Graf UK Signature

PRINT NAME	DATE CAPTURED	CAPTURED BY
Susan Snell	03/04/2024 12:42	Susan Snell

SOURCE

mobile



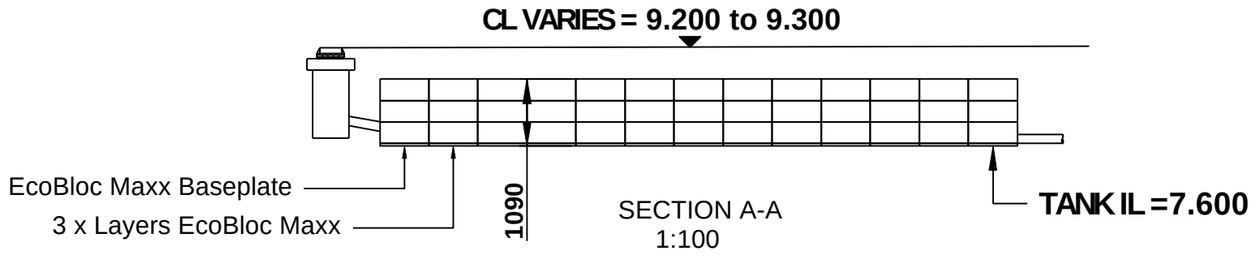
Customer Signature

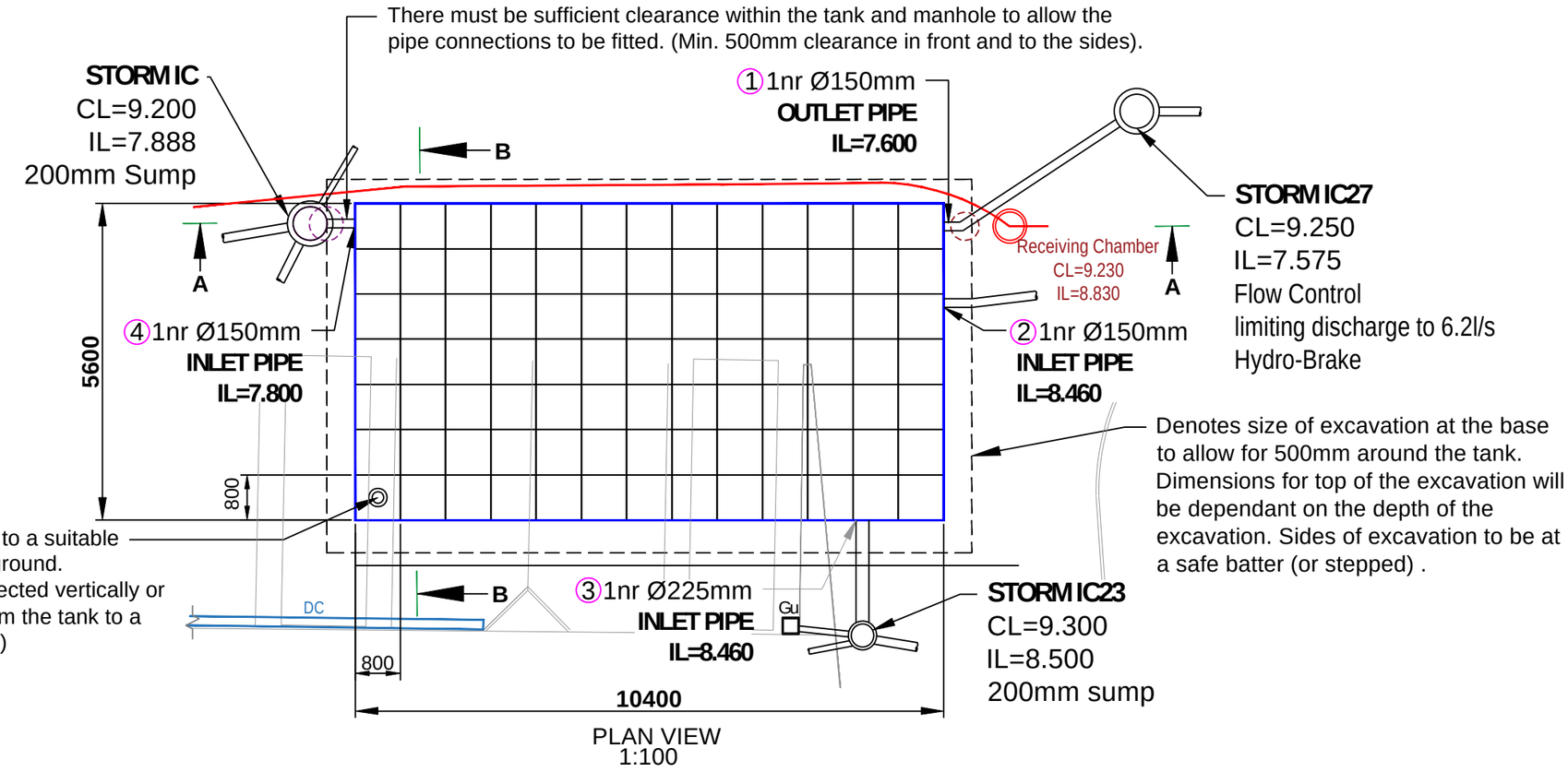
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Jboast	03/04/2024 12:43	Susan Snell

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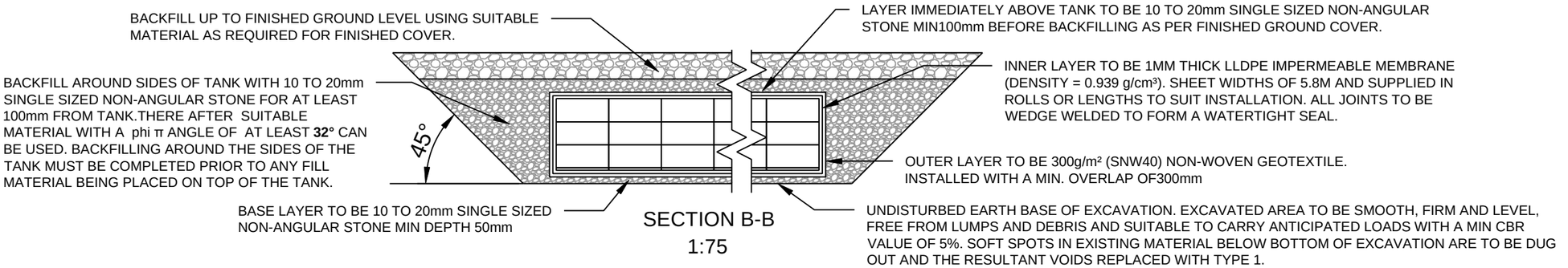
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NOTE: EXCAVATION TO EXCEED TANK SIZE BY 500MM ON ALL SIDES TO ALLOW FOR ACCESS



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DO NOT SCALE - IF IN DOUBT ASK

NOTES:-

1. Proposed Graf UK Ltd Layout.
2. All dimensions in mm unless otherwise stated.
3. All temporary and enabling works by others.
4. Membrane specification 1.0mm LLDPE, density 0.939g/cm³.
5. Geotextile specification - SNW40, density 300 g/m².
6. This design assumes there is no ground water present.
7. The attenuation tank must be vented to a suitable location above ground and it is recommended to have one Ø110mm vent pipe for every 7,500m² of impermeable catchment area.

Tank Size:
10.4m x 5.6m x 1.09m = 63.48m³ (Gross)
@ 96%Void Ratio = 60.94m³ (Net)

Based on the levels provided on this drawing the proposed tank will be suitable for up to 6,000kg vehicle loading in accordance CIRIA guidelines.

MAXX CRATES(402200) = 273nr
MAXX BASE PLATES(402201) = 91nr
MAXX END PLATES(402203) = 60nr (SET OF 2)
ECOBLOC CONNECTORS(402025) = 486nr
ADAPTOR PLATE (AP-110MM) Ø100mm PIPE =1nr
ADAPTOR PLATE (AP-160MM) Ø150mm PIPE =3nr
ADAPTOR PLATE (AP-250MM) Ø225mm PIPE =1nr

Qty cut is rounded up to the next 5m

Membrane	
GTLLDPE-1MM	232m² = 5.8m x 40m
Geotextile - SNW40	
TERREX-SNW40	240m² = 4m x 60m

C FRAMES REQUIRED

This drawing has been produced from Cowan Consultancy Drg **No**. 41.4601.10**P6** Drainage General Arrangement

REV.	DESCRIPTION	BY	DATE
C1	ISSUED FOR CONSTRUCTION	MC	23.02.24
P1	PRELIMINARY FOR APPROVAL	AP	22.02.24

FOR CONSTRUCTION

GRAF UK Limited
GRAF UK Limited. Regen House, Beaumont Road, Banbury , Oxfordshire. OX16 1RH
T: 01608 661500 F: 01295 211333
E: info@grafuk.co.uk www.grafuk.co.uk

DRAWN :	AP	DATE :	22.02.2024
CHECKED :	MC	SCALE :	VARIOUS@A3

PROJECT
EAST STREET
HAMPSHIRE

DESCRIPTION
ATTENUATION TANK
using GRAF ECOBLOC MAXX

DRAWING No. East St. Hampshire_001
REV. C1

METHOD STATEMENT

Contractor	JNP Developments & Investments Ltd	**Project Name:**	EAST STREET HAMPSHIRE
Site Contact	Jon Boast - Project Manager	**Mobile No:**	07464 310264
Site Address/Location	10A The Pallant, Havant, Hampshire, PO9 1EQ		
Description of the Works	Installation of Graf EcoBloc Attenuation Tank including Geomembrane and Geotextile		
Graf UK Contact	Robyn Sutton	**Mobile No.**	07966 849149
Contact Email:	Robyn@grafuk.co.uk		
Main Contractor to Provide:	**N.B. All Lift Plans are the sole responsibility of the Main Contractor who provides both the certified plant and certificated driver. (refer also to Standard Attendances)** Forklift vehicle (min SWL 2000kgs), for unloading/transfer of pallets. LOLER rated '360' object handler, or telehandler (min SWL 2000kgs) for deploying pallets into excavation. Plus driver and topman/slingman. (Cellular units are required at the rate of one pallet every 4 minutes.) Excavate hole to required size and lay gravel base. Site engineer responsible for the setting out of the tank position with the corners of the tank and position & levels of all inlet/outlet connections clearly marked. Dewatering Pumps (if required). The installation must be carried out on a dry base and it is the main contractor's responsibility to ensure that all water is removed from the excavation. 2 points providing safe access/egress (either dug steps or slope) Safety Barriers around excavation. Skips for disposal of waste. If no skips are available, then we must be notified prior to us attending site and commencing works so alternative arrangements can be made. Failure to do so may result in additional charges.		
Tools	110V Triac Hot Air Gun. 110V Wedge Welder & Extrusion Welding Plant. 110V Generator.		
Materials for this specific installation (supplied by Graf UK)	Geomembrane - 1mm LLDPE Non-Woven Geotextile - 300g/m² Geocellular Crates, Baseplates & Endplates. Adaptor Plates. Vario Shafts (If required).		
Key elements of the Installation process: (see detail below)	1. Site inductions/Initial Briefing 2. Summarized sequence of Installation Works		

Installation Process:	1.	**Site Inductions/Initial Briefing** The installation team will report on arrival to the site office. Before commencing work the installation team must receive a full site safety induction (including emergency and fire meeting points) and have been made aware of any restrictions on the site with regards to specific hazards, prohibited areas and traffic routes. Attention should be drawn to any new risks now present, not noted at pre-start meeting. (Responsibility – Main Contractor and Graf UK Ltd Installation Team) **Approved Method Statement Briefing** The Graf UK Ltd appointed person will hold a brief site meeting with all personnel involved in the installation to read through the method statement and risk assessment to ensure that there is a clear understanding of the requirements. **Important Note:** The method statement **must** be signed by all involved personnel **prior** to the commencement of any installation works. (Responsibility – Graf UK Ltd Installation Team)

	2.	**Summarized Sequence of Installation Works (for detail refer to Appendix A)** **Important Note:** Prior to the commencement of any installation works, an initial inspection and measure of the prepared excavation will be carried out. The position and level of all pipe connections must be clearly marked by the site engineer. **The prepared area must extend a minimum 500mm** beyond the tank markers and be stepped or battered back at a safe angle, max height of vertical sides to be 1m (this may need to be reduced depending on ground conditions). Any water within the excavation must be removed before the installation can commence. Main contractors appointed person to signoff excavation as deemed safe to enter prior to works commencing. **The base of the tank should have a minimum of 50mm non-angular single sized stone 8mm to 16m and be flat with no low spots or undulations. (We would recommend that sand, compacted or otherwise, is not used for the base as this can be washed away).** **N.B. A charge of £1250.00 + VAT/per day will occur for delays on site. These charges will become effective 90mins after the completion of the site induction.** 1. Geo-textile Installation (Base) (Responsibility – Graf UK) 2. Geo-membrane Installation (Base) (Responsibility – Graf UK) 3. Weld Geo-membrane seams (Base) (Responsibility – Graf UK) 4. Transport cellular units to excavation (deployment) (Responsibility – Main Contractor) 5. Install cellular units onto geo-membrane (Responsibility – Graf UK) 6. Fit adaptor plates and seal to membrane (Responsibility – Graf UK) 7. Continue with remainder of cellular unit installation (Responsibility – Graf UK) 8. Install and weld top sheets of membrane (It is necessary to work on top of the tank to undertake this). (Responsibility – Graf UK) 9. Cover top and sides with protective geo-textile (Responsibility – Graf UK) 10. Install vent connections and seal (Responsibility – Graf UK) 11. Final housekeeping 12. Sign off by site.

Prepared by:	Mark Caswell	
Position:	Technical Manager	Date: 26.02.2024
Client Approval by:		
Position:		Date:

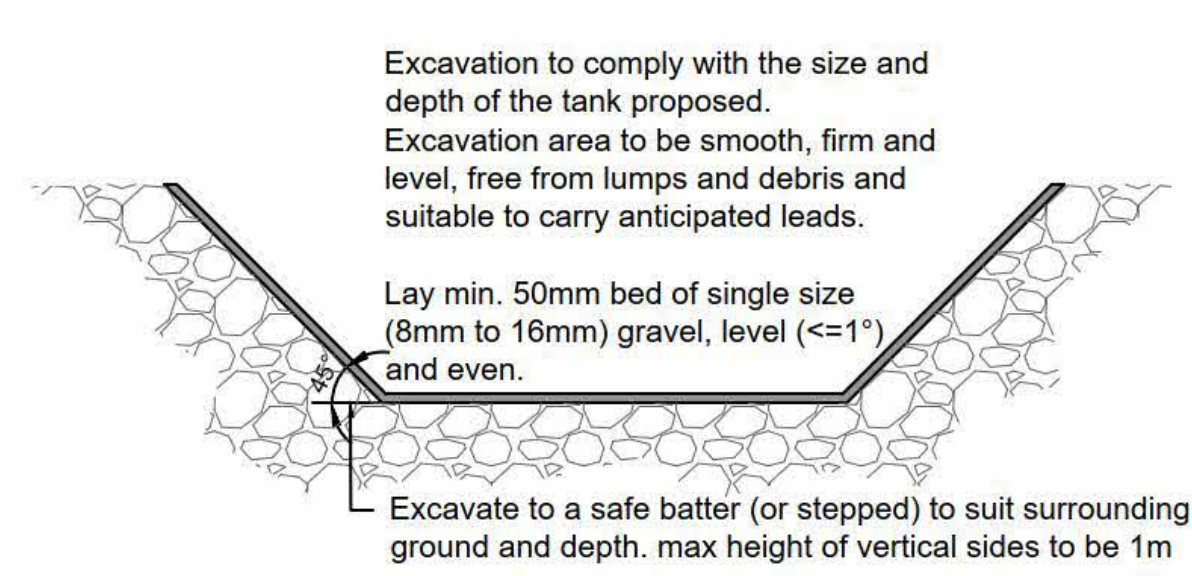
Items Attached:	Yes	No
Illustration sequence of Installation	☒	☐
COSHH	☒	☐
Risk Assessments	☒	☐

Method Statement Briefing Record

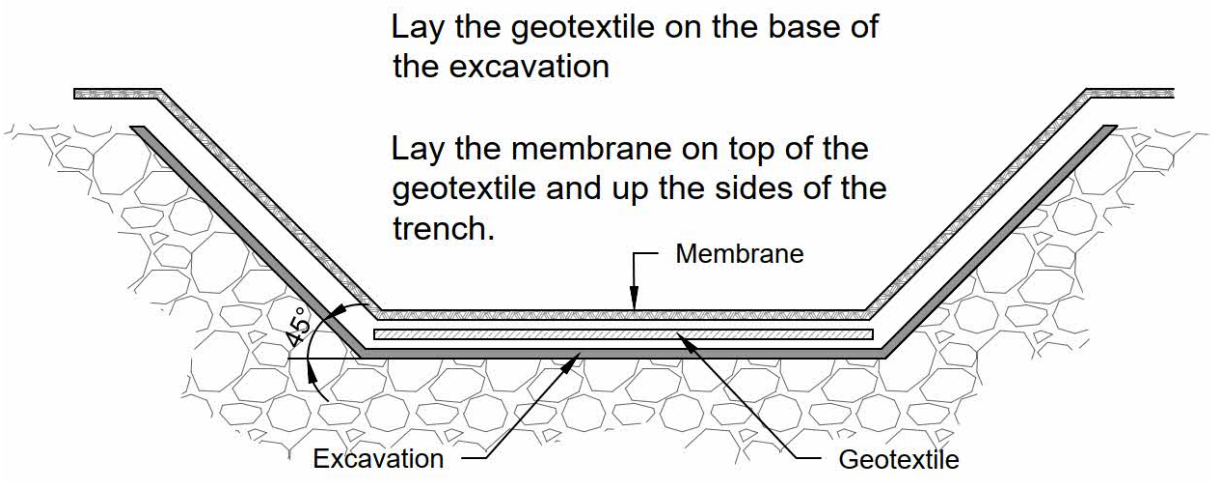
We (the undersigned) have read and understood the attached method statement and will comply with the specified requirements and control measures. If the work activity changes or deviates from that originally envisaged, we will seek further advice and request an amended method statement.

Name (Print)	Signature	Date

Appendix A



1 & 2) Membrane & Geo-textile general method of deployment



A lift plan must be established and agreed by all persons involved.
N.B. All lift plans are the sole responsibility of the main contractor who provides both the certified plant and certificated driver.
The Main Contractor will provide a certified machine operator and an appointed person to act as a 'designated Topman/Slingsman'.
Geo-textile and geo-membrane are deployed using a '360' tele-handler or similar object handling equipment (provided by the Main Contractor).

If supplied in Full Rolls:

Geo-textile rolls are deployed using c-frames for subsequent placement into the excavation, rolled out manually, and cut to length.
The membrane roll is lowered into the excavation to a position of approx. 500mm above the base of the excavation.
Manual pulling clamps are attached for distances of up to 40mtrs. The membrane is then manually pulled by at least 2 operatives and cut to length using a hook bladed knife.

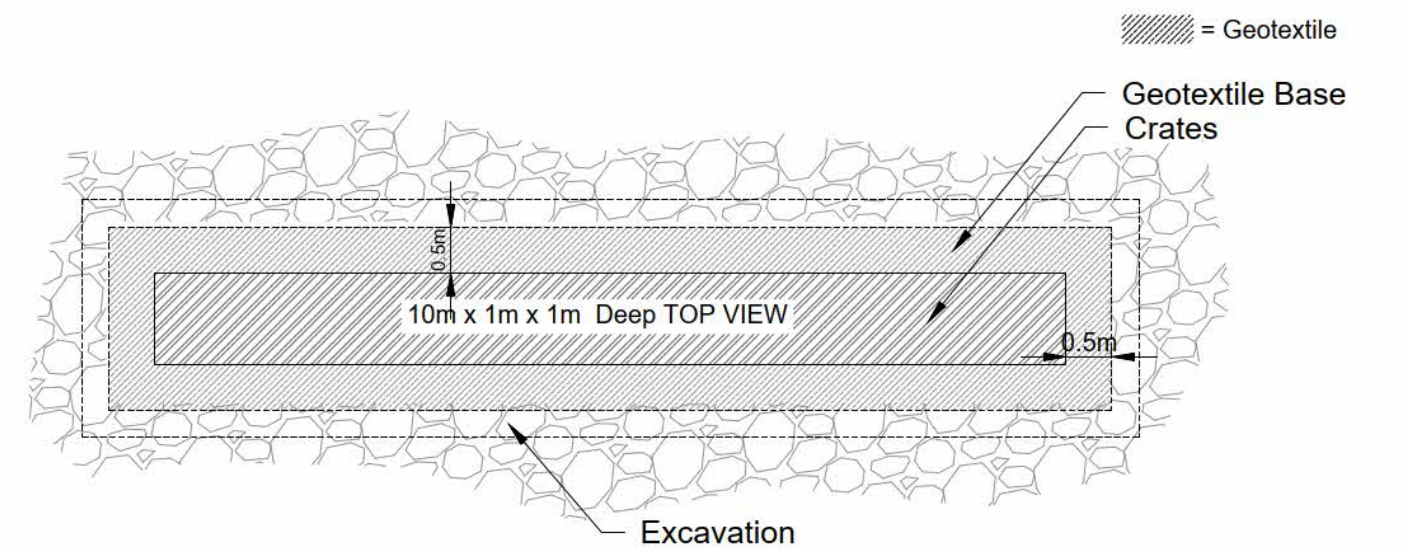
If supplied in Pre-Cut Lengths / Shoebox:

Pre-cut Geo-textile sheets are lowered into excavation using suitable machine or manually lifted if size and weight allow, then rolled/unfolded out manually.

Geo-textile Installation - Base

Following deployment, 4m meters wide geo-textile is installed to the marked size of the base with an additional allowance of 0 .5m around the base of the tank.

Adjacent sheets are overlapped by a minimum of 300mm, and then secured in place. It should be noted that there is no requirement for a high strength bond, since this jointing is only to ensure that there will be no movement of geo-textiles during tank installation.



Geo-membrane Installation – Base

Following deployment, geo-membrane is installed to the marked size of the base.

Sheets 5.8m meters wide are laid in positions across the excavation area (secured against the wind when necessary) cut to the required size, and folded as needed for ease of handling.

Additional sheets, if required, are laid out to overlap the first sheet by 100mm.

3) Weld Geo-membrane seams – Base

Geo-membrane sheets are then overlapped by 100mm and wedge welded together.

Wide Wedge Welding is limited when the following weather conditions prevail, affecting its' performance and integrity:

Heavy continuous rain

Snow

Heavy frost

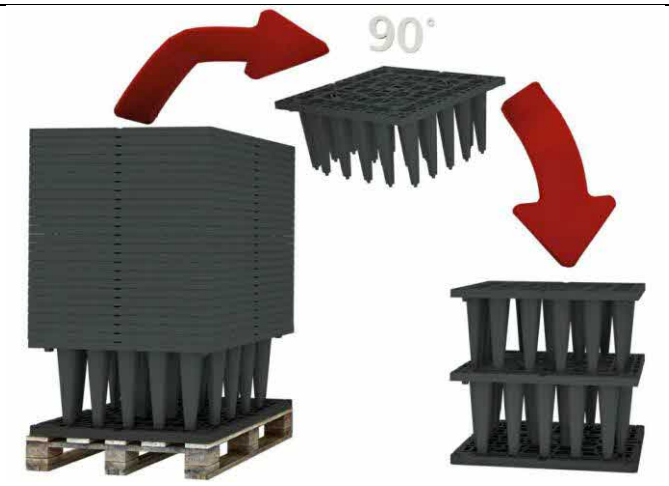
High winds

4) Transport cellular units to excavation

A suitable machine and designated 'topman/slingsman'. (Cellular units are required at the rate of one pallet every 4 minutes)

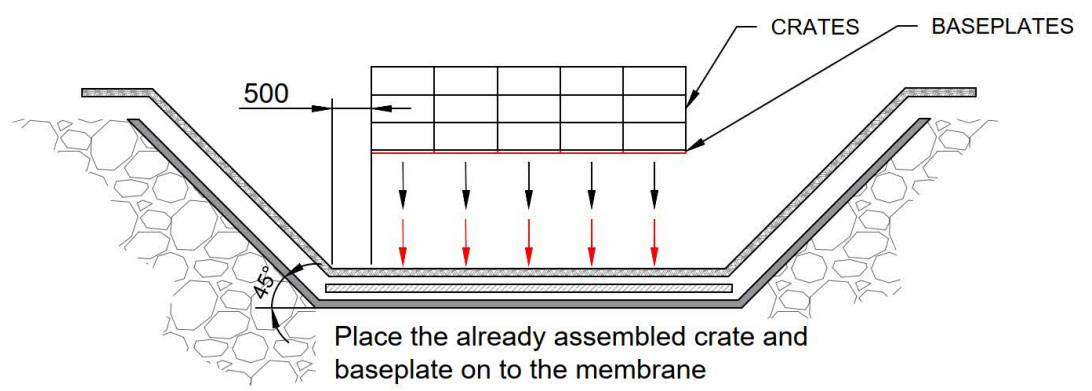
Deployment of cellular units

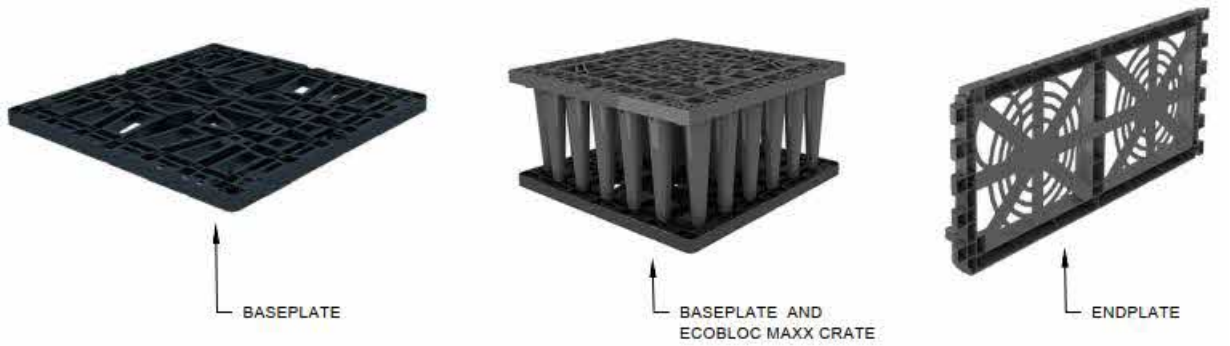
The pallets are lowered into the excavation using a suitable telehandler machine.



5) Install cellular units onto base geo-membrane or geo-textile

Assemble Crate onto Base Plates (bottom layer only) and position in place, clip to adjacent crate(s) with connectors supplied.





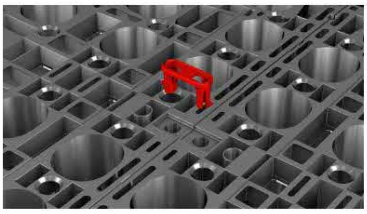
6) Fit low level pipe connections and seal to Membrane

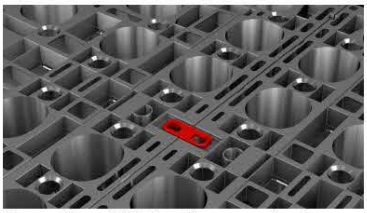
7) Continue with remainder of cellular unit installation

Any remaining layers are now constructed by clipping the crates into the top of the crate on the layer below, clip to adjacent crates using connectors provided.

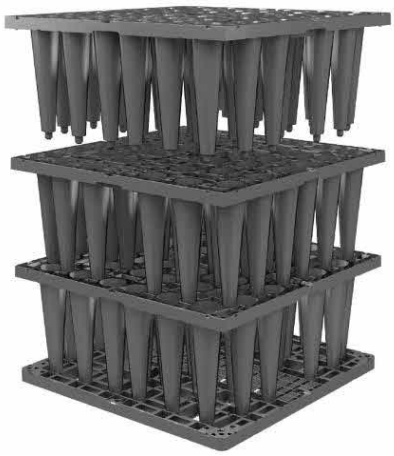
To ensure constant vertical support for the side fill material, clip Endplates into place on the outside of the crates.

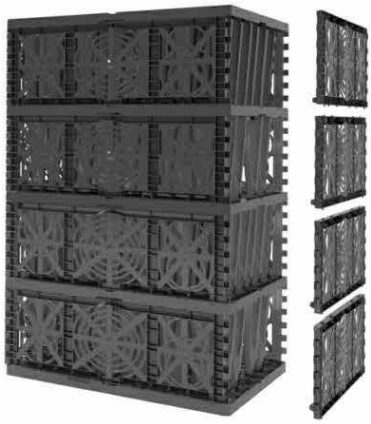
Remove a crate from the stack, rotate it 90° and place on top of the previously placed crate ensuring the connector clips are clipped locking the crates together.





Connector clips are Red for illustration purposes only and are Grey in colour





8) Fit upper level Install pipe connections and seal to membrane

Once all the units are in place, the upper level pipe connections are fitted and sealed.

9) Install top sheets of membrane and fit vent pipe connection

The top geo-membrane sheets are installed, overlapped and wedge welded to the base panel.

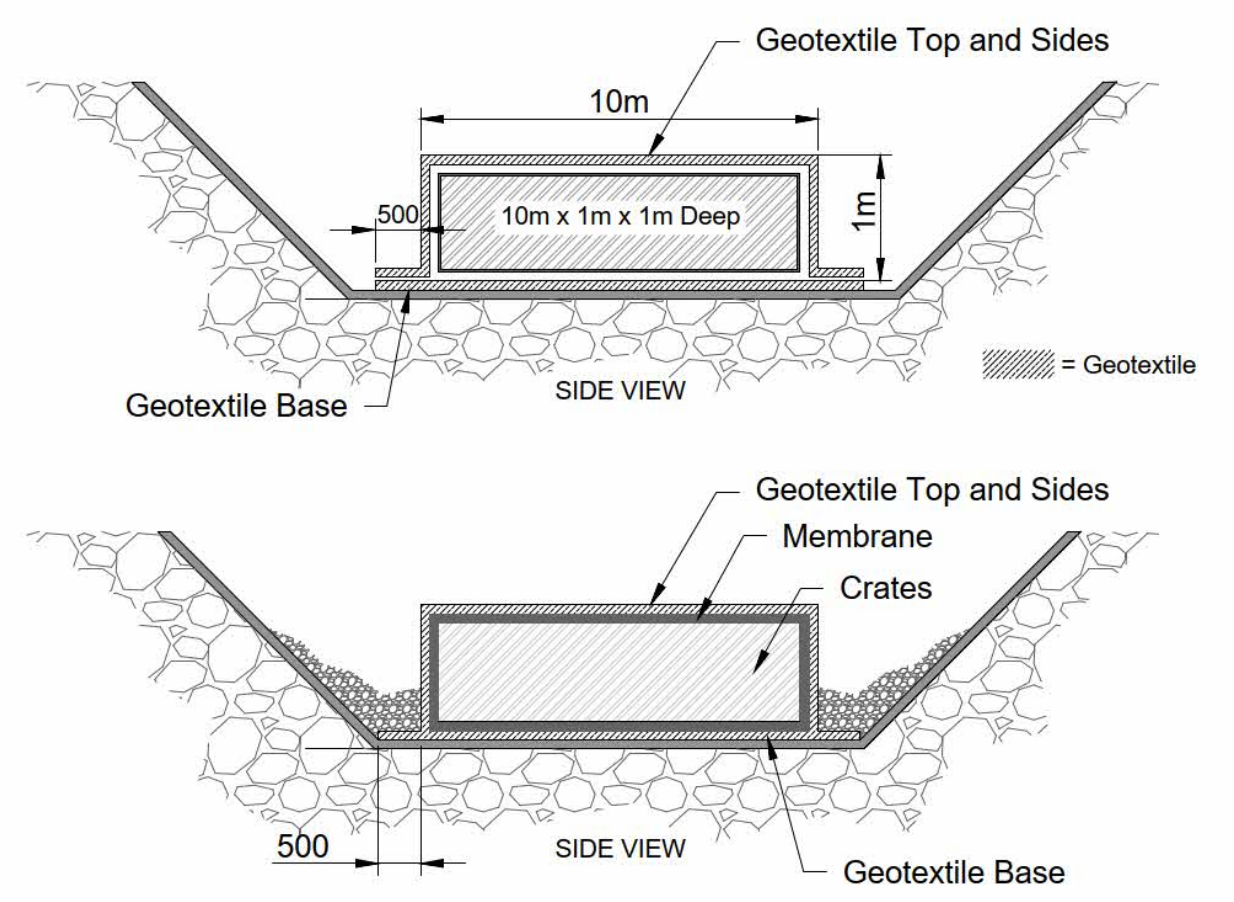
All tanks must have a vent installed on the top of the tank. This will be a 110mm Coupler sealed into the membrane on the top of the tank (or 110mm adaptor plate on the side of the tank if venting to a manhole). The exact position is to be confirmed on site by Main Contractor and can be placed anywhere on top of the tank to suit site layout.

Please note: it is necessary to work on top of the tank to weld the top sheets of membrane in place.

10) Cover top and sides with protective geo-textile

Cover top and sides of tank with geotextile, overlap each join by 300mm.

Geotextile can be tack bonded in place to prevent movement during the back fill process.



11) Final Housekeeping

All excess membrane/geo-textile off cuts and pallets used for shipping will be disposed of in the waste skips provided by site. If no skips are available, then we must be notified prior to us attending site and commencing works so alternative arrangements can be made. Failure to do so may result in additional charges.

12) Sign of by Site

Risk Assessment

Site:	10A The Pallant, Havant, Hampshire, PO9 1EQ	Task:	Installation of Attenuation Tank	Risk Assessment No:	RA/100011
Completed By:	Mark Caswell	Assisted By:	Matthew Rolph	Date:	26.02.2024

(1) Hazard Description	(2) Risk	(3) Persons at Risk	(4) Severity	(5) Probability	=	(6) Risk Rating Before Controls	(7) Control Measures Introduced to Reduce Risk	(8) Severity	(9) Probability	=	(10) Risk Rating	(11) Further control measures necessary
Exposed Underground Services	Contact; Electrocution; fire; Explosion	All	H	M	=	H	All personnel to be informed of applicable safety measures	H	L		M	No Further Action Required
Work within excavation	Entrapment: Crush; Suffocation; Trauma; Flooding	Contractor	H	H	=	H	Ground condition assessment carried out by site management; daily Inspections undertaken; work will be suspended if unforeseen circumstances render practices unsafe. Works remain suspended until safe system is employed. Client to provide sump and extraction pump to collect and remove excess water;	H	L	=	M	Excavation to be battered or stepped back at a suitable angle - no more than 45°. Minimum 300mm (500mm recommended) working space required around tank footprint
Failure of tools / equipment	Electrocution/Burns/Cuts	Contractor	M	M	=	M	PA testing: daily Inspections; Operatives competent to use	M	L	=	L	
Slips / trips / falls	Breaks/Strains/Sprains	Contractor	M	M	=	M	Pedestrian routes maintained by Site management; Suitable access & egress provided; Edge protection provided near excavation; Suitable footwear provided	M	L	=	L	Main Contractor to provide 2 points of access/egress, either steps or ramps, A secure ladder may be used as last resort.
Wet or icy membrane (Not applicable to soakaways)	Breaks/Strains/Sprains from slipping over	Contractor	M	H	=	H	Extreme caution must be taken when membrane is wet or icy. If wet a suitable area should be dried to form a walk way. If icy then a similar process of removing the ice can be used but if the membrane continues to freeze over then works should not commence until the temperature has warmed up and the ice thawed.	M	L	=	L	On larger jobs taking more than 1 day it may be possible to cover the membrane with a tarpaulin to try and prevent ice from forming.
Contact with moving parts / machinery	Entrapment; Cuts	Contractor	M	M	=	M	Daily inspections carried out; Appropriate guarding; Operatives trained	M	L	=	L	No Further Action Required
Falls from height	Severe personal injuries	Contractor	H	M	=	M	Use of Fall-Pac Soft Landing System for tanks over 1.5m deep.	H	L	=	M	No Further Action Required
Manual handling	Upper Limb Disorders/Breaks/Strains/Sp	Contractor	M	M	=	M	Mechanical handling equipment to be used to place cellular units into excavation; Manual Handling training;	M	L	=	L	Mechanical handling Equipment provided by Client
Use of cutting equipment	Cuts to body parts	Contractor	M	M	=	M	Use of safety knives. Wear appropriate protective gloves. Information & Instruction	M	L		L	No Further Action Required
Use of cutting equipment	Damage to eyes	Contractor	M	H	=	H	Eye protection MUST be worn by the operator and everyone in the work area while the equipment is in use.	M	L		L	No Further Action Required
Vehicle movements	Contact with: Hit by:	Contractor; Site Personnel	H	M	=	H	Induction; designated traffic routes; Segregation/Barriers	H	L	=	L	No Further Action Required
Ground collapse / failure	Traps; Crushing; Suffocation	Contractor	H	M	=	H	Excavation inspected daily by competent site person	H	L	=	L	Excavation to be battered or stepped back at a suitable angle - no more than 45°. Minimum 300mm (500mm recommended) working space required
Use of Welding equipment. (Not applicable to soakaways)	Electrocution; Electrical Burns	Contractor	M	M	=	M	All Electrical equipment PAT tested: daily visual inspections undertaken: all equipment 110V;	M	L		L	No Further Action Required

Risk Assessment

Site:	10A The Pallant, Havant, Hampshire, PO9 1EQ	Task:	Installation of Attenuation Tank	Risk Assessment No:	RA/100011
Completed By:	Mark Caswell	Assisted By:	Matthew Rolph	Date:	26.02.2024

(1) Hazard Description	(2) Risk	(3) Persons at Risk	(4) Severity	(5) Probability	=	(6) Risk Rating Before Controls	(7) Control Measures Introduced to Reduce Risk	(8) Severity	(9) Probability	=	(10) Risk Rating	(11) Further control measures necessary
Structural failure of adjacent buildings;	Collapse; Trapping; Crush;	Contractor	H	L	=	M	Impact of Excavation on surrounding structures assessed and managed by Site management	H	L		M	No Further Action Required
Noise	Hearing Impairment: Noise induced deafness	Contractor	M	M	=	M	Noise Assessment carried out by site management as required; Area to be identified by signage: Hearing protection to be provided at 1st action level(80db(A));	M	L	=	L	No Further Action Required
Lifting Operations	Failure of Lifting Equipment; Unsafe positioning of Equipment;	Contractor	H	M	=	H	Lifting machinery provided by main contractor to be LOLER certified operators to be trained & competent;	H	L	=	M	Lift plan required (sole responsibility of Main Contractor)
Lifting and slinging	Failure of lifting equipment: Slings inadequate for weight to be lifted; Slings incorrectly	Contractor, Site Personnel	M	M	=	M	Statutory Inspections carried out; Daily Checks: Competent personnel; SWL on slings identified: damaged slings to be rendered unusable:	M	L	=	L	No Further Action Required
Falling / flying objects	Struck by; entrapment; cuts; bruises; breaks;	Contractor	M	M	=	M	Area around excavation to be cleared of loose or stored items by Site Management. Particular attention during windy conditions	M	L	=	L	No Further Action Required
Machines / objects overturning	Impact; Crushing; Entrapment.	Contractor	H	M	=	H	Client controlled Site Traffic management in place; Barriers to protect vehicles/work equipment from excavation edges.	H	L	=	M	Installation area to be fenced off from other site traffic.
Unsafe access / egress	Fall from height; Entrapment	Contractor	M	H	=	H	Ladders, Steps, ramps, scaffolding provided by Site management; daily Inspections undertaken; defect reporting to site management; 2 means of safe access/egress to be provided by site management;	M	L	=	L	Main Contractor to provide 2 points of access/egress, either steps or ramps, A secure ladder may be used as last resort.
Inadequate Lighting	Insufficient vision; slips/trips/falls;	Contractor	M	M	=	M	Work restricted to day light hours or Client to provide suitable/sufficient lighting;	M	L	=	L	No Further Action Required
Weils Disease aka Leptospirosis	Contact with infected area	Contractor	M	M	=	M	Instruction on Personal Hygiene; PPE provided; Excess/Stagnant water removed	M	L		L	No Further Action Required
Fuel Spillages	Environment: Fire; Explosion; Skin Contact	Contractor	M	M	=	M	No smoking during re-fueling. Site Smoking restriction; Use funnels/nozzles for re-fueling; Drip trays to be in position at all times; Spill kits to be available at all times; Fire extinguisher carries in vans and be made available during refueling	M	L		L	No Further Action Required
Fumes	Inhalation	Contractor	M	M	=	M	Generator to be positioned to direct exhaust fumes away from excavation.	M	L	=	L	No Further Action Required
Emergency Situation in Excavation	Illness / injury in excavation	All	H	M	=	H	Daily inspections carried out; Appropriate guarding; Operatives trained - Tool Box Talk for Working in Excavations	H	L	=	M	Emergency response plan to be agreed with client

Risk Assessment Matrix

Severity				
Major	Medium	High	High	
Moderate	Low	Medium	High	
Minor	Low	Low	Medium	
Risk Rating = (Probabilty x Severity)	Unlikely (0 - 33%)	Moderately Likely (34% - 66%)	Highly Likely (67% - 100%)	
	Probability			

Risk Assessment							
Manual Handling Operations	(I.e. Provide details of all significant manual handling operations. If required, refer to any Manual Handling Assessments) Manual Handling of Graf EcoBloc Crates (8kg)						
Hazardous Substances: (Attach MSDS if required)	 Very Toxic	 Harmful/ Irritant	 Corrosive	 Dangerous For the environment	 Oxidising	 Highly flammable (only during refueling of generator)	 Explosives
Applicable:	Yes☐ No☒	Yes☐ No☒	Yes☐ No☒	Yes☐ No☒	Yes☐ No☒	Yes☒ No☐	Yes☐ No☒
Permits to Work:	Hot Works Permit – Whilst the membrane welding process does not involve any naked flames or produce any sparks the heating wedge can reach temperatures of 350ºC when running, therefore it is the at the discretion of the Site Manager that a Hot Works Permit is issued.						
Lifting Equipment and Accessories provided by Graf UK Ltd:	(Provide details of the lifting equipment, i.e. crane or other device and any lifting accessories to be used) C-Frames & Shackles for lifting rolls of membrane / Geotextile						

Required Personnel Protective Equipment:	 Hi-vis Vest (Standard) (BS EN 471) ☒	 Hi-vis Trousers (Optional) (BS EN 471) ☐	 Steel Toe Boots (Standard) (BS EN 345) ☒	 Protective Work Gloves (BS EN 420) ☒	 Hard Hats (Standard) (BS EN 397) ☒	 Hearing Protection (BS EN 352) ☐	 Eye Protection (BS EN 166) (As required – see Risk Assessment) ☒
	Other:						
Emergency Procedures:	Initially refer to clients site emergency procedures as explained during the site induction Stop work immediately. If safe to do so, remove all personnel from danger area. Contact Site Manager and then your contracts manager. If emergency involves injury to persons or other property, Graf UK Ltd employees must follow site safety and evacuation procedures, as laid down by the client.						

 Canteen	**Welfare Facilities:**	**Are Shared Welfare facilities available to use and suitable:**	Yes☒ No☐ If NO then state below what arrangements will be made to provide suitable welfare facilities on site.
		Welfare Facility Provisions:	Shared Toilets/restroom

Risk Assessment			
	**First Aid Facilities:**		
		First Aid Box Location:	Main site office
		Location of Nearest Hospital:	

Noise / Vibration	How will personnel be protected from noisy work activities	n/a
	How will personnel be protected from over exposure to Vibration	n/a
Protection of Others	How will other trades, personnel or the general public, be kept safe from our work activities	Safety Barriers around excavation (By Main Contractor)
All work will be undertaken by qualified competent persons with experience of the type of work described above, and in all cases, in full accordance with safety procedures specified in the company's health and safety Policy.		

COSHH ASSESSMENT SHEET

Name of Substance	Unleaded Petrol							
Supplied By	Various						**COSHH Ref:**	
Supplied at Risk	Staff	X	Public	X	Young / Pregnant Workers	X	**Date of Assessment**	27/05/2022
	Visitors		Contractors	X			**Review Date**	26/05/2023
Assessor	Print: Robyn Sutton						Supervisor	Print: Signed
Description of Substance	Highly flammable liquid for spark ignition engines.						Method of use	Refuelling Generator

Hazards Identification and PPE

Routes of Entry		**Personal Protective Equipment (Mark Required Boxes)**							**Mark here for none**	
Inhalation	X									
Absorption	X									
Ingestion	X									
Location		Hand Protection	Protective clothing	Protective Footwear	Safety Glasses	Shield	Face Mask	Respirator		
		X								

Risk Phrases
Safety Phrases

H224: Extremely flammable liquid and vapour. H225: Highly flammable liquid and vapour. H304: May be fatal if swallowed and enters airways. H315: Causes skin irritation. H319: Causes serious eye irritation. H336: May cause drowsiness or dizziness. H340: May cause genetic defects. H350: May cause cancer. H361: Suspected of damaging fertility or the unborn child. H372: Causes damage to organs through prolonged or repeated exposure. H373: May cause damage to organs through prolonged or repeated exposure. H411: Toxic to aquatic life with long lasting effects. R11: Highly flammable. R12: Extremely flammable. R20: Harmful by inhalation. R23: Toxic by inhalation. R24: Toxic in contact with skin. R25: Toxic if swallowed. R36: Irritating to eyes. R38: Irritating to skin. R45: May cause cancer. R46: May cause heritable genetic damage. R48: Danger of serious damage to health by prolonged exposure. R62: Possible risk of impaired fertility. R63: Possible risk of harm to the unborn child. R65: Harmful: may cause lung damage if swallowed. R67: Vapours may cause drowsiness and dizziness. R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Components	Occupational Exposure Standard (OES)	Maximum Exposure Limits (MEL)	Workplace exposure Limits (WEL)
Ethanol			STEL: 3000ppm
Toluene			100ppm
n-Hexane			60ppm
Benzene			3ppm

Frequency & Duration of Exposure

Amount Used		**How many times per day**		**Duration**	
Small (Millilitres)		1 – 5	X	1 – 5 Minutes	X
Medium Litres	X	5 – 10		6 – 30 Minutes	
Large Cubic Metres		More than 10		31 – 60 Minutes	
				1 Hour & Above	

GHS SUBSTANCE PROPERTIES

Oxidising	Explosive	Toxic	Harmful	Corrosive	Human Health	Dangerous for Environment	Gas under Pressure	Flammable	Highly Flammable	Extremely Flammable	Carcinogenic
☐	☐	☐	X	☐	X	X	☐	☐	☐	x	☐

Control Measure

General Precautions

Explosive mixtures may form at ambient temperatures. Aspiration into lungs caused by vomiting is harmful and can be fatal. Contains1% benzene which is classified as a category 2 carcinogen. Repeated exposure to benzene may cause anaemia and other blood diseases including leukaemia. Do not siphon by mouth

First Aid Measures

Eye Contact: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention. Skin Contact: Remove contaminated shoes and clothing and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention. Wash contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of appearance of the wound or its size, the individual should be evaluated immediately by a physician. (See Note to Physician.) Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If breathing is difficult, oxygen or artificial respiration should be administered by qualified personnel. If symptoms persist, seek medical attention.
Ingestion (Swallowing): Aspiration hazard: do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical Attention.

Spillage Procedure

Environmental precautions: Stop spill/release if it can be done safely. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems and natural waterways. Use foam on spills to minimize vapours. Use water sparing to minimize environmental contamination and reduce disposal requirements. If spill occurs on water, notify appropriate authorities and advise shipping of any hazard.
Methods and material for containment and cleaning up: Notify relevant authorities in accordance with all applicable regulations. Immediate cleanup of any spill is recommended. Dyke far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite and place in suitable container for disposal. If spilled on water, remove with appropriate methods (eg skimming, booms or absorbents). In case of soil contamination, remove contaminated soil for remediation or disposal, in accordance with local regulations.

Fire Prevention

Extinguishing media: Dry chemical, carbon dioxide or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam. Water may be ineffective for extinguishment, unless used under favourable conditions by experienced fire fighters.

Handling and Storage

Only small quantities are to be stored, up to 5 litres, in specifically designed containers which must be kept tightly closed and stored upright. It must be stored in a cool, remote place away from any sources of heat, ignition or open flame. Do not eat, drink or smoke whilst handling.

Disposal Considerations

Dispose of in accordance with local authority regulations.

Further Controls Required	Responsibility

COSHH Assessment Comments

I have read and understood the contents of this Risk Assessment and COSHH Assessment. Anything I did not understand has been explained to me to my satisfaction. I agree to follow the COSHH Assessment and understand that any control procedures are provided for my safety and the safety of others.

Print Name ……	Signed ……	Date ……
Print Name ……	Signed ……	Date ……
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Inspection & Maintenance of Graf Stormwater Tanks – without Integrated Inspection Run

The owner of the structure is responsible for maintenance.

For small soakaways/aΣ enuaϴon tank to individual houses, the only necessary maintenance of the system is to keep all gullies clear of debris such as leaves.

For large installaϴons or where the receiving waters are environmentally sensiϴve, a system of regular inspecϴons should be established to prevent siltaϴon of the system which, if allowed to develop could reduce effecϴveness. They should also be inspected aŌer every major storm event.

It is recommended that silt traps, filters or other means of reducing the amount of silt and solids entering the system to a minimum, should be incorporated into the pipework at the inlet of the tank. There must be a maintenance plan that ensures regular cleaning of the trap to ensure correct performance.

For all flow control devices, it is sensible to incorporate access (via a manhole or similar) to the locaϴon of the pipe entry, orifice or vortex control. This will enable easy removal of any blockage. The orifice itself may be protected by a debris screen.

Paved surface areas above an installaϴon should be inspected at the same ϴme to ensure the units conϴnue to provide the required structural support.

Silt traps prior to inlet pipework should be rouϴnely inspected and cleaned out to minimise debris reaching the tank. It is important to prevent construcϴon silt from entering the tank structure.

It is recommended that any system be inspected no less frequently than at monthly intervals for the first 3 months and thereaŌer at 6 monthly intervals. In addiϴon, it is suggested that the installaϴon is inspected immediately following the first storm event, whenever this should occur post installaϴon.

Individual maintenance schedules should be drawn up using the informaϴon obtained from the iniϴal inspecϴons. It should also be noted that more regular inspecϴons may be required should the catchpit(s) fill more frequently and/or if the iniϴal inspecϴons reveal that maintenance/cleaning will be required more regularly than at six month intervals.

OPERATION & MAINTENANCE REQUIREMENTS

Regular inspecθon and maintenance is required to ensure the effecθve long-term operaθon of below ground modular storage systems. Maintenance responsibility should be placed with a responsible organisaθon. Maintenance requirements for modular systems are described in Table 1.0 below.

Specific maintenance needs of the system should be monitored, and maintenance schedules adjusted to suit requirements.

Table 1.0 Modular systems – operaθon and maintenance requirements

Maintenance schedule	Required acθon	Recommended frequency
Regular maintenance	Inspect and idenθfy any areas that are not operaθng correctly. If required, take remedial acθon.	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Where rainfall infiltrates into blocs from above, check surface of filter for blockage by silt, algae or other maΣ er. Remove and replace surface infiltraθon medium as necessary.	Monthly (and aŌer large storms)
	Remove sediment from pre-treatment structures.	Annually, or as required
Remedial acθons	Repair/rehabilitaθon of inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condiθon and operaθng as designed.	Annually and aŌer large storms

EcoBloc Maxx

STORMWATER ATTENUATION & SOAKAWAY CRATES

Product Specification Sheet

EcoBloc Maxx is manufactured from selected recycled material and is designed for deeper applications which may be subject to regular and heavy traffic loadings, e.g. cars and HGV's.

Technical Specification

	Crate	Baseplate
Product Code	402200	402201
Colour	Black	Black
Dimensions (mm)	800 x 800 x 350	800 x 800 x 40
Weight	9kg	4kg
Gross Volume	225 litres	25 litres
Net Volume	217 litres	20 litres
Void Ratio	96%	80%
Inspectable	No	
Vertical Loading	36.5 tonnes/m² (365kN/m²)	
Lateral Loading	10 tonnes/m² (99.6kN/m²)	
BBA Approved	Yes - certificate 15/5200	



Maximum depth of installation

Maximum depth of installation - to base of units (m)[1]

Typical soil type	Soil weight kN/ m2	Angle of internal friction (degrees)[2]	Landscaped areas	Vehicle weight <9 tonnes[3]	Vehicle weight <30 tonnes	Vehicle weight <60 tonnes
Over consolidated stiff clay	20	24	3.25	3.00	2.75	2.50
Silty sandy clay	19	26	3.75	3.50	3.25	3.25
Loose sand and gravel	18	30	4.50	4.25	4.00	4.00
Medium dense sand and gravel	19	34	5.00	4.75	4.50	4.50
Dense sand and gravel	20	38	5.00	5.00	4.75	4.75

It is advised that structural design calculations are carried out prior to work commencing. Installation depths and loadings outside of those covered in this table may be permissable depending on site conditions. Contact Graf UK Ltd for more information.

Minimum & maximum cover depths

	Landscaped area	Vehicle weight <3 tonnes[4]	Vehicle weight <9 tonnes	Vehicle weight <12 tonnes	Vehicle weight <30 tonnes	Vehicle weight <60 tonnes
Minimum cover depth (m)	0.30	o.50	0.65	0.75	0.85	1.00[5]
Maximum cover depth (m)	2.75	2.75	2.75	2.75	2.50	2.25

Other vehicle loads are possible. Please contact Graf UK for technical advice.

Notes:

1. Without groundwater present. EcoBloc Maxx may be used where groundwater is present, contact Graf UK for technical advice.
2. The design is very sensitive to small changes in the assumed value of ϕ, therefore, it is recommended that these values are confirmed by a chartered geotechnical engineer.
3. Applicable for car parks or other areas trafficked only by cars or LGVs. Infrequent accidental load from heavier vehicles may be possible.
4. This category should be used when considering landscaped areas that may be trafficked by ride on mowers.
5. Including 200mm concrete slab.

Assumptions made:

- Ground above and to the sides of the tank is horizontal.
- Shear planes or other weaknesses are not present within the structure of the surrounding soil.

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Stormwater Management

GSE UltraFlex Geomembrane Spec Sheet

GSE UltraFlex is a smooth Linear Low density polyethylene(LLDPE) Geomembrane manufactured with the highest quality resin specifically formulated for flexible geomembranes. this product is used in applications that require increased flexibility and elongation propreties where differential or localized subgrade settlements may occur such as in a landfill closure application.

Product Specifications

TESTED PROPERTY	TEST METHOD	FREQUENCY	VALUES(*)
Thickness(1), mm	ASTM D 5199	Every roll	1.00
Density, g/cm3 (Max)	ASTM D 792	90,000 Kg	0.939
Tensile Properties(each direction) Strength at Break, N/mm Elongation at Break, (%)	ASTM D 6693, Type IV Dumbbell, 2 imp G.L. 50 mm	9,000 Kg	 26 750
Tear Resistance, N	ASTM D 1004	20,000 Kg	95
Puncture Resistance, N	ASTM D 4833	20,000 Kg	238
Carbon Black Content, % (Range)	ASTM D 4218	9,000 Kg	2.0 - 3.0
Carbon Black Dispersion	ASTM D 5596	20,000 Kg	Note(2)
Oxidative Induction Time (OIT) min	ASTM D 3895(200 °C, O2, 1atm)	90,000 Kg	> 100

TYPICAL ROLL DIMENSIONS		
Roll Length(3), (m)	210	210
Roll Width(3), (m)	5.8	7.0
Roll Area(3), (m^2)	1218	1470
Standard Containcr, Roll	15	15

Revision Date: November, 2014

NOTES:

- (*) All values-unless otherwise noted are Minimum average values.
- (1) Minimum Average Thickness: Nominal -5%.
- (2) Dispersion only applied to near spherical agglomerates 9 of 10 views shall be Category 1 or 2. No more than 1view from Category 3.
- (3) Roll lengths and widths have a tolerance of ± 1%
- GSE HD is available in rolls weighting approximately (1200 kg)
- All HD geomembranes have dimensional stability of ±2% when tested according to ASTM D 1204 and LTB of > -77 C when tested according to ASTM D 746.

GSE UltraFlex is produced at GSE Lining Technology-Egypt.

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Terrex SNW
Data Sheet

TERREX SNW is a range of high performance needle-punched non-woven staple fibre UV-stabilised polypropylene geotextiles. The range of application spans protection, drainage and separation and includes erosion control and revetment construction. TERREX SNW may also be used in the construction of reinforced soil walls and slopes. Appropriate grades of TERREX SNW may be used to provide a protection layer to geomembrane barriers.

Geotextile Properties																
Product Grade		**SNW14**	**SNW17**	**SNW25**	**SNW31**	**SNW40UV**	**SNW46**	**SNW50**	**SNW55**	**SNW62**	**SNW70**	**SNW80**	**SNW90**	**SNW100**	**SNW120**	**SNW140**
Thickness at 2kPa *EN ISO 9863-1*	(mm)	1.2	1.5	1.8	2.2	2.4	2.8	3.0	3.2	3.5	3.8	4.4	4.7	5.0	6.0	7.0
Mass per unit area *EN ISO 9864*	($g/m^{2)}$	120	150	200	250	300	370	400	450	500	565	650	750	800	1000	1200
Tensile strength MD/CMD *EN ISO 10319*	(kN/m)	8 / 8	10 / 10	14 / 14	18 / 18	22 / 22	27 / 27	30 / 30	33 / 33	37 / 37	42 / 42	45 / 45	54 / 54	58 / 58	70 / 70	84 / 84
Elongation MD/CMD *EN ISO 10319*	(%)	40 / 55	45 / 55	45 / 55	50 / 55	50 / 55	50 / 55	50 / 55	55 / 60	60 / 65	60 / 65	65 / 70	65 / 70	70 / 70	70 / 70	70 / 70
CBR puncture resistance *EN ISO 12236*	(N)	1 400	1 700	2 500	3 100	4 000	4 600	5 000	5 500	6 200	7 000	8 000	9 000	10 000	11 500	14 000
Dynamic perforation cone drop *EN ISO 13433*	(mm)	28	22	18	13	12	10	9	7	5	4	2	1	1	0	0
Pore size O_{90} *EN ISO 12956*	(µm)	120	110	100	95	90	85	80	75	72	70	65	60	58	55	49
Water flow normal to the plane *EN ISO 11058*	($l/m^2 \cdot s$)	110	100	80	70	60	55	50	45	40	35	30	28	28	20	15
Resistance to weathering		To be covered within 14 days for filtration, drainage and separation applications. **SNW40UV** has enhanced UV stabilisation permitting exposure in excess of 30 days.														
Product Dimensions																
Width	(m)	5.25	5.25	5.00	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.25
Length	(m)	100	100	100	100	100	100	50	50	50	50	50	50	50	35	35

Notes

1. Cut widths may also be available, please enquire. Rolls supplied cut to width are subject to wider tolerance.
2. In line with our policy of continuous improvement, we reserve the right to make changes without notice at any time. It is the responsibility of all users to satisfy themselves that the above data is current.
3. The above figures have been obtained from statistical interpretation of test results and are subject to tolerances.
4. Final determination of the suitability of any information is the sole responsibility of the user.

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www.grafuk.co.uk

Stormwater Management


COVERS
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