WHITES RECYCLING LTD
NON TECHNICAL SUMMARY
FACILITY; STRATTON HALL LAGOONS

October 15, 2019

LOCATION	NATIONAL GRID REFERENCE
Stratton Hall Lagoons Walk Farm Stratton Hall IP10 0BW	TM 25583 39936

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Should be read in conjunction with WRL/EMS/STRHLL – Environmental Management System

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1. Introduction

1.1 This non-technical summary outlines the important build information and highlights management techniques that the site at Stratton Hall will be operated under.

1.2 Whites Recycling Ltd is an experienced waste contractor engaged to remove and recycle to land a number of organic wastes derived principally from food and beverage production.

1.3 Whites Recycling Ltd have well established operational procedures including the recording of delivery and removal of waste / environmental management / health and safety / waste acceptance criteria and eventual land spreading operations.

1.4 During the majority of the year these wastes are spread directly to land, onto appropriately deployed field sites under mobile plant permits in close proximity to the points of production.

1.5 At certain times throughout the year it is inadvisable to land spread wastes due to ground/soil/weather conditions and in some circumstances certain wastes may not be spread as this would contravene the 'closed period' as advised by the Environment Agency.

1.6 The Lagoons at Stratton Hall will be utilised to store wastes under circumstances of 1.5

1.7 The Lagoons site will provide storage for food and drinks wastes to allow bulking up and subsequent land spreading to local field sites on surrounding farmland.

2. Location

2.1 The Lagoons will be operated by Whites Recycling Ltd as a storage for nutrient rich organic waste before being spread on farm land.

2.2 The site comprising of 2 lagoons are located on arable farmland between the villages of Levington to the South West, Bucklesham to the North East and Kirton to the East

2.3 At the application site there are five lagoons/ reservoirs for clarification this bespoke permit application is for the North West facing smaller lagoons/ reservoirs at site (these will hence for be referred to as lagoons) and will not include the 3 larger North East facing lagoons/ reservoirs (hence referred to as reservoirs).

2.4 The land is classified as grade 3 agricultural with no conservation, wildlife or vintage designations on site or in the immediate vicinity.

2.5 The site adjoins a solar farm (Stratton Hall solar park) and 3 irrigation reservoirs.

2.6 There are only two residential receptors within close proximity to the site, Walk Fam (site owners) within 500m South West of site. Second residence Croft House is over 700m to the South East, the house is well screened from the site by tall garden and road side vegetation that stands within a triangle of land directly in front of the house.

2.7 The site is within easy reach from the A14, on to Croft Lane leading to a private access road to the site.

2.9 The lagoons have stood empty for the past 12-18 months, prior to that they were used for storing digestate.

2.2 Construction Background

2.2.1 The two lagoons were built in the 90's by Anglian Water for irrigation purposes. Planning details are no longer available on Suffolk Coastal planning portal, however it is the view of the land owner (and current Lagoons owner) that the lagoons were built to BS 5502-50 standards (CIRIA 759) as was practice for all Anglian Water developments of this time.

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2.2.2 The lagoons were operated under an environmental permit (CB3002CT) by FGS Agri Ltd for the storage of liquid digestate for approximately 5 years. This permit has since been surrendered.

3. Lagoons Specification

3.1.1 Stratton Hall Lagoons will not be used as an anaerobic/aerobic digester, the only 'treatment' the materials will receive will be the physical mixing (each waste will confer benefit for land or crops in its own right and this will remain the same once mixed) to achieve a single homogenous product ready for land spreading.

3.1.2 The waste stored is well known to Whites Recycling Ltd having been through waste acceptance and analysis procedures plus we have been working with it through our land spreading operation for 25+ years. Other than modest gas release from minor decomposition no reactions have been observed during storage.

3.1.3 The total storage capacity of both Lagoons combined is approx. 12,000 cubic metres (excluding the freeboard of 750mm), the measurements for both lagoons are approximately 73m x 37.5m x 4m.

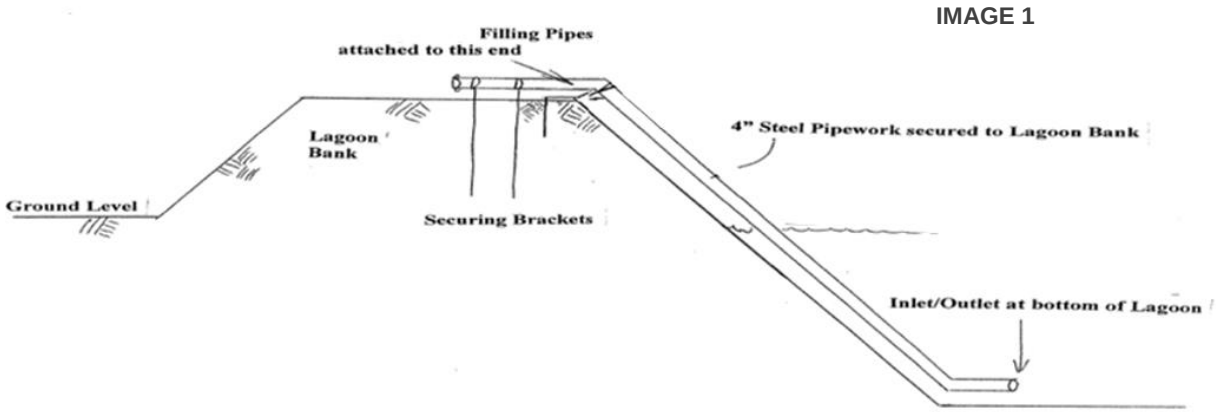
3.1.4 A freeboard of 750mm will be maintained at all times when in use (on each Lagoon). Should in the unlikely event that the freeboard be breached then the EMS spill procedure will be implemented and followed and the EA informed.

3.2 Pipework

3.2.1 Pipework will be inspected visually before any loading/unloading takes place at the Lagoons.

3.2.2 Waste loaded into the Lagoons is carried out utilising sealed submerged pipe work placed on to the base of the Lagoons which exits below the surface level causing minimal surface disturbance, and removed by secure pipework to sealed tankers or an umbilical pipe spreading system using the same pipe work. (See **IMAGE 1**)

IMAGE 1



3.3 Liner Specification

3.3.1 The liner is 1.5mm thick impermeable membrane and provides a robust containment, with a life expectancy of approx. 20 years.

3.3.2 The liner is anchored in to a key trench which surrounds each lagoon. (See **IMAGE 2**)

3.3.3 The liner is audited fortnightly. As part of this procedure the liner is visually checked for UV deterioration and physical damage to the body of the liner and welding joints (including pest damage). An annual check is made on the liner

and the joints when the Lagoons is empty. Any defects are reported to the Whites Recycling Ltd's relevant management for prompt remedial action. (See **IMAGE 6**)

3.3.4 Should during an audit inspection by the TCM (or nominated competent person) significant damage be found to the liner, loads into the Lagoons will be halted until our liner sub-contractor can conduct the professional repairs that are required.

3.3.5 The liner was installed by Geosynthetics – Geosynthetics Limited is a successful, dynamic and creative business. Since its incorporation in 1998 the company has grown rapidly into the largest independent geosynthetics supplier in the UK employing over 40 people, including fully qualified civil engineers. The company has earned an excellent reputation for high quality products, next day delivery and high levels of customer service, all of which are the cornerstones of the company's commitment to its customers in the UK civil engineering and construction industries. Their experienced and well trained technical team, are fully conversant in all products from geotextiles, geogrids, geomembranes, cellular confinement systems, erosion control mats and gabions.

3.3.6 The liner is tested in an UKAS accredited ISO 17025 laboratory and is UV stabilized and high crush resistance.

3.3.7 The liner is fitted and welded by TWI trained staff and destructive testing if the weld joints is under taken through the day with results being recorded. To protect the liner (silver layer in Image 2) a geotextile layer (black in image 2) is placed beneath it.

3.3.8 Seam testing at the site is 'standard site CQA' where weld samples are tested to destruction by means of a peel test. A peel test consists of the seam sample being quite literally peeled apart. Results being recorded throughout the day.

IMAGE 2

Image shows key trench & Liner (Image is not from Stratton Hall Lagoons but from a previous lagoon lined by Geosynthetics and operated by Whites Recycling Ltd)

3.4 Leak Detection

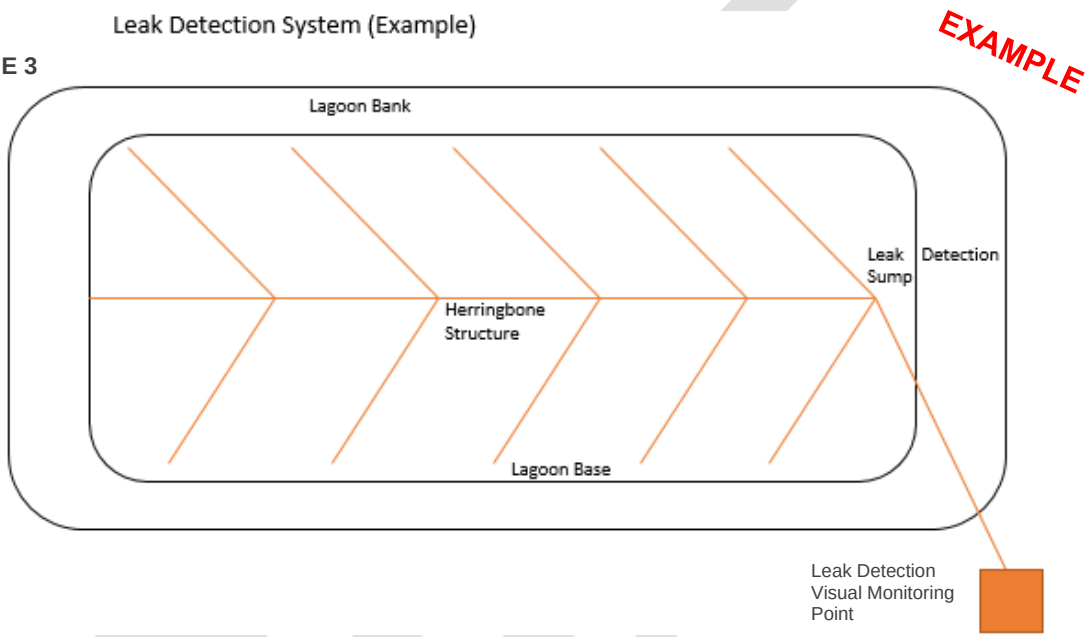
3.4.1 The Lagoons have been built with an integrated leak detection system in a herringbone configuration. (See **IMAGE 3**)

3.4.3 Leak detection is essential for preventing an environmental incident by monitoring what is happening beneath the liner.

3.4.4 Leak detection does not replace a visual inspection routine and it will be checked fortnightly as part of the audit system by TCM (or nominated competent person)

3.4.5 If a leak is discovered then the Lagoons will be emptied and repaired and any waste destined for the Lagoons shall be temporarily diverted.

IMAGE 3



3.5 Stirring

3.5.1 To achieve a uniform mix for spreading purposes, the Lagoons are stirred using a tractor mounted stirrer. (See **IMAGE 4**).

3.5.2 Given the experience gained with lagoons circulation pipework is insufficient when dealing with a crust and there are times when a mechanical stirrer will be required. The tractor has an 'arm' (OCELOT Mixer frame extension) attached which is designed for both open slurry tanks and lagoons. The stirring mechanism is designed to sit 2 ft under the surface of the crust. The vortex allows the crust to be pulled down and broken up and the sediment to be pulled upward to aid a homogenous product. Surface disturbance is kept to a minimum.

3.5.3 On the day we start application to land the lagoon will be stirred for 2 hours in the morning (after 9am) and 2 hrs in the afternoon (before 5pm). Stirring will be replicated (if required) at the same times every day whilst waste is being applied (or removed by tanker). On the days when stirring takes place (i.e. daily) an odour audit will be carried out and logged on our IMS for review by the TCM. Stirring will not take place while tankers are loading or unloading.

IMAGE 4

Image shows stirrer in crust covered Lagoon

3.6 Wind Break

3.6.1 The Lagoons is flanked by a wind break in the form of natural hedge rows. These can reduce odour in two ways. Firstly; the windbreak reduces the volume of air passing across the surface of the Lagoon, the amount of odour released will be reduced. Secondly, the windbreak if it is of sufficient size and design can force the air to move vertically, this can assist in dispersing the odour and reduce the amount of it transported downwind to a receptor. Vegetated shelterbelt windbreaks not only enhance dispersion by promoting air turbulence, they also serve as a filtration barrier where particulate matter and odours are partly retained. (Lin et al. 2006)

3.7 Fencing

3.7.1 The Lagoons site will be securely fenced, stock proof/ security fence comprising livestock netting and two strands of barbed wire on the top. This will be to a height of 1.8m. (See **IMAGE 5**)

3.7.2 The fencing, gate and wire work if found defective will be temporarily repaired immediately to keep the site secure.

3.7.3 The fence is to prevent farm animals, wildlife or unauthorised personnel entering the Lagoons site.

3.8 Security

3.8.1 A lockable gate is provided to enable access for maintenance and management of the Lagoons.

3.8.2 Waste can be loaded into the Lagoons without personnel having to unlock the gate to the Lagoons immediate perimeter. (See **IMAGE 5**)

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IMAGE 5

Image shows WRL standard fencing and gate (Image is not from Stratton Hall Lagoons but from another lagoon operated by Whites Recycling Ltd)

4. Lagoons Management

4.1 Whites Recycling Ltd has a comprehensive range of management control measures that will be implemented at the site.

4.2 As a company Whites Recycling Ltd have managed Lagoons Storage sites for liquid wastes for 25+ years. This has provided us with a great wealth of experience. We have WAMITAB qualified members of staff to assist with the operating and management of other such facilities. Whites Recycling Ltd have constructed and now operate 7 similar Permitted Facilities.

4.3 All waste destined for Stratton Hall Lagoons is organized by Whites Recycling Ltd transport office at South Witham. Transport is carried out by Whites Recycling Ltd lorries (or authorized sub-contractors) and therefore the content of all loads is known as is the content and volume of the Lagoons.

4.4 All bookings are carried out from South Witham transport office the quantity of material in the Lagoons is known at all times. Allowing loads into and out of the Lagoons to be tracked and monitored to prevent overfilling.

4.5 Planning of loads is carried out in advance of wastes being picked up and taken to destinations. Records of all loads (quantity and volume) taken by transport into the Lagoons are held electronically at our main office in South Witham. This is vital for completing quarterly waste returns.

4.6 Whites Recycling Ltd operates a thorough waste acceptance procedure. This means that any waste to go into this storage Lagoons would have to have gone through a number of phases. These include receiving a representative sample along with the EWC code and description of waste. Following this the sample would be sent off to be analysed by an external laboratory to prove agricultural benefit within its own right (The analytical results are

reviewed by a suitably experienced member of staff, the review includes checking against the appropriate standards of PTEs [Potentially Toxic Elements] for land spreading using the limits recommended in "Sludge use in Agriculture 1994" guidance booklet). Also by receiving a full analysis of the material it enables us to assess the material for a wide range of nutrients. This ensures that no wastes are accepted into the Lagoons that do not comply with the permit conditions.

4.7 The Nominated Competent Manager (TCM) (or nominated competent person) will have responsibility for ensuring that nuisances and hazards arising from the Lagoons are minimised. Weekly meetings are instigated to discuss current and planned site operations.

4.8 An experienced Farm Liaison Manager with direct access to operational staff can ensure timely completion of remedial actions at site. The operational staff maintain a full back up of essential equipment and are fully trained in loading/unloading procedures and spill procedures among others.

4.9 Whites Recycling Ltd understands there is an expectation from the EA that we have sufficient contingency for storage given unforeseen events can occur plus the weather can result in us diverting from land spreading activity to storage. The materials will therefore be stored until ground conditions and cropping circumstances allow spreading to land. It is our intention, once ground conditions are suitable in the spring to apply the materials to growing crops, as the need for nutrients is recognized. Based on 25+ years' experience in the wastes to land business, we would not anticipate to store for longer than 12 months, but we would equally not expect that a time limit would be imposed as this could lead to undue pressure on managing the Lagoons.

4.10 All waste unloading, loading, circulation and storage will be carried out by trained authorised personnel.

4.11 Monitoring the site is of utmost importance, regardless of activity at site a TCM (or nominated competent person) will attended and audit the site fortnightly which will include but are not limited to the following checks.

Site Audits will include but are not limited to the following checks.	
Clear of obstructions	Evidence of damage, movement or weather erosion
Access integrity of road surfaces	Freeboard
Liner integrity and condition	Leak Detection
Gate locked/ secured – Fencing integrity	Odour Assessment
Warning signage displayed/ legible	Lagoons colour
Cover intact where applicable	Rodent Control

4.12 All operational staff will be responsible for reporting any issues at site immediately to the TCM (or nominated competent person).

4.13 All Audits will be categorised for input into the IMS (Integrated Management System) as follows;

- **GREEN** – No event: No further action required.
- **YELLOW** - Minor event: quick fix possible, locally resolved. Not time sensitive.
- **AMBER** - Medium event: possibility to cause brief disruption to service, Management intervention required.
- **RED** - Major event: potential to cause significant disruption to service significant disruption to service. Management intervention required.

4.14 Each non-conformance category has a given deadline (based on severity) for rectification, although the majority of actions in any category will be completed within a few weeks. The fencing, gate and wire work if found defective will be temporarily repaired immediately to keep the site secure.

4.15 The IMS will record any actions taken to rectify the issue and any necessary actions or review are recorded onto the system and the person reporting the incident is notified. These reports are reviewed at national, regional and local levels, via operational, management and health and safety meetings.

4.16 The Compliance Manager will investigate the performance failure event and, if necessary, will report the event to the Environment Agency. Once the issue has been resolved, the corrective action taken will be entered onto the system and the issue will be closed.

4.17 Whites Recycling Ltd have a countrywide operations team who as well as responding to issues raised by auditing also conduct an annual maintenance check of the Lagoons

Maintenance check will include;

- Rodent Control - Checks should be made to see that burrowing animals such as Rattus norvegicus, have not damaged/ undermined the lagoon or liner. Rodent control is achieved through baiting and traps. Any damage found to be caused by rodent activity will be repaired.
- The liner is visually checked for UV deterioration and physical integrity, which includes the welding joints.
- Seepage Control – leak detection system will monitor possible seepage. When seepage is suspected operations on site will desist and measure taken.
- Erosion control – erosion can take place on either the inner sloped side due to wave action, or the outer sloped side due to surface runoff. Wave action erosion is controlled by the use of liner. Surface runoff around the perimeter of the lagoon should be controlled to prevent exterior erosion. This can be done by proper grading, butyl liners, regular monitoring followed by remedial action and diverting rainwater runoff away from lagoons bank.
- Maintenance of Pipework - all pipework should be kept clear and well maintained.
- Fence and Gate Repairs - the fence and gate must be kept in good condition to help prevent trespassing by unauthorized personnel and to keep out livestock. The gate is locked.
- Vegetation Control - the grass around the lagoons should be cut regularly to discourage burrowing pests and keep pipework relevantly exposed for inspection.

4.18 Should during an audit or annual maintenance check, significant damage be found to the integrity of the Lagoons further remedial action will be taken. Eg; liner, loads into the Lagoons will be halted until our liner sub-contractor can conduct the professional repairs that are required.

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IMAGE 6

Operations - Annual Maintenance Check

WHITES RECYCLING LTD
ANNUAL LAGOON MAINTENANCE SHEET

LAGOON – Name Location	
VALVES & PIPEWORK *Screw tap check *Inlet pipes in working order	
COVER, LINER & LEAK DETECTION *Age of Liner *Integrity and condition; Cover *Integrity and condition; Liner *Leak detection in working order *UV damage to liner * Liner welding joints	
SECURITY & FENCING Secure, safe *Gate locked/ secured *Perimeter fencing and gate secure	
TRACKWAY *Access integrity of road surfaces acceptable	
SAFTEY *Warning signage displayed/ legible *Safety tyres secure	
VEGETATION & PEST CONTROL *Any evidence of damage, movement or weather erosion *Maintenance of grass banks acceptable no over growth *Rodent control in place	
OVERALL CONDITION & REMEDIAL ACTION(S) REQUIRED IF ANY (PTO)	
OPERATIVES NAME	.....
OPERATIVES SIGNATURE & DATE	..... / /
MANAGER SIGNATURE & DATE	..... / /

Whites Recycling Ltd – The Mine Site, South Witham, Grantham, Lincolnshire, NG33 5QN Tel; 01572767177 Page 1 of 2

Operations - Annual Maintenance Check

WHITES RECYCLING LTD
RECORD OF INVESTIGATION AND REMEDIATION
Connected to Annual Lagoon Maintenance

LAGOON – Name Location Maintenance Date & Operative(s)	
Issues Identified	
Investigation Findings	
Remediation/ Repairs	SUBCONTRACTOR; WRL;
MANAGER SIGNATURE & DATE	..... / /
COMPLIANCE MANAGER SIGNATURE & DATE	..... / /

Whites Recycling Ltd – The Mine Site, South Witham, Grantham, Lincolnshire, NG33 5QN Tel; 01572767177 Page 2 of 2

5. Emergency Plans

5.1.1 This section considers the potential for accidents (or incidents) which would result in the loss of substances and could have an unacceptable short term impact on the local community/ environment.

5.1.2 The emergency plan is to be followed and read in conjunction with our **Emergency Spill Procedure document** WRL/ESP/STRHLL Appendix 1.2 of the EMS.

5.1.3 Should an emergency occur outside of normal operating hours, a nominated representative (FLM) will be on site within two hours of notification. The nominated representative will contact his operatives and managers, as appropriate, via mobile telephone.

5.1.4 The nominated representative will identify whether the emergency services are required to attend a site emergency and will contact them directly if necessary and where applicable the EA will be contacted.

5.1.5 Whites Recycling Ltd has a procedure for dealing with a major pollution incident. (See **IMAGE 7)**

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IMAGE 7

PROCEDURE FOR MAJOR POLLUTION	INTERNAL ESCALATION & COMMUNICATION
• Immediately inform others of the incident • Follow Site emergency procedures if safe to do so • Contain pollution where possible if safe to do so • Isolate and protect receptors where safe to do so • Phone the Emergency Services if applicable • Contact relevant regulating authorities (EA/NRW) • Follow internal escalation & communication ***Note:*** *A Director will take responsibility for the following:* *Any media approach.* *Any approach by Regulatory bodies/local community* *Legal advice if required.*	**EMERGENCY CALL RECEIVED BY THE DUTY MANAGER** **The Emergency will need to be escalated for advice/decision:** ↓ **OPERATIONS MANAGER** **The Emergency will need to be escalated for advice/decision:** ↓ **GENERAL MANAGER – White's Recycling Ltd** **and/or** **MANAGING DIRECTOR – White's Recycling Ltd** ↓ **Notify MD/DIRECTORS – Regen Holdings Ltd** ↓ **NOTIFY CEO – Regen Holdings Ltd**

5.2 Experience with Contingency/Emergency Situations

5.2.1 Whites Recycling Ltd has a policy of continuous review of emergency and contingency procedures and this has allowed experience from incidents to be used to improve procedures across operations.

5.2.2 Whites Recycling Ltd has experience in operating a significant number of waste facilities (which allows us to divert loads in the event of an issue at site). Whites Recycling Ltd is able to offer the benefit of experience in and knowledge of logistical planning to ensure that service continues effectively with minimal disruption.

5.2.3 The Contingency measures and Emergency Plan/Disaster Escalation Plan will be reviewed following any incident where they have had to be followed. They will be updated as necessary with any lessons learned.

6. Contingency

6.1 If a structural fault is found with the Lagoons (containment, liner or walls) the following action will be considered while remedial action takes place;

- Loads to site halted
- Temporarily divert waste to other appropriately licenced waste facilities
- Lagoons emptied for inspection
- If necessary professional advice will be sort

6.1.2 In the event of a serious incident requiring the complete shutdown of the Lagoons for an extended period, contingent treatment/storage points will be used to divert waste that would otherwise have been delivered to the site.

6.2 Once the improvements identified by the TCM (or nominated competent person) have been completed, the manager will commission a further assessment to ensure that the improvements have addressed the issue raised. If the issue persists then the manager will repeat the request for improvements and subsequent assessments until conditions are satisfied.

6.3 If operational failings are identified, the retraining of employees will take place to ensure that all employees operate to the required standards. If the failings are identified as part of the operating techniques then the problem will be raised as part of the review of control measures. If the failing was found to be integrity based, the use of the Lagoons will be halted until structural work has been complete.

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MATERIAL SPECIFICATION
Exceliner HD

EXCELINER HD is a high density polyethylene single ply sheeting producted by extruding high quality resins to exacting physical properties to provide a Geomembrane with excellent mechanical properties, environmental stress crack resistance and chemical resistance. The resin is compounded with proper quantities of carbon black, typically 2.25% to provide extended life expectancy with superior ultra violet radiation resistance. EXCELINER HD is ideal for projects where chemical resistance is an important requirement. Example projects are landfill lining and waste lagoons.

Tested Property	Test Method	Minimum Values (1)				
Thickness (mm) (2)	ASTM D 5199	**0.75**	**1.00**	**1.5**	**2.00**	**2.5**
Density g/cm³ (max)	ASTM D 792/1505A	0.94	0.94	0.94	0.94	0.94
Tensile Properties (each direction)	ASTM D 6693, Type IV, Speed: 50 mm/min					
Strength at Break (N/mm)		20	27	40	53	67
Strength at Yield (N/mm)		11	15	22	29	37
Elongation at Break, %	G.L. (50 mm)	700	700	700	700	700
Elongation at Yield, %	G.L. (33 mm)	12	12	12	12	12
Tear Resistance (N)	ASTM D 1004	93	125	187	249	311
Puncture Resistance (N)	ASTM D 4833	240	320	480	640	800
Carbon Black Content %	ASTM D 1603	2.0	2.0	2.0	2.0	2.0
Carbon Black Dispersion	ASTM D 5596	(3)	(3)	(3)	(3)	(3)
Environmental Stress Crack	ASTM D 5397	300	300	300	300	300
Resistance, hr	Appendix					
Reference Property	**Test Method**	**Nominal Values**				
Melt Flow Index g/10 minutes	ASTM D 1238. Cond. 190°C/2.16kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dimensional Stability (each direction) %	ASTM D 1204, 100°C, 1 hour	+/-2	+/-2	+/-2	+/-2	+/-2
Oxidative Induction Time	ASTM D 3895, 200°C	100	100	100	100	100
Oxidative induction time, minutes (Standard OIT)	ASTM D 3895, 200°C, pure O_2, 1 atm	100	100	100	100	100
Oxidative induction time, minutes (HP OIT)	ASTM D 5885, 150°C, pure O_2, 500 psig	400	400	400	400	400
Oven Aging, 85ºC, 90 days/ Standard OIT, % retained	ASTM D 5721 ASTM D 3895	55	55	55	55	55
UV exposure 1600 hrs/HP-OIT % retained	GRI-GM 11 ASTM D 5885	50	50	50	50	50

(1) Value at 95% confidence interval
(2) Average value of 10 specimens taken across roll width. No value to be less than 90% of average value.
(3) Dispersion only applies to near spherical agglomerates. 9 of 10 views shall be Category 1 or 2. No more than 1 view from Category 3.
(4) Value based on % retained regardless of the HP-OIT value of the unexposed sample.

Certificate No. 7928

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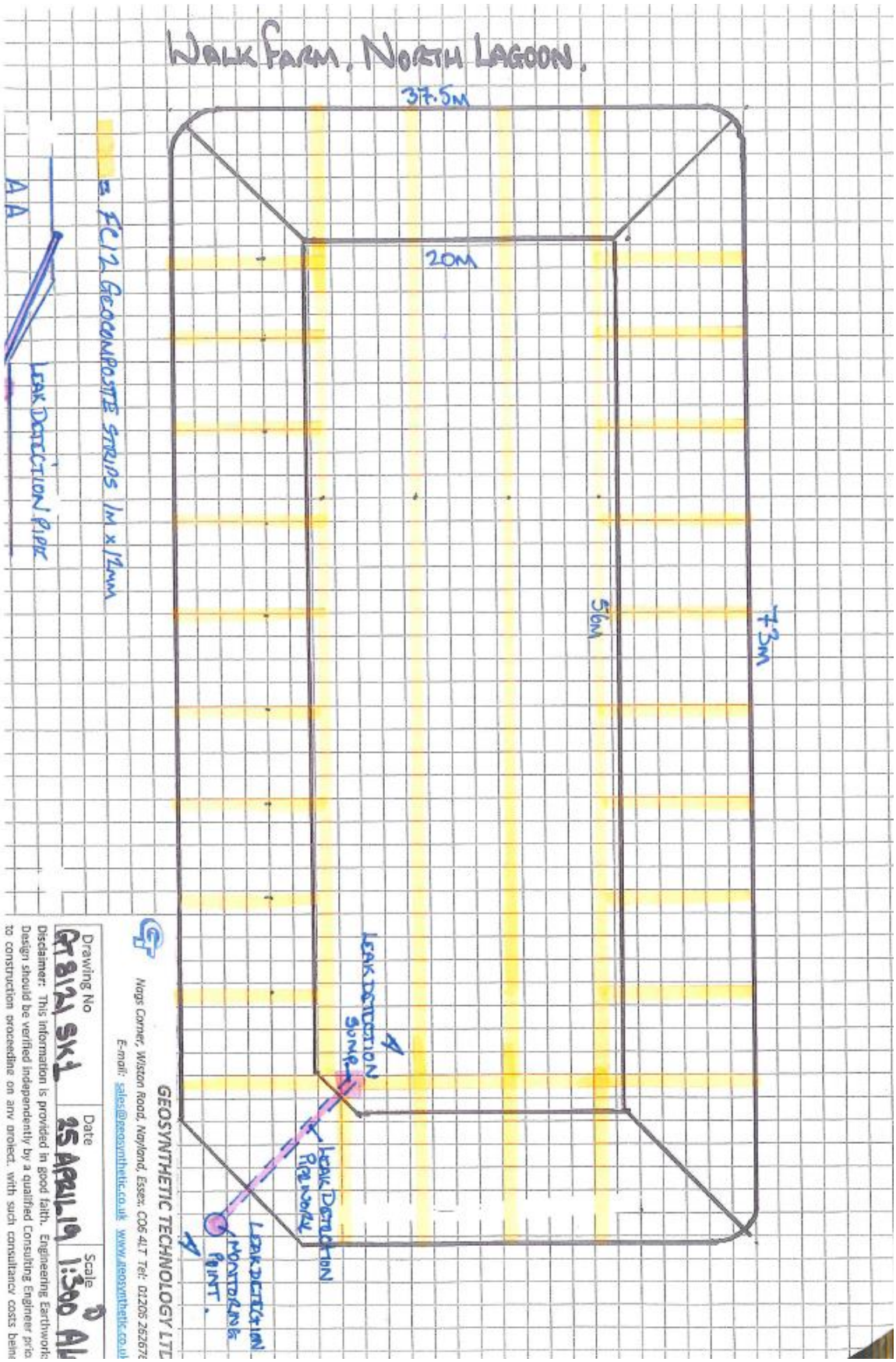
NON-WOVEN GEOTEXTILE SPECIFICATIONS

Mechanical Properties	Test	Units	14	17	25	31	40UV	46	50	55
Tensile Strength - MD	EN ISO 10319	Kn/M	8.0	10.3	14.0	17.8	22.0	27.0	30.0	33.5
Tensile Strength – XD	EN ISO 10319	Kn/M	8.0	10.3	14.0	17.8	22.0	27.0	30.0	33.5
Elongation at Break - MD	EN ISO 10319	%	40.0	45.0	45.0	50.0	50.0	55.0	55.0	60.0
Elongation at Break – XD	EN ISO 10319	%	55.0	55.0	55.0	55.0	55.0	60.0	60.0	60.0
CBR Puncture Resistance	EN ISO 12236	N	1400	1700	2500	3100	4000	4600	5000	5500
Dynamic Cone Drop	EN ISO 13433	mm	24.0	22.0	18.0	13.0	12.0	10.0	9.0	8.0
Pyramid Puncture	EN ISO 14574	N	85.0	120.0	200.0	240.0	300.0	385.0	400.0	450.0
Hydraulic Properties	**Test**	**Units**	**14**	**17**	**25**	**31**	**40UV**	**46**	**50**	**55**
Permability	EN ISO 11058	m/s	$110x10^3$	$100x10^3$	$90x10^3$	$80x10^3$	$75x10^3$	$65x10^3$	$60x10^3$	$50x10^3$
Waterflow Normal to the Plane	EN ISO 11058	l/m^2s	110	100	90	80	75	65	60	50
Waterflow in the Plane 20 kPa	EN ISO 12958	m^2/s	1x10-7	1x10-7	1x10-6	2x10-6	3x10-6	5x10-6	6x10-6	6x10-6
Characteristic Opening Size	EN ISO 12956	um	120.0	110.0	80.0	70.0	70.0	70.0	70	70
Physical Properties	**Test**	**Units**	**14**	**17**	**25**	**31**	**40UV**	**46**	**50**	**55**
Thickness Under 2 kPa	EN ISO 9863-1	mm	1.2	1.5	1.8	2.2	2.4	2.8	3.0	3.2
Weight	EN ISO 9864	g/m^2	120.0	150.0	200.0	250.0	300.0	370.0	400.0	450.0
Roll Width		cm	525	525	500	525	525	525	525	525
Roll Length		m	100	100	100	100	100	100 / 50	50	75
Full Load Volume +/- 10%		m^2	57,750	44,625	34,125	27,200	22,500	18,000	17,325	14,700
Roll Diameter +/- 10%		cm	35	38	45	45	54	60 / 42	44	58

Polypropylene is the main polymer used in the production of these materials.
It is the responsibility of all potential specifiers/end users to satisfy themselves that the above values are current.
We cannot accept responsibility for the performance of these products due to the conditions of use being outside our control.

Certificate No. 7928

Registered Office: Nags Corner, Wiston Road, Nayland, Colchester, CO6 4LT
Company Registration No: 2522950


WALK FARM, NORTH LAGOON.
37.5M
20M
56M
73M
= FC12 GEOCOMPOSITE STRIPS 1M x 12MM
A A
LEAK DETECTION PIPE
LEAK DETECTION SUMP
LEAK DETECTION PIPEWORK
LEAK DETECTION MONITORING POINT.
GEOSYNTHETIC TECHNOLOGY LTD
Nags Corner, Wiston Road, Nayland, Essex. CO6 4LT Tel: 01206 262678
E-mail: sales@geosynthetic.co.uk www.geosynthetic.co.uk
Drawing No
GT8121 SK1
Date
25 APRIL 19
Scale
1:300 A
Disclaimer: This information is provided in good faith. Engineering Earthwork
Design should be verified independently by a qualified Consulting Engineer prio
to construction proceeding on any project, with such consultancy costs being

DATA SHEET

GEOfabrics®

FC12 Cuspate Geocomposite

1. DESCRIPTION 12mm HDPE cuspated drainage board with a geotextile filter/separator bonded to a single side.

2. APPLICATIONS GEOfabrics' FC12 geocomposite has been designed to provide a passive venting system for gasses and liquids.

3. FEATURES

- Optimised for maximum strength and performance
- UV stabilised
- High crush resistance
- Excellent flow rate

	Test	Unit	MEAN VALUES		
4. MECHANICAL PROPERTIES - Geocomposite					
Compressive strength	EN ISO 25619-2	kPa	500		
Tensile strength (MD/CMD)	EN ISO 10319	kN/m	12		
Static puncture (CBR)	EN ISO 12236	kN	2.4		
5. HYDRAULIC PROPERTIES - Geotextile					
Water permeability v_{H50}	EN ISO 11058	l/(m²·s)	100		
Apparent opening size	EN ISO 12956	µm	80		
6. HYDRAULIC PROPERTIES - Geocomposite					
Water flow capacity in the plane (rigid/rigid)	EN ISO 12958	l/(m·s)	(i=1)	(i=0.5)	(i=0.1)
@ 20kPa			7.0	4.5	2.0
@ 100kPa			7.0	4.5	2.0
@ 200kPa			7.0	4.5	2.0
7. PHYSICAL PROPERTIES					
Thickness @ 2kPa	EN ISO 9863-1	mm	13		
Standard colour - Cuspate			Black		
Polymer - Cuspate			HDPE		
Polymer - Textile			PP		

Notes:

a) Mean values indicate the arithmetic mean derived from the samples taken for any one test as defined in the standard – usually an overall mean of five samples. Mean values are subject to tolerances based on 95% confidence limits as published on the product CE declaration of performance.

8. TESTING All materials are tested every 6000m² in an UKAS accredited ISO 17025 laboratory to all mechanical properties prior to release.

9. STORAGE The geocomposites are supplied in packaging designed to protect the product from damage during handling and storage and degradation as a result of UV exposure. The product should be kept in appropriate packaging until such time that it is required for installation. The product is clearly and indelibly marked with the product name along the edge of the roll at regular intervals no greater than 5m. The packaging is labelled clearly to identify the product supplied in accordance with EN ISO 10320: Geotextile and Geotextile related products – Identification on site. Use slings where provided. Product weights are given on roll tickets. Use equipment appropriate to weight and dimension. Store and handle in accordance with good occupational hygiene and safety practice.

	Unit	VALUES
10. DIMENSIONS		
Standard roll length	m	50
Standard roll width	m	1
Approximate roll weight	Kg	60

Product Data Sheet
GEOfabrics FC12
EDS080-2018-01-09

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Source	Harm	Probability	Consequence unmanaged	Justification	Magnitude	Risk Management	Overall Risk
Spillages caused when Filling/ Emptying Lagoon	Inhalation of odour emissions Spillages Harm to the soil	MED	Nuisance, loss of amenity Deterioration in groundwater quality	Site Loading/discharge procedures adherence. Drivers given full training. Monitoring of odours and weather conditions and wind direction. Wind break. Site procedures in place.	MED	Care to be taken when wind direction is towards receptors. Prevailing wind direction is South Westerly. Nearest receptor is 578 metres away. Sealed umbilical pipework that feed in under the surface of the Lagoons. Any spillage cleaned up following our spill procedure. Spill kit on site. Comprehensive waste acceptance criteria. Site monitored, maintained and audited on a fortnightly basis. Back up of essential equipment available. 750mm Freeboard*(EMS 9.5).	LOW
Spillages caused by Over filling	Inhalation of odour emissions Spillages Harm to the soil	LOW	Nuisance, loss of amenity Deterioration in groundwater quality	Site Loading/discharge procedures adherence. Drivers given full training. Site procedures in place. 750mm free board maintained at all times.	MED	Full comprehensive management from head office. Loads planned in advance. Vehicles fitted with trackers so movements can be monitored. Drivers have hand held devices to record load volumes and quantities at time of deliver which is fed through to head office for a live report on all loads. All waste volumes in Lagoons recorded, monitored and reviewed at weekly management meetings. Operations at the Lagoons planned in advance. Site monitored, maintained and audited on a fortnightly basis.	LOW
Failure of Lagoons walls	Nutrient within the waste Spillages Harm to the soil	LOW	Nuisance, loss of amenity Deterioration in groundwater quality	Strong, secure banks. Impermeable ground conditions. Lagoons are lined. Site procedures in place.	MED	Annual thorough inspection of Lagoons walls. Site monitored, maintained and audited on a fortnightly basis. Dedicated operational team for the area. Back up of essential equipment available. Pest control on site. Spill procedure and Emergency plan.	LOW

DRAFT