part of your infiltration system within 10 metres of a watercourse?
No

Your site plan (see guidance note to part B6.5)

Please upload your plan here
• Attached to email

Payment

What date do you want the permit for this effluent to start? Please note that this is the date that your annual subsistence charges will start, even if you have not started to discharge, unless you contact us to change (delay) the start date.
* 11/07/2022

Will the discharge take place all year?
Yes

Is the maximum volume of effluent you will discharge five cubic metres (m3) or less a day?
No - The standard application fee applies (£912). Please note that there is an annual subsistence charge to cover the costs we incur in the ongoing regulation of the permit. PAID

Who can we talk to about your billing or invoice?	
Same as application contact	Complete

How do you want to pay for your application fee?	
Credit or debit card	Completed and paid

Data Protection

You can ask for information to be made confidential by ticking the box below and enclosing a letter with your application giving your reasons. If we agree with your request, we will tell you and not include the information in the public register. If we do not agree with your request, we will let you know how to appeal against our decision, or you can withdraw your application. Confidentiality is unlikely to be applicable for a small-scale sewage discharge except for information about ex-directory telephone numbers. In those cases please write to tell us that information should not go on the public register. Only tick the box below if you wish to claim confidentiality for your application.
Please treat the information in my application as confidential

Please upload any documents here
Attached to email to Terry Gulliford

Declaration

If you knowingly or recklessly make a statement which is false or misleading to help you get an environmental permit (for yourself or another person), you are committing an offence under the Environmental Permitting (England and Wales) Regulations 2016.

I declare that the information in this application is true to the best of my knowledge and belief. I understand that this application may be refused or approval withdrawn if I give false or incomplete information.

I understand that if I knowingly or recklessly make a false or misleading statement:
• I may be prosecuted; and
• if convicted, I may have to pay a fine and/or go to prison.

By signing below, you are confirming that you understand and agree with the declaration above.

Title	Mr
First name	Carl
Last name	Beddis
On behalf of (if relevant)	
Today's date	11/07/2022

If you knowingly or recklessly make a statement which is false or misleading to help you get an environmental permit (for yourself or another person), you are committing an offence under the Environmental Permitting (England and Wales) Regulations 2016.

I declare that the information in this application is true to the best of my knowledge and belief. I understand that this application may be refused or approval withdrawn if I give false or incomplete information.

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Title	Mr
First name	Carl
Last name	Beddis
On behalf of (if applicable)	
Today's date	11/07/2022