Environmental Management System

Upland Farm Lagoon

Permit Reference: EPR/LB3504GC/A001

Working Plan

November 2022

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Appendices

1.0 Site Information

Name of installation:	Upland Farm

Operator:	M. Gaze & Co Ltd.

WML/Permit Reference:	EPR/LB3504GC/A001
Date of Issue:	TBC

Location of site:	Upland Farm, Rectory Road, Thurlton, Norfolk, NR34 0HH

National Grid Reference:	TM 40425 93755 (640425, 293755)

Location plan attached:	Yes – Appendix 1

Site reference:	Upland Farm lagoon
Permitted activities:	R13

Description of activities:	Temporary storage of biodegradable liquid effluent produced at Crossways Farm depackaging plant

Document revision number:	1

Date:	30th November 2022

2.0 Company Information

Company:	M Gaze and Company Ltd.
Company registration No:	00951688
Registered address:	Crossways Farm, Thurlton, Norwich, Norfolk, NR14 6NZ
Telephone:	01508 548543
Fax:	01508 548920
E-mail:	mgaze@mgaze.co.uk
Site contact (s):	Edmund Gaze (Director) Mitchell Gaze (Director)
Site Operators:	Mitchell Gaze
Technical standards:	WAMITAB

3.0 Regulatory Details

Environment Agency Office:	2 Gilders Way, Norwich NR3 1UB
Tel:	08708 506506
E-mail:	enquiries@environment-agency.gov.uk

4.0 Emergency Contact Information

Norwich City Council:	0344 980 3333
Emergency Services:	999
Norfolk Police:	101
Norfolk Fire:	01603 810351
Norfolk Ambulance:	0845 6013733
Nearest Hospital:	Norfolk and Norwich University Hospital, Colney Lane, Norwich, Norfolk, NR4 7UY. Tel: 01603 286 286

5.0 Summary of Bespoke Permit Application

5.1 M Gaze and Company Ltd. operate a controlled waste packaging recycling and composting facility at their Crossways Farm site. The facility is managed according to Environmental Permit NP 3994NA/003**.**

5.2 Liquid effluent (LoW Code 19 02 03) produced from the Crossways Farm facility is currently applied to land at Upland Farm using deployments agreed under mobile plant permit GP3992SC/V004.

5.3 Implementation of the Farming Rules for Water (2018) and Environment Agency landspreading guidance has recently limited the spreading of M Gaze and Co liquid waste to land during the winter months and when there are no crop requirement for the nutrients it contains. Storage on the Crossways Farm facility is constrained by other permitted activities.

5.4 M Gaze and Co. Ltd are therefore tasked with providing sufficient and suitable storage for their liquid waste during non-spreading periods. M Gaze and Co Ltd therefore propose to temporarily store liquid waste in an appropriately designed and constructed HDPE lined earth banked slurry store located at Upland Farm.

5.5 Planning permission for the lagoon was granted on 12th October 2017 by South Norfolk Council and construction was completed in 2018. The lagoon has since been used for the storage of PAS110 anaerobic digestate and more recently of up to 1,150m^3 under agreed deployments.

5.6 The storage facility will be operated according to the principles and guidance set out in EPR Standard Rule Set No 17, 2010 for the Storage of Wastes to be Used in Land Treatment. Whilst SR No 17, 2010 includes a provision to store Waste Code 19 02 03, the descriptive element of the LoW code, i.e. '*premixed wastes composed only of non-hazardous wastes'* is not included in Table 2.3 of SR No 17, 2010. This necessitates a bespoke permit application to regularise the slight disparity in the 19 02 03 LoW Code descriptions**.**

5.7 This document provides a working plan which M Gaze and Company Ltd. will implement to demonstrate compliance with the proposed bespoke permit. It includes the procedures to be implemented with due regard to Environment Agency Guidance: 'Getting the Basics Right' (April 2008 as amended) together with other relevant standards, legislation and best practice.

6.0 Environmental Baseline

Site Location

6.1 Upland Farm is a 160 ha arable enterprise located 5.5km south east of Loddon and is centred over OS National Grid Reference (NGR) TM 40260 93475, lying to the north and south of Rectory Road.

6.2 The lagoon is located at OS NGR TM 40425 93755 The nearest villages are located 1.75 km southeast of the site at Gillingham and 2.8 km to the southwest at Geldeston. A site location plan is shown at Appendix 1. The lagoon site lies in a rural context with 8 residential receptors

within 1km located between 300-975m of the boundary of the lagoon. There are no dwellings within 200m and a single farm, including outdoor pigs, is situated within 500m some 375m to the east (Receptor 2).

6.3 Access to the lagoon is proposed off Rectory Lane using an existing concrete access track into Upland Farm and thereafter along an internal farm road The lagoon site is accessed via a track and ramp to the northeast of the farm buildings

Climate and relief

6.4 The area has a moderately high mean annual rainfall of 620mm/yr. The average Accumulated Temperature Above 0°C (ATO) between January and June is 1,397 day°C, which indicates a moderately long and mild growing season. The land is typically at field capacity, (when the land is wet and field drains would be expected to flow), for 122 days (i.e. 4 months) in a normal year. The relief of the land is gently undulating with very slight slopes of less than 1° with a slight fall from 31-30m AOD North-South..

5.5 Prior to construction, the site sloped very gently with a fall of approximately 1.5m east to west across its 84m length and <1m north to south along its 72m width. There is a ditch present to the south and a 10m standoff will be maintained between this and the lagoon and which will be occupied by open ground and the southern embankment.

Geology

6.6 Solid geology has been mapped by the British Geological Survey (BGS, 1:50,000 maps), as the Crag Rock Member. This is sedimentary bedrock formed between 0-5 million years ago in the Quaternary and Neogene Periods. The BGS maps shows the area North of the main farm buildings, including the 'lagoon site is overlain with superficial Diamicton deposits of the Lowestoft Formation, deposited around 2 million years ago during the Quaternary Period. The area immediately south of Upland Farm includes localised inclusions of sand mapped as the Happisburgh Glaciogenic sand Formation and subaerial deposits of Head Clay, Silt, Sand And Gravel.

Soils

6.7 Soils in this geographical area have been mapped (1:250,000) and described by the Soil Survey of England and Wales (Sheet 4 Midland and Western England) as representative of the Beccles Soil Association. These soils are predominantly heavy textured and comprise of seasonally waterlogged fine loamy soils overlying clayey soils. The Beccles Association overs 1,761km^2, over North and central Lincoln shire, and throughout the watershed of Norfolk and Suffolk. Additional concentrations are found in areas of Leicestershire and in isolated areas on the dip slopes north and south of Lincoln.

6.8 Ground investigations completed for the lagoon design confirmed the above geology and soils mapping with deep (4-5m) clayey materials suitable for lagoon engineering and with cohesive characteristics suitable for very low permeability construction.

Sensitive receptors

Residential

6.9 A plan of the lagoon site location together with the proximity of potentially sensitive residential and transient receptors within a radius of 1km is shown at Appendix 2.

6.10 The lagoon site lies in a rural context with 8 residential receptors within 1km being located between 300-975m from the boundary of the lagoon. There are no dwellings within 200m and only a single farm, including outdoor pigs, within 500m which comprises an unnamed pig farm 375m to the east (Receptor 2). With the exception of Lodge Farm to the northeast, receptors are concentrated predominantly to the west, south and southeast of the lagoon and are generally downwind of a prevailing west, southwest or southeast wind direction. Receptor's will include permanent residents, worker's and visitor's.

6.11 There are three potential locations for transient receptors within 1km of the lagoon, the closest being a bridleway which runs to the east of the lagoon site. Ravenigham Road lies 550m to the east and Rectory Road some 800m to the south. Receptor's are likely to include bridleway users, pedestrians and vehicle occupants

Ecological

6.12 A rural designation site check report has been prepared using Natural England's MAGIC website and this is shown at Appendix 3. This indicates that that there are no International, National or Locally sensitive designations within 1km of the site.

Groundwater

6.13 A surface water and groundwater sensitivity check has been completed for the site and this is shown at Appendix 4. The site lies in Source Protection Zone 3 (Total Catchment) and there are no SPZ1, SPZ2, boreholes or abstraction points within 500m of the site. The aquifer sensitivity for the site is medium

Surface water and flooding

6.14 A flood risk sensitivity assessment is shown at Appendix 5 and shows that the site and surrounding land lie within flood zone 1, an area with low probability of flooding. The risk that the lagoon might affect flood water or be subject to flood incident is considered low. The site lies in a drinking water protected area for surface water and this will be considered during the operational phases of the lagoon..

6.15 In conclusion, the site is considered compliant with the recommended proximity criteria outlined in SR No17, 2010

7.0 Site Management

Signage and security

7.1 The lagoon has been fenced with 1.80-2.00m high climb proof fencing to all boundaries.

7.2 Signage has been erected at the lagoon site entrance and around the embankment perimeter. This will be updated to include the permit number and contact details once the permit has been issued and will include details of the permit number, operator, opening times, contact and emergency numbers.

7.3 Warning signs have been placed on the site boundary to inform members of the public of the site presence and hazards therein.

7.4 Speed limit signs of 5mph are placed on all interior site roads.

7.5 The access to Upland Farm is controlled by an electronic security gate with combination locks.

Operating hours

7.6 The site will operate to the following hours of work, as agreed by The Local Planning Authority and the Environment Agency:

(a) 07.30hrs to 18.00hrs Monday to Friday.
(b) 07.30hrs to 13.00hrs Saturdays.
(c) No deliveries or spreading proposed outside of these hours or during Bank Holidays

7.7 Outside of these hours, and only under specified Emergency circumstances, the site may be allowed:

(a) Reception only of waste collections from road tankers or trailers in accordance with planning consents and approval from the Environment Agency.

(b) Essential maintenance to be listed and agreed in writing beforehand with the Local Planning Authority and the Environment Agency.

Emergency circumstances for this site are considered to be work carried out by M Gaze and Company Ltd. as emergency domestic or environmental work that has prior agreement of the Environment Agency.

7.8 The site benefits from the supervision of two Directors and WAMITAB qualifications. At least one of these Directors is on site or contactable via telephone at all times and M Gaze and Co have a 24 hour contact number for out of hours emergencies which will be displayed on the lagoon signage. .

Security

7.9 The Upland Farm site has:

(a) Signing in procedures, security checks or supervision of people entering the site during normal working hours.

(b) A locked gate policy for both the lagoon and access to Upland Farm both during and outside normal operating hours to prevent accidental or deliberate trespass.

(c) Weighbridge reporting procedures for all drivers delivering or removing materials to and from the lagoon.

(d) Inspection and maintenance of secure fences around the site perimeter on at least a monthly basis.

(e) Secure storage of site records in both electronic and hard copy format.

Records

7.10 M Gaze and Company Ltd. will maintain records which:

(a) Will be legible.

(b) Will be made as soon as reasonably practicable.

(c) If amended, will be amended in such a way that the original and any subsequent amendments remain legible or are capable of retrieval.

(d) Be retained, unless otherwise agreed by the Agency, for at least 2 years from the date when the records were made, or in the case of the following records until permit surrender: (i) off-site environmental effects; and (ii) matters which affect the condition of land and groundwater.

(e) All records, plans and the management system will be held on site in the offices and weighbridge.

(f) Are prepared with reference to Getting the Basics Right and relevant sector guidance notes.

8.0 Permitted activities

Proposed activities

8.1 The Waste Management Operations shown in Table 1 are proposed under this permit.

Table 1. Upland Farm Lagoon: Proposed Activities	
Description of activities	**Limits of activities**
R13: Storage of wastes pending recovery by land treatment	Secure storage of waste listed in table 2.3 Waste shall not be stored on site for longer than 3 years. The maximum quantity of waste accepted shall not exceed 75,000 tonnes per year. The maximum storage capacity of the site shall not exceed 75,000 cubic metres. Individual wastes must be stored separately.

Permitted Wastes

8.2 Waste shall only be accepted into the Upland Farm lagoon if it is of a type listed in Table 2.

Table 2. Upland Farm Lagoon: Permitted Waste Types (SR No 17, 2010)	
Exclusion - waste containing Hazardous substances (as defined in Environment Permitting Regulations 2010) shall not be accepted	
Waste Code	**Description**
01	**WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING AND PHYSICAL CHEMICAL TREATMENT OF MINERALS**
01 01	**Wastes from mineral excavation**
01 01 02	Chalk only
01 04	**Wastes from physical and chemical processing of non-metalliferous minerals**
01 04 08	Chalk only
02	**WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCES**
01	**Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing**
02 01 01	Soils and sludges from washing and cleaning fruit and vegetables only
02 01 06	Farmyard manure and slurry, horse manure and soiled bedding made from plant tissue only
02 01 99	Milk from agricultural premises only
02 01 99	Untreated wash waters from cleaning fruit and vegetables on farm only
02 01 99	Slurry and manure and soiled bedding from any premises except abattoirs, soiled biodegradable bedding not made from plant tissue, soiled bedding desiccants only
02 02	**Wastes from the preparation and processing of meat, fish and other foods of animal origin**
02 02 01	Untreated wash waters and sludges from washing and cleaning from abattoirs, poultry preparation plants, rendering plants or fish preparation plants only
02 02 01	Wash waters and sludges from secondary food processing or the cook chill sector
02 02 02	Egg shells from hatcheries, processing plants and similar premises

02 02 02	Shellfish shells from which the soft tissue or flesh has been removed
02 02 02	Cooked shellfish shell which is not completely free of flesh
02 02 02	Blood and gut contents from abattoirs, poultry preparation plants, rendering plant or fish preparation plants only
02 02 04	Sludges from on-site effluent treatment plant from abattoirs, poultry preparation plants, rendering plants or fish preparation plants only
02 02 99	Slurry and manure and soiled bedding from abattoirs including soiled biodegradable bedding not made from plant tissue and soiled bedding desiccants only
02 02 99	Wash waters from animal by-product handling and processing plants that meet the waste water treatment requirements in the ABPR
02 02 99	Processed animal by-product material from rendering plants
02 02 99	Catering waste
02 03	**Wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation**
02 03 01	Sludges from washing and cleaning produced during food preparation and processing only
02 03 01	Wash waters and sludges from secondary food processing or the cook chill sector
02 03 01	Sludges from washing, cleaning, peeling, centrifuging and separation
02 03 02	Wastes from preserving agents
02 03 03	Wastes from solvent extraction
02 03 04	Biodegradable materials unsuitable for consumption or processing only
02 03 05	Effluent from the on-site treatment of wash waters from cleaning fruit and vegetables on farm only

Table 2. Upland Farm Lagoon: Permitted Waste Types continued

Waste Code	Description
02 03 05	Sludges from on-site effluent treatment
02 03 99	Soils from cleaning and washing fruit and vegetables only
02 03 99	Untreated wash waters from cleaning fruit and vegetables on farm only
02 03 99	Biodegradable wastes not otherwise specified from the processing of such materials including those from secondary food processing or the cook-chill sector
02 04	**Wastes from sugar processing**
02 04 01	Soil from cleaning and washing beet
02 04 02	Off-specification calcium carbonate
02 04 03	Sludges from on-site effluent treatment
02 04 99	Biodegradable wastes not otherwise specified derived from the processing of sugar
02 05	**Wastes from the dairy products industry**
02 05 01	Biodegradable materials unsuitable for consumption or processing
02 05 02	Sludges from on-site effluent treatment
02 05 99	Biodegradable wastes not otherwise specified derived from the processing of dairy products
02 06	**Wastes from the baking and confectionery industry**
02 06 01	Biodegradable materials unsuitable for consumption or processing
02 06 02	Wastes from preserving agents
02 06 03	Sludges from on-site effluent treatment
02 06 99	Biodegradable wastes not otherwise specified from the processing of materials used in baking and confectionary
02 07	**Wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)**
02 07 01	Wastes from washing, cleaning and mechanical reduction of raw materials
02 07 02	Wastes from spirits distillation
02 07 03	Wastes from chemical treatment
02 07 04	Materials unsuitable for consumption or processing
02 07 05	Sludges from on-site effluent treatment
02 07 99	Biodegradable wastes not otherwise specified from the processing of the raw materials used in the production of such beverages only

03	**WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARDBOARD**
03 03	**Wastes from pulp, paper and cardboard production and processing**
03 03 05	De-inked paper sludge and de-inked paper pulp from paper recycling only
03 03 09	Lime mud waste
03 03 10	Fibre rejects and sludges including mineral based fillers and coatings only
03 03 11	Sludges from on-site effluent treatment other than those mentioned in 03 03 10
04	**WASTES FROM THE LEATHER, FUR AND TEXTILE INDUSTRIES**
04 01	**Wastes from the leather and fur industry**
04 01 07	Sludges from on-site effluent treatment free of chromium
04 02	**Wastes from the textile industry**
04 02 10	Organic matter from natural products only
04 02 15	Biodegradable wastes from finishing other than those containing organic solvents only
04 02 20	Sludges from on-site effluent treatment other than those mentioned in 04 02 19
05	**WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL**
05 01	**Wastes from petroleum refining**
05 01 10	Activated sludges from on-site oil refinery biological effluent treatment plants other than those mentioned in 05 01 09
07	**WASTES FROM ORGANIC CHEMICAL PROCESSES**
07 07	**Wastes from the manufacture, formulation, supply and use of fine chemicals and chemical products not otherwise specified**
07 07 12	Sludges from on-site biological effluent treatment plant at chemical manufacturing sites other than those mentioned in 07 07 11 only

Table 2. Upland Farm Lagoon: Permitted Waste Types continued

Waste Code	Description
10	**WASTE FROM THERMAL PROCESSES**
10 01	**Waste from power stations and other combustion plants**
10 01 01	Poultry litter ash, paper sludge ash and ash from wood chip boilers only
10 01 01	Meat and bone meal ash
10 01 05	Flue gas gypsum (solid) only
10 01 07	Flue gas gypsum (sludge) only
10 13	**Wastes from manufacture of cement, lime and plaster and articles and products made from them**
10 13 04	Wastes from calcinations and hydration of lime
10 13 13	Cement kiln dusts and by-pass dust other than those mentioned in 10 13 12 only
10 13 99	Gypsum only
16	**WASTES NOT OTHERWISE SPECIFIED IN THE LIST**
16 03	**Off-specification batches and unused products**
16 03 06	Out of date and out of specification beverages only
16 10	**Aqueous liquid wastes destined for off-site treatment**
16 10 02	Wash waters from animal by-product intermediate plants that meet the waste water treatment requirements in the ABPR
17 05	**Soils (excluding excavated soils from contaminated sites), stones and dredging's**
17 05 04	Topsoil, peat, subsoil and stones only other than those mentioned in 170503
17 05 06	Dredging spoil other than those mentioned in 17 05 05
19	**WASTE FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 01	**Wastes from incineration and pyrolysis of waste**
19 01 12	Ash from the incineration of pig and poultry carcasses at premises used for agriculture only
19 01 18	Biochar manufactured from untreated wood, bark, and cork from the furniture manufacturing and wood processing industries (including untreated sawdust, wood shavings, and wood cuttings, except from particle board).

19 01 18	Biochar manufactured from untreated wood and plant matter from agriculture, horticulture and forestry, or from vegetable waste from food preparation and
19 02	**Wastes from physico/chemical treatments of waste (including dechromatation, decyanidation, neutralisation)**
19 02 03	**cement kiln dust and by-pass dust from cement kilns conditioned with water only**
19 02 03	Cement kiln dust and by-pass dust from cement kilns conditioned with water only
19 02 03	Premixed wastes not including hazardous substances
19 05	**Wastes from the aerobic treatment of waste**
19 05 99	Compost derived from non-source segregated biodegradable waste
19 05 99	Liquor and digestate from aerobic treatment of source segregated biodegradable waste only
19 06	**Wastes from anaerobic treatment of waste**
19 06 03	Liquor from anaerobic treatment of non-source segregated biodegradable waste
19 06 04	Whole digestate and fibre digestate from anaerobic treatment of non-source segregated biodegradable waste
19 06 05	Liquor from anaerobic treatment of source segregated biodegradable waste
19 06 06	Whole digestate and fibre digestate from anaerobic treatment of source segregated biodegradable waste
19 06 06	Whole digestate and fibre digestate from anaerobic treatment of source segregated biodegradable waste and sludges from treatment of urban
19 08	**Waste from waste water treatment plants**
19 08 02	Washed sewage grit (waste from desanding) only
19 08 05	Treated sludges from treatment of urban waste water

Table 2. Upland Farm Lagoon: Permitted Waste Types continued	
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)**
Waste Code	**Description**
19 09	**Wastes from the preparation of water intended for human consumption or water for industrial use**
19 09 02	Sludges from water clarification
19 12	**Wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise**
19 12 12	Soil substitutes other than that containing dangerous substances only
19 12 12	Recycled gypsum from plasterboard
19 13	**Wastes from soil and groundwater remediation**
19 13 04	Sludges from soil remediation other than those mentioned in 19 13 03
20	**MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS**
20 02	**Garden and park wastes (including cemetery waste)**
20 02 01	Seaweed only
20 02 02	Soils and stones

Waste acceptance

8.3 Waste will only be accepted if:

(a) It conforms to the description in the documentation supplied by the producer and holder and is compliant with Table 2.

(b) It is accompanied by a completed and signed consignment note, individual waste transfer note or season ticket.

8.4 Waste shall not be accepted if:

(a) Deliveries are not accompanied by appropriate documentation or are not described within the terms of the permit. They will be rejected on arrival at the site.

(b) Loads inspected on arrival at the weighbridge or during unloading are found to differ significantly from the documentation provided or the permitted LoW Codes.

(c) It consists solely or mainly of inorganic dusts or powders.

(d) Is likely to generate significant odour.

8.5 If waste does not meet the specified description in the consignment paperwork or if contraries are found:

(a) It will be immediately quarantined in a designated area and removed from site within 48 hours to an appropriately licensed facility or returned to the supplier. The shift manager will investigate the nature and cause of the presence of contraries and a corrective action report initiated as per M Gaze and Company Ltd.'s Environmental Management System. If necessary, the Environment Agency will be notified of any suspect loads or activities.

9.0 Lagoon Design and Construction

Design and construction

9.1 The lagoon was constructed according to EA guidance, the SSAFOS Regulations and CIRIA Report C759 Livestock manure and silage storage infrastructure for agriculture. Construction was completed under the supervision of an appropriately qualified structural and civil engineer. A copy of the lagoon layout and cross sections is shown at Appendix 6 and details and details of embankment, liner and leakage detection system is shown at Appendix 7. A structural engineering validation report is included at Appendix 8.

9.2 The lagoon has a capacity of 10,240m^3 excluding freeboard and is an earth banked construction. Primary engineering containment is provided by 2 no HDPE liners, with welded joints and a separating drainage layer, this type of lining is commonly used in similar permitted lagoons elsewhere in the UK. The liner has a 25 year manufacturer's guarantee and is highly resistance to UV and/or temperature fluctuations. A summary of the lagoon dimensions and capacity are shown in Table 2.

9.3 Secondary containment is provided by the engineering compaction achieved in the embankments and base during construction, which was designed to provide a minimum of 10^{-9} permeability.

Lagoon Capacity

9.4 The design has provided a suitable size to allow flexibility for recycling and/or irrigation, particularly to avoid the need to spread when crop, weather or ground conditions are unsuitable and to provide sufficient storage for spring or summer application to adjacent arable land.

9.5 The lagoon has sufficient capacity to accommodate 8,500m^3 of effluent at any one time together with a provision for approximately 1,500m^3 of rainfall.

9.6 The net capacity in Table 1 should be considered as a minimum since no allowance has been made for evaporation. Effluent, particularly containing rainfall, will be subject to summer evaporation depending on prevailing weather conditions. The result being that the effective volume of the lagoon will be slightly greater than the net capacity shown.

Safety

9.7 The lagoon site has been fenced and has access gates with combination locks and signage as per 7.1-7.5

9.8 Life rings and climbing points (15m intervals) have been provided around the lagoon sides consisting of rope ladders with tyres fitted to ropes/chains anchored to a steel pin assembly on the bank top.

9.9 All activities working in and around the lagoon will be accompanied by Risk Assessment and Method Statements (RAMS) to ensure the Health and Safety of operatives.

Table 2. Upland Farm Lagoon: Dimensions and Capacities

Capacity and Dimensions	Lagoon
Gross capacity (m³)	10,240
Freeboard (m)	0.75
Bank height (m)	2.25
Bank top width (m)	4.00
Dry slope	1:2
Wet slope	1:2.5
Liquid depth (m)	5.00
Depth of dig (m)	3.50
Overall dimensions (m)	84x72
Slurry line (m)	64x51
Base dimensions (m)	39x26
Rainfall – (m³)	1,500
Capacity minus rainfall (m³ approx)	8,500
Volume excavated (m³)	5,896
Embankment volume (m³)	5,883
Access Ramp minimum gradient (if required)	1:10

10.0 System Management

Lagoon filling

10.1 The system will be operated using the guidelines contained in DEFRA's Water Code (1998 as amended) and SSAFOS Regulations. A minimum freeboard of 750mm will be maintained at all times. 8.10

10.2 Deliveries to the lagoon site will be made by registered waste carriers. This documentation will be checked prior to waste acceptance by M Gaze and Co Ltd.

10.3 Any deliveries will first report to the Crossways Farm weighbridge and quantities of waste recorded in tonnes to an accuracy of 0.02 tonnes.

10.4 A weighbridge ticket number will be issued and shall be used in conjunction with the waste transfer note for audit and tracking purposes.

10.5 The weight ticket details will be uploaded onto M Gaze and Co.'s bespoke weighbridge tracking system and this will be used to maintain a record of site storage capacity and current throughput.

10.6 Deliveries into Upland Farm will be made from an established concrete road and access from Rectory Road.

10.7 Effluent will be pumped from delivery tankers that will access from the southwest corner of the site via a ramp onto the western embankment. Liquids will be introduced into the lagoon via pipework located on a double HDPE lined discharge apron extending from bank top and flumed at the base to reduce potential liner damage on the internal wet slope.

10.8 No discharge shall take place until all couplings have been connected and secured. All valves on delivery vehicles are to be checked regularly prior to pumping to ensure locking systems and correctly functioning. The valve from the tanker will be sealed until all coupling are made.

10.9 When the load is discharged the vehicle valve will be closed and connecting pipe to the tanker, when fully drained, will be decoupled

10.10 For external loads, a tare weight and load weight will be taken on the weighbridge and recorded electronically. The driver will be presented with a weight ticket prior to exiting the site.

10.11 Internal transfers from Crossways Farm will be recorded electronically according to a waste transfer note season ticket managed by M Gaze and Company Ltd. This will include the relevant LoW code and a unique identification number and site reference for specified materials.

Lagoon emptying

10.12 There is 150 ha of land available for spreading of effluent at Upland Farm which can be accessed by either umbilical spreading equipment or farm tanker from the lagoon location. At a typical annual application rate of 250 m^3/ha the capacity of the proposed lagoon can be accommodated within the land area available. M Gaze also own further land in the immediate vicinity of Upland Farm and this land could also be spread from the lagoon site, subject to appropriate deployments being agreed.

10.13 Effluent can separate with liquid on the surface and sludge on the bottom when stored for prolonged periods. Before emptying, the lagoon contents may need to be thoroughly agitated/mixed. Agitation is normally by PTO driven propeller type agitators, but floating or submerging electric types can also be deployed.

10.14 Periodically, the lagoon may need to be de-silted using a specialised excavator or pumps to remove basal accumulations of solids. Care must be taken not to disturb the base, sides or liner during this activity.

10.15 The lagoon contents will be pumped via controlled flow rate pumps via an umbilical hose to a field applicator and applied to land either using a tractor drawn injector (for bare ground or grass) or dribble bar assembly (for growing crops). This will be completed according to a deployment agreed in advance with the Environment Agency.

Monitoring

10.16 Earth embankments to all sides will be inspected at least quarterly for signs of deterioration, and particularly after heavy rain. The embankments will be kept clear of trees and shrubs, grass cover kept short and vermin controlled. This will be recorded and logged into M Gaze's EMS system.

10.17 The condition of the liner on the wet slope and base will be monitored and checked on emptying regularly together with drainage outfalls from the field and a photographic record maintained.

10.18 The lagoon will be inspected each year when full, for signs of leakage. Inspection will involve a close visual examination of the embankments and ground up to 3m away.

10.19 A leakage detection system has been installed within the lagoon base and will be monitored on a quarterly basis during the operational phase of the permit. In the event that a leak in the liner were detected a maintenance outage would be scheduled at the next opportunity after lagoon drawdown.

10.20 Any waste delivered to the lagoon will be subject to a detailed chemical analysis to determine its chemical composition prior to acceptance. This will include as a minimum

(a) Dry solids, pH, electrical conductivity, Biological Oxygen Demand, Total Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Magnesium, Calcium, Sodium, Organic Matter, E-coli and Salmonella.

(b) Total Arsenic, Cadmium, Chromium (III), Copper, Fluoride, Lead, Mercury, Molybdenum Nickel, Selenium, Zinc, speciated PAH and TPH.

11.0 Emissions

Point source

11.1 There shall be no point source emissions to air, water or land. M Gaze and Company Ltd shall:

(a) If notified by the Agency that the activities at Upland Farm are giving rise to pollution, submit to the Agency for approval within the period specified, a fugitive emissions management plan;

(b) Implement the approved fugitive emissions management plan, from the date of approval, unless otherwise agreed in writing by the Agency.

Odour

11.2 Emissions from the operation of the lagoon will be free from odour at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, including those specified in the risk management controls at Appendix 9 and odour management plan at Appendix 10.

11.3 M Gaze and Company Ltd. will:

(a) If notified by the Agency that the activities are giving rise to annoyance outside the site due to odour, submit to the Agency for approval within the period specified, an odour management plan;

(b) Implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Agency.

Noise and vibration

11.4 M Gaze and Company Ltd. will ensure that emissions from the activities at Upland Farm will be free from noise and vibration at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, including those specified in any approved noise and vibration management plan, to prevent or where that is not practicable, to minimise, the noise and vibration.

11.5 M Gaze and Company Ltd. will:

(a) If notified by the Agency that the activities are giving rise to annoyance outside the site due to noise and vibration, submit to the Agency for approval within the period specified, a noise and vibration management plan;

(b) Implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Agency.

12.0 Risk Assessment

12.1 Operations will be undertaken with due regard to the risk assessment shown at Appendix 9.

13.0 Accident Management Plan

13.1 M Gaze and Company Ltd will:

(a) Implement an accident plan according to their EMS and taking account of the Risk Assessment at Appendix 9.

(b) Review this plan at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) and whether changes to the plan should be made.

(c) Make any changes to the plan identified by the review.

14.0 Fire Prevention Plan

14.1 A pre-application screening request to the Environment Agency outlined that as the lagoon is proposed for the storage of non-flammable liquid an FPP was not a pre-requisite of the application nor relevant for inclusion in the site working plan.. :

15.0 Qualifications and Continuing Professional Competence

15.1 This permit will be managed by Mitchell Gaze who holds a current WAMITAB qualification and certificate of continuing competence which is shown at Appendix 11.

15.2 Details of the identities, relevant experience and qualifications of engineers and consultants providing independent advice to M Gaze and Company Ltd will be maintained together with engineering validation reports for the lagoon.

15.3 The permit technical consultant, David Royle MBPR Fert of LDCL holds a BSc Hons in Environmental Science and is qualified under FACTS. David has more than twenty five-years' experience in Environmental Permitting applications.

15.4 M Gaze and Company Ltd staff have full induction and training records which are maintained on file. These records reflect an employee's ability to undertake his work in a safe and competent manner and are updated to reflect each training course that a driver/operative has attended.

15.5 A copy of M Gaze and Co Ltd.'s EMS structure is included at Appendix 12 and individual components are available on request.

LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

Upland Farm Lagoon

Appendix 1

Site Location Plan

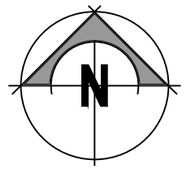
November 2022

LB3504GC/A001/M Gaze and Co: Upland Farm Lagoon Location Plan

OS Location Plan
Scale 1:2500

Site Location Plan 1
N.T.S

Site Location Plan 2
N.T.S



Note:

1. All dimensions noted are in millimetres unless stated otherwise.
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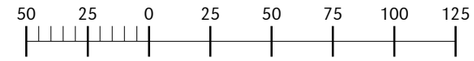
5. This drawing is to be read in conjunction with all other relevant documents relating to the project.

1:2500 - DRAWING SCALE REFERENCE (m)



LEGEND

Permit Area

Ordnance Survey
Sitemap Data

The representation of a road, track or path is no evidence of a right of way. The alignment of tunnels is approximate.

Heights are given in meters above Datum.

August 2017 Produced from Ordnance Survey digital digital and incorporating surveyed revision available at this date.

This Site map product does not contain all recorded map information.

licence no. AL100020033.

Rev	Date	Chkd	Description
0	14-07-22	OAJ	First Issue

plandescil consulting engineers

Connaught Road Attleborough Norfolk NR17 2BW
Telephone: (01953) 452001 Fax: (01953) 456955
E-mail: pdc@plandescil.co.uk www.plandescil.co.uk

civil • structural • environmental • surveying

Client
M. Gaze

Project
Upland Farm,
Rectory Road, Stockton,
Beccles, Norfolk, NR34 0HH

Drawing Title
Permit Area Drawing

Scale U.N.O.	Date	Drawn By
As Noted (A3)	July 2022	IMP

Drawing No.	Rev
22146/152	-

LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

Upland Farm Lagoon

Appendix 2

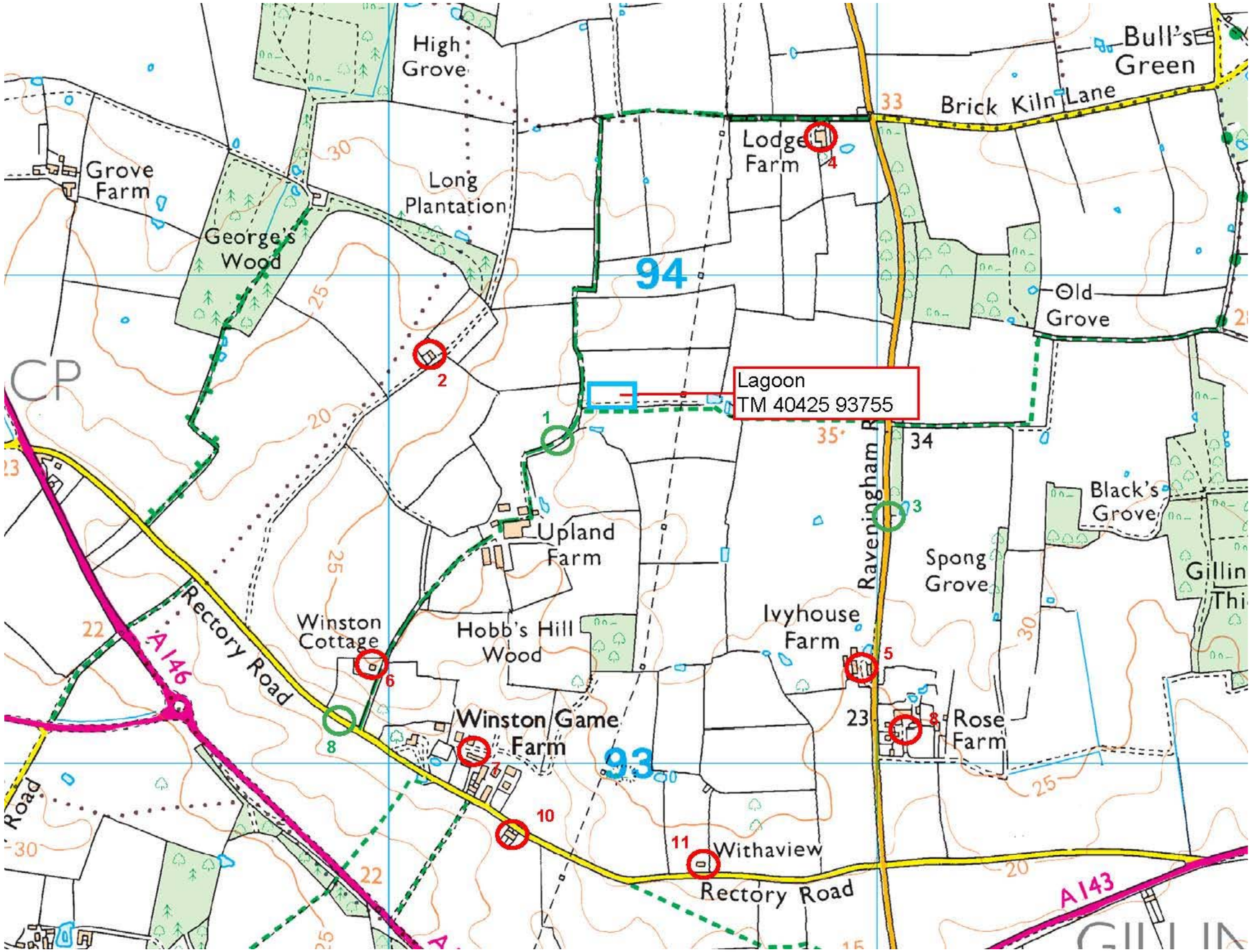
Location of Sensitive Residential and Transient Receptors < 1 km

November 2022

LB3504GC/A001/M Gaze and Co: Upland Farm Lagoon

Location of Sensitive Residential and Transient Receptors < 1 km

Appendix 2



Key

Residential **receptors**

Transient receptors

Receptor	Distance (m)	Description
1	0	Site workers/ bridleway
2	325	Unnamed Farm (Pigs)
3	550	Raveningham Road
4	670	Lodge Farm
5	725	Ivy House Farm
6	730	Winston Cottage
7	760	Winston Game Farm
8	860	Rectory Road
9	875	Rose Farm
10	915	Unnamed residence
11	975	Withaview

N

Site: Upland Farm Lagoon
NGR (Centre) TM 40425 93755
Scale: 1:15,000 approx
Client: M Gaze and Company Ltd
Date: 15.08.2022

M.GAZE

LDC Land Drainage Consultancy Ltd

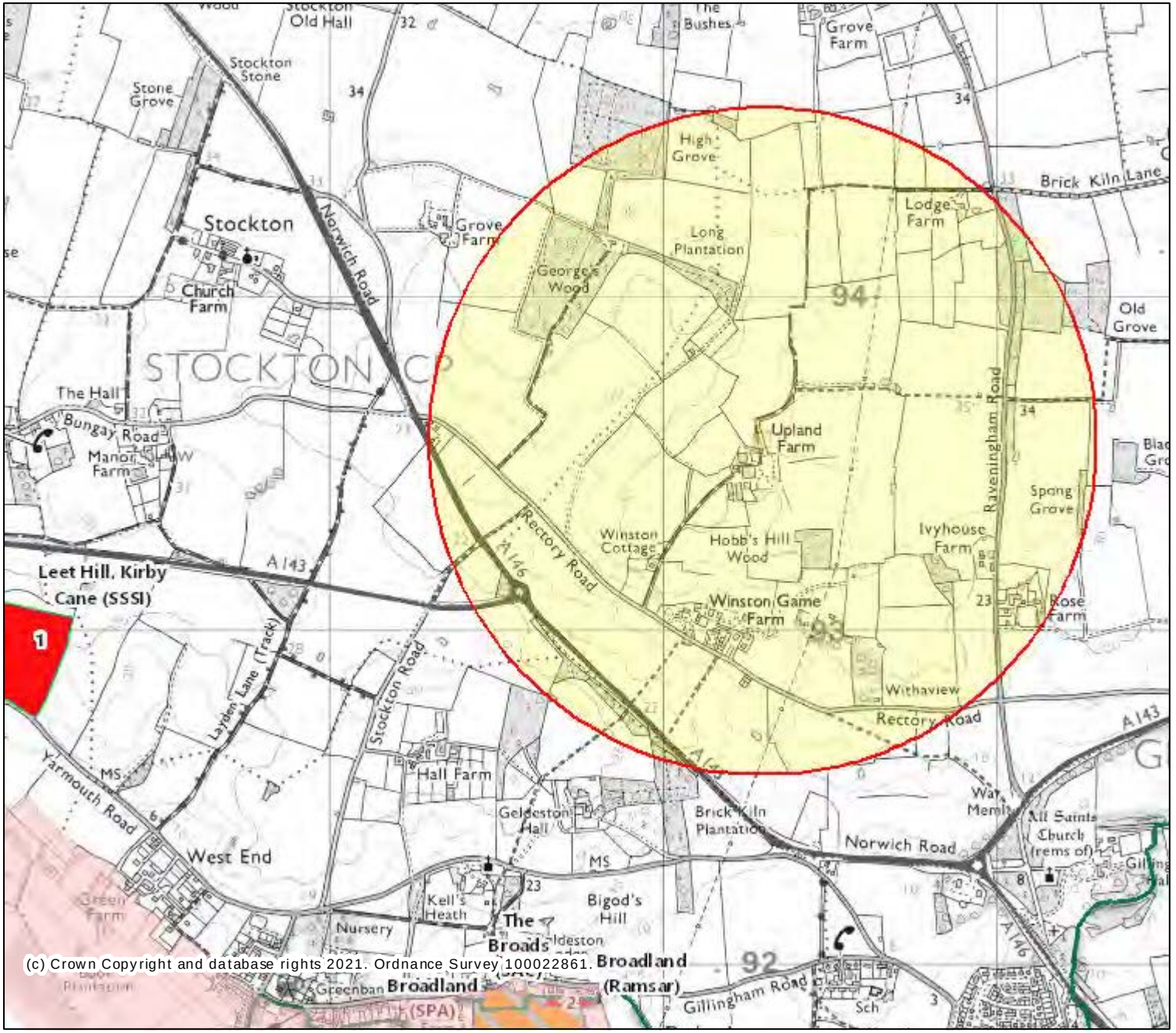
LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

Upland Farm Lagoon

Appendix 3: Rural designation site check report

November 2022



Legend

- Environmentally Sensitive Areas (England)
- Local Nature Reserves (England)
- National Nature Reserves (England)
- National Parks (England)
- Ramsar Sites (England)

Sites of Special Scientific Interest Units (England)

- Favourable Condition
- Unfavourable Recovering
- Unfavourable no change
- Unfavourable Declining
- Part Destroyed
- Destroyed
- Not Assessed
- Sites of Special Scientific Interest (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)
- Biosphere Reserves (England)

Less Favoured Areas (England)

- Disadvantaged
- Severely Disadvantaged

Projection = OSGB36
xmin = 635300
ymin = 291100
xmax = 644200
ymax = 295600

0 0.3 0.6
km

Map produced by MAGIC on 19 July 2022. Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.

Site Check Report Report generated on Tue Jul 19 2022
You selected the location: Centroid Grid Ref: TM40459376
The following features have been found in your search area:

Areas of Outstanding Natural Beauty (England)
No Features found

Limestone Pavement Orders (England)
No Features found

Local Nature Reserves (England) - points
No Features found

Local Nature Reserves (England)
No Features found

Moorland Line (England)
No Features found

National Nature Reserves (England) - points
No Features found

National Nature Reserves (England)
No Features found

Ramsar Sites (England) - points
No Features found

Ramsar Sites (England)
No Features found

Proposed Ramsar Sites (England) - points
No Features found

Proposed Ramsar Sites (England)
No Features found

Sites of Special Scientific Interest Units (England) - points
No Features found

Sites of Special Scientific Interest Units (England)
No Features found

Sites of Special Scientific Interest (England) - points
No Features found

Sites of Special Scientific Interest (England)
No Features found

Special Areas of Conservation (England) - points
No Features found

Special Areas of Conservation (England)
No Features found

Special Protection Areas (England) - points
No Features found

Special Protection Areas (England)
No Features found

Potential Special Protection Areas (England) - points
No Features found

Potential Special Protection Areas (England)
No Features found

Biosphere Reserves (England) - points
No Features found

Biosphere Reserves (England)
No Features found

Less Favoured Areas (England)
No Features found

Wild Bird General Licence Protected Sites Condition Zone (England)
No Features found

Site Check Report Report generated on Tue Jul 19 2022
You selected the location: Centroid Grid Ref: TM40459376
The following features have been found in your search area:

Areas of Outstanding Natural Beauty (England)
No Features found

Limestone Pavement Orders (England)
No Features found

Local Nature Reserves (England) - points
No Features found

Local Nature Reserves (England)
No Features found

Moorland Line (England)
No Features found

National Nature Reserves (England) - points
No Features found

National Nature Reserves (England)
No Features found

Ramsar Sites (England) - points
No Features found

Ramsar Sites (England)
No Features found

Proposed Ramsar Sites (England) - points
No Features found

Proposed Ramsar Sites (England)
No Features found

Sites of Special Scientific Interest Units (England) - points
No Features found

Sites of Special Scientific Interest Units (England)
No Features found

Sites of Special Scientific Interest (England) - points
No Features found

Sites of Special Scientific Interest (England)
No Features found

Special Areas of Conservation (England) - points
No Features found

Special Areas of Conservation (England)
No Features found

Special Protection Areas (England) - points
No Features found

Special Protection Areas (England)
No Features found

Potential Special Protection Areas (England) - points
No Features found

Potential Special Protection Areas (England)
No Features found

Biosphere Reserves (England) - points
No Features found

Biosphere Reserves (England)
No Features found

Less Favoured Areas (England)
No Features found

Wild Bird General Licence Protected Sites Condition Zone (England)
No Features found

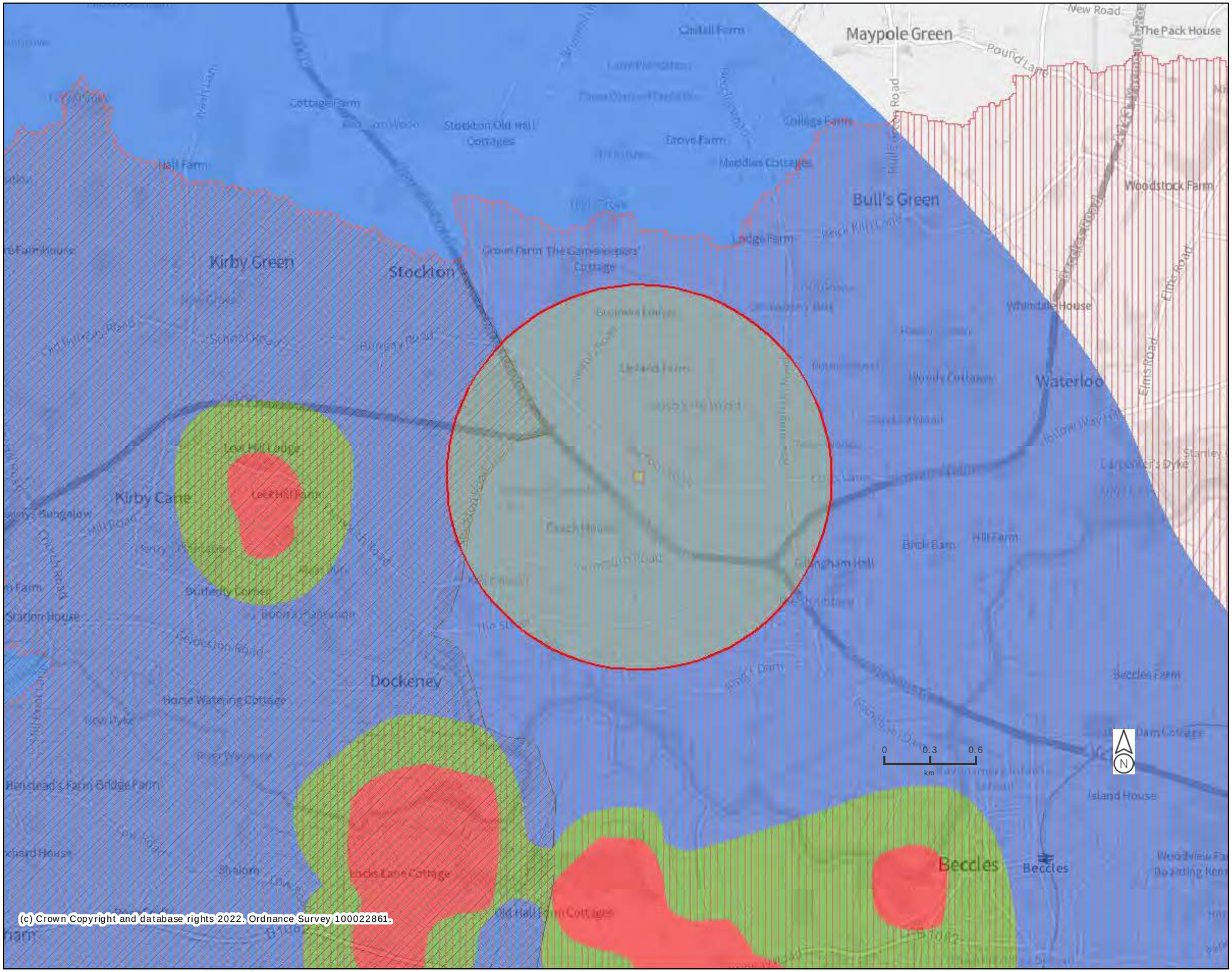
LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

Upland Farm Lagoon

Appendix 4: Groundwater and Surface Water Sensitivity

November 2022



Legend

- Drinking Water Protected Areas (Surface Water) (England)
- Drinking Water Safeguard Zones (Surface Water) (England)
- Drinking Water Safeguard Zones (Groundwater) (England)

Source Protection Zones merged (England)

- Zone I - Inner Protection Zone
- Zone I - Subsurface Activity
- Zone II - Outer Protection Zone
- Zone II - Subsurface Activity
- Zone III - Total Catchment
- Zone III - Subsurface Activity
- Zone of Special Interest

Projection = OSGB36
xmin = 633300
ymin = 289500
xmax = 646600
ymax = 296000

0 0.5 1
km

Map produced by MAGIC on 3 May, 2022.

Site Check Report Report generated on Tue May 03 2022
You selected the location: Centroid Grid Ref: TM40129282
The following features have been found in your search area:

Drinking Water Protected Areas (Surface Water) (England)

Waterbody ID	GB105034045903
Waterbody Name	Waveney (Ellingham Mill - Burgh St. Peter)
WFD Management Catchment	Broadland Rivers
WFD River Basin District	Anglian
Environment Agency Area	Essex Norfolk and Suffolk
Current Risk Status	At Risk
Algae	
Algae 2 Methylisoborneol	
Algae Blue Green	
Algae Chlorophyll	
Algae Geosmin	
Total Algae	
Ammonia	
Benzo-A-Pyrene	
Benzofluoranthene K	
Colour	
Cryptosporidium	
Eutrophication	
Fluroanthene	
Metals	
Nitrate	Yes
Nitrite	
Accumulative total of all Pesticides within waterbody	
Pesticide 2-4 D	
Pesticide Asulam	
Pesticide Atrazine	
Pesticide Bentazone	
Pesticide Captan	
Pesticide Carbendazim	
Pesticide Carbetamide	YES
Pesticide Chlorthal	
Pesticide Chlorotoluron	
Pesticide Clopyralid	YES
Pesticide Cyromazine	
Pesticide Cypermethrin	
Pesticide Diazinon	
Pesticide Dichlobenil	
Pesticide Diuron	
Pesticide Flufenacet	
Pesticide Fluroxypyr	
Pesticide Glyphosate	
Pesticide Isoproturon	
Pesticide Linuron	
Pesticide MCPA	
Pesticide MCPB	
Pesticide Mecoprop	
Pesticide Metaldehyde	YES
Pesticide Metazachlor	
Pesticide Pendamethalin	
Pesticide Propachlor	
Pesticide Propyzamide	YES
Pesticide Quinmerac	
Pesticide Simazine	
Pesticide Terbuthylazine	
Pesticide Terbutryn	
Pesticide Triclopyr	
Pesticide Trifluralin	
Pesticides to be determined	
Poly Aromatic Hydrocarbons	
PolyNuclear Aromatic Hydrocarbons	
Solvents	
Turbidity	
Risk status data reported to Water Information System for Europe 2015	At Risk
Water Company	Essex & Suffolk Water
Water Treatment Works name	Barsham WTW
Surface Water Safeguard Zone unique identifier	SWSGZ1020
Surface Water Safeguard Zone name	Anglian_ SWSGZ1020_ Waveney
List of Water Framework Directive water body ID numbers that are contained / make up the Safeguard Zone	GB105034045930, GB105034045650, GB105034045660, GB105034045670, GB105034045690, GB105034045710, GB105034045741, GB105034045750, GB105034045780, GB105034045810, GB105034045820, GB105034045830, GB105034045840, GB105034045850, GB105034045880, GB105034045903

URL to download the Drinking Water Safeguard Action Plan for Safeguard Zone	https://ea.sharefile.com/d-s699f38f03b94b8ea

Drinking Water Safeguard Zones (Surface Water) (England)

Safeguard Zone ID	SWSGZ1020
Safeguard Zone Name	Anglian_ SWSGZ1020_ Waveney
Environment Agency Area	Essex Norfolk and Suffolk
Algae	
Algae 2 Methylisoborneol	
Algae Blue Green	
Algae Chlorophyll	
Algae Geosmin	
Total Algae	
Ammonia	
Benzo-A-Pyrene	
Benzofluoranthene K	
Colour	
Cryptosporidium	
Eutrophication	
Fluroanthene	
Metals	
Nitrate	Yes
Nitrite	
Accumulative total of all Pesticides within waterbody	
Pesticide 2-4 D	
Pesticide Asulam	
Pesticide Atrazine	
Pesticide Bentazone	
Pesticide Captan	
Pesticide Carbendazim	
Pesticide Carbetamide	YES
Pesticide Chlorthal	
Pesticide Chlorotoluron	
Pesticide Clopyralid	YES
Pesticide Cyromazine	
Pesticide Cypermethrin	
Pesticide Diazinon	
Pesticide Dichlobenil	
Pesticide Diuron	
Pesticide Flufenacet	
Pesticide Fluroxypyr	
Pesticide Glyphosate	
Pesticide Isoproturon	
Pesticide Linuron	
Pesticide MCPA	
Pesticide MCPB	
Pesticide Mecoprop	
Pesticide Metaldehyde	YES
Pesticide Metazachlor	
Pesticide Pendamethalin	
Pesticide Propachlor	
Pesticide Propyzamide	YES
Pesticide Quinmerac	
Pesticide Simazine	
Pesticide Terbuthylazine	
Pesticide Terbutryn	
Pesticide Triclopyr	
Pesticide Trifluralin	
Pesticides to be determined	
Poly Aromatic Hydrocarbons	
PolyNuclear Aromatic Hydrocarbons	
Solvents	
Turbidity	
List of Water Framework Directive water body ID numbers that are contained / make up the Safeguard Zone	GB105034045930, GB105034045650, GB105034045660, GB105034045670, GB105034045690, GB105034045710, GB105034045741, GB105034045750, GB105034045780, GB105034045810, GB105034045820, GB105034045830, GB105034045840, GB105034045850, GB105034045880, GB105034045903
URL to download the Drinking Water Safeguard Action Plan for Safeguard Zone	https://ea.sharefile.com/d-s699f38f03b94b8ea

Source Protection Zones merged (England)

Zone	3

Drinking Water Safeguard Zones (Groundwater) (England)

No Features found

LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

Upland Farm Lagoon

Appendix 5: Flood Risk Sensitivity

November 2022

Environment Agency

Flood map for planning

Your reference	Location (easting/northing)	Created
Upland Farm/Flood Risk	**640332/293641**	**19 Jul 2022 11:12**

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following:**

- bigger that 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

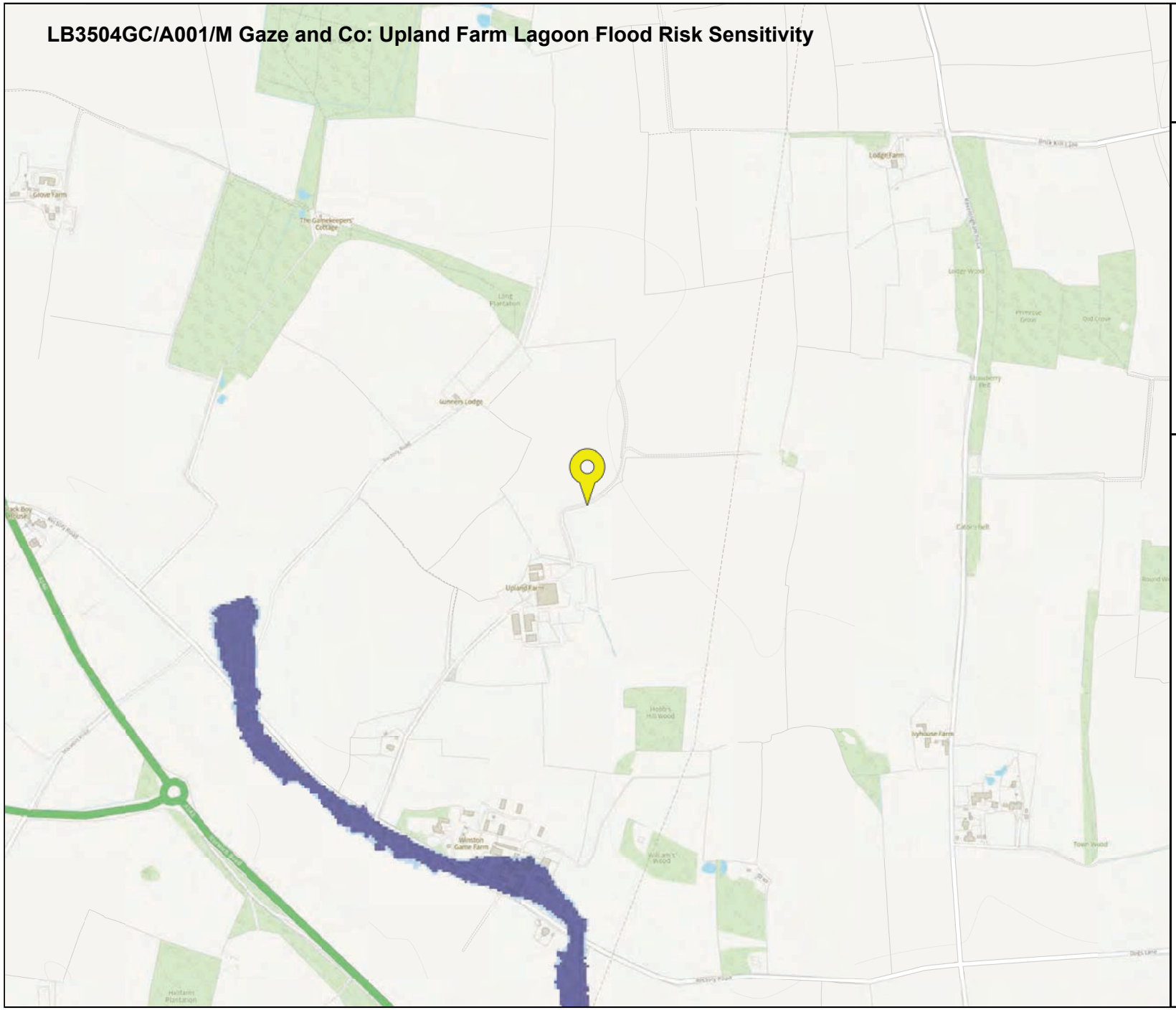
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence **which** sets out the terms and conditions for using government data. https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. https://flood-map-for-planning.service.gov.uk/os-terms



Appendix 5

Environment Agency

Flood map for planning

Your reference
Upland Farm/Flood Risk

Location (easting/northing)
640332/293641

Scale
1:10000

Created
19 Jul 2022 11:12

- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 100 200 300m

LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

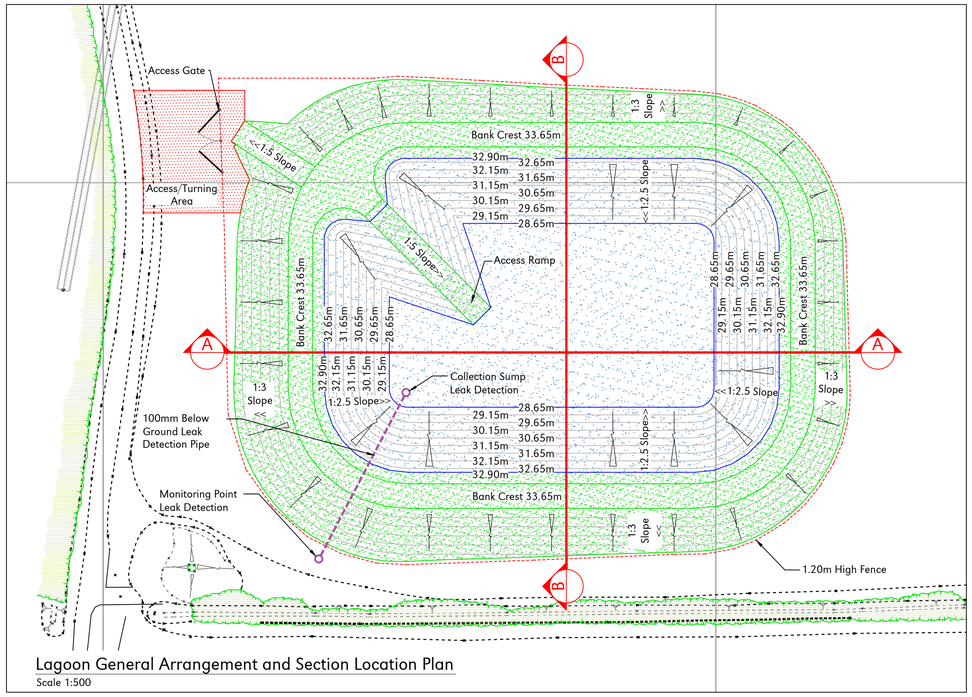
Upland Farm Lagoon

Appendix 6: Lagoon Construction and Sections

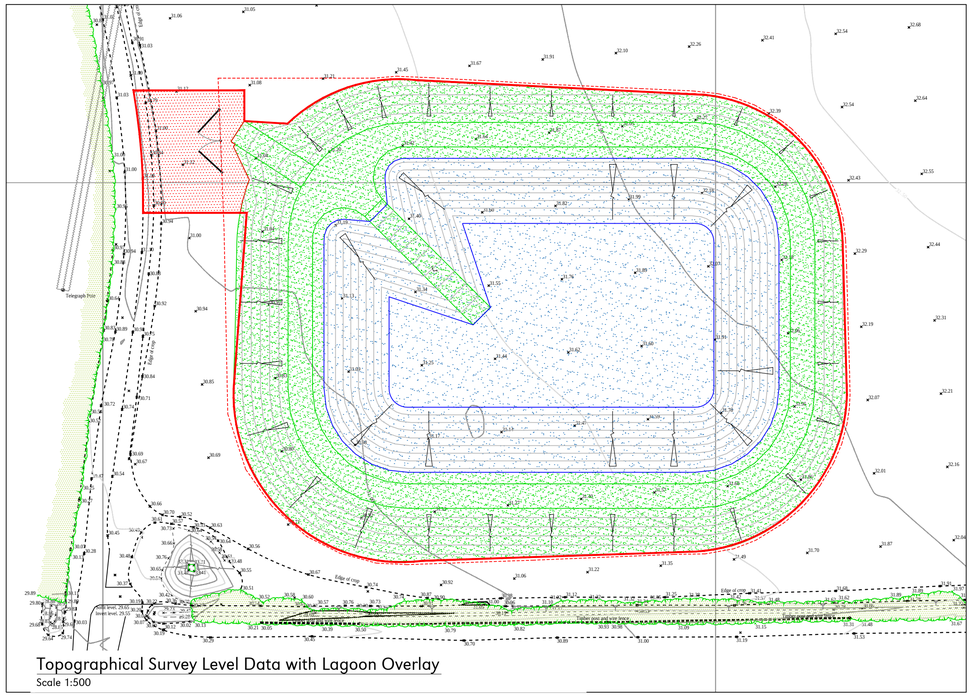
November 2022

LB3504GC/A001/M Gaze and Co: Upland Farm Lagoon Construction and Sections

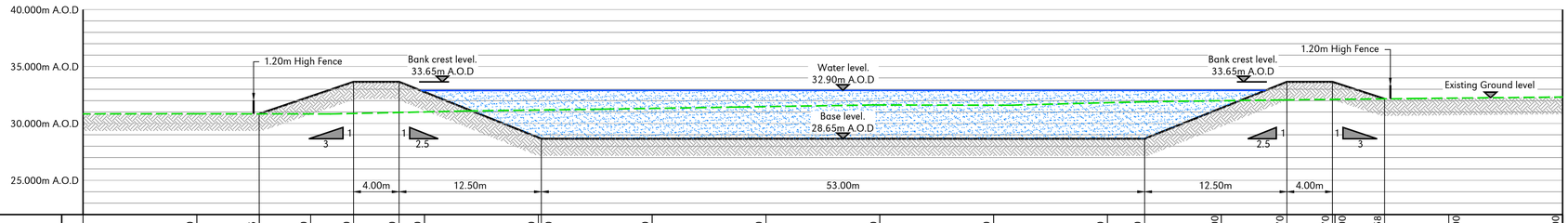
Appendix 6



Lagoon General Arrangement and Section Location Plan
Scale 1:500

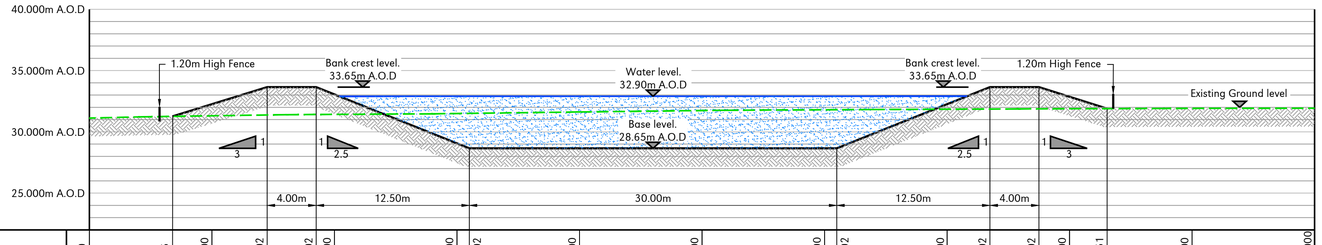


Topographical Survey Level Data with Lagoon Overlay
Scale 1:500



Chainage. (m A.O.D)	0.000	10.000	15.485	20.000	23.770	27.770	30.000	40.000	40.270	50.000	60.000	70.000	80.000	90.000	93.270	100.000	105.770	109.770	110.000	114.358	120.000	130.000
Existing ground level. (m A.O.D)	30.840	30.850	30.840	30.833	30.875	30.962	31.010	31.175	31.179	31.320	31.476	31.619	31.602	31.821	31.908	31.992	32.064	32.108	32.110	32.158	32.217	32.317
Lagoon Design level. (m A.O.D)	30.840	30.850	30.840	32.372	33.650	33.650	32.758	28.758	28.650	28.650	28.650	28.650	28.650	28.650	28.650	31.342	33.650	33.650	33.575	32.158	32.217	32.317

Section A-A
Scale 1:250 Vertical, 1:250 Horizontal



Chainage. (m A.O.D)	0.000	6.766	10.000	14.502	18.502	20.000	30.000	31.002	40.000	50.000	60.000	61.002	70.000	73.502	77.502	80.000	83.061	90.000	100.000
Existing ground level. (m A.O.D)	31.120	31.261	31.310	31.377	31.415	31.424	31.496	31.508	31.621	31.738	31.801	31.806	31.846	31.861	31.876	31.884	31.895	31.914	31.931
Lagoon Design level. (m A.O.D)	31.120	31.261	32.260	33.650	33.650	33.051	29.051	28.650	28.650	28.650	28.650	28.650	32.250	33.650	33.650	32.861	31.895	31.914	31.931

Section B-B
Scale 1:250 Vertical, 1:250 Horizontal

General Notes:

1. All dimensions noted are in millimetres unless stated otherwise.
2. All levels shown are in metres unless stated otherwise.
3. Do not scale from this drawing, if dimensions are not clear ask.
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5. Plandescil Ltd to be immediately notified of any suspected omissions or discrepancies.
6. This drawing is to be read in conjunction with all other relevant documents relating to the project.
7. All levels and coordinates relate to a GPS derived datum. Control was established using Ordnance Survey's Active GPS Network OSGB32(36). Translated from ETRS89 using OSGM02 and OSTN02 models.

Lagoon Notes:

8. Lagoon footprint area = 6,980m²
9. Lagoon volume excluding freeboard = 10,240m³
10. Lagoon volume including freeboard = 13,080m³
11. Total Cut excavation volume (inc. topsoil) = 5,970m³
12. Total Fill excavation volume (inc. topsoil) = 5,840m³
13. Storage capacity or lagoon has been designed to allow a nominal 750mm vertical freeboard.
14. Placement of topsoil over the formed banks to be at a minimum of 300mm, residual volume to be lost in adjacent field.
15. Slope stabilization to be installed as required.

N

Legend
Site Boundary

PROVISIONAL FOR TENDER PURPOSES ONLY

Rev	Date	Chkd	Description
B	05-04-18	OAJ	Minor Amendments
A	18-12-17	OAJ	Tender Issue
0	19-09-17	OAJ	First Issue

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Client
M. Gaze

Project
Upland Farm,
Rectory Road, Stockton,
Beccles, Norfolk, NR34 0HH

Drawing Title
Proposed Lagoon Layout and Sections

Scale	U.N.O.	Date	Drawn By
As Noted (A1)		April 2018	JLB

Drawing No. 22146/500 Rev B

1:500 - DRAWING SCALE REFERENCE (m)
20 10 5 0 10 20 30 40 50

1:250 - DRAWING SCALE REFERENCE (m)
10 5 0 5 10 15 20 25

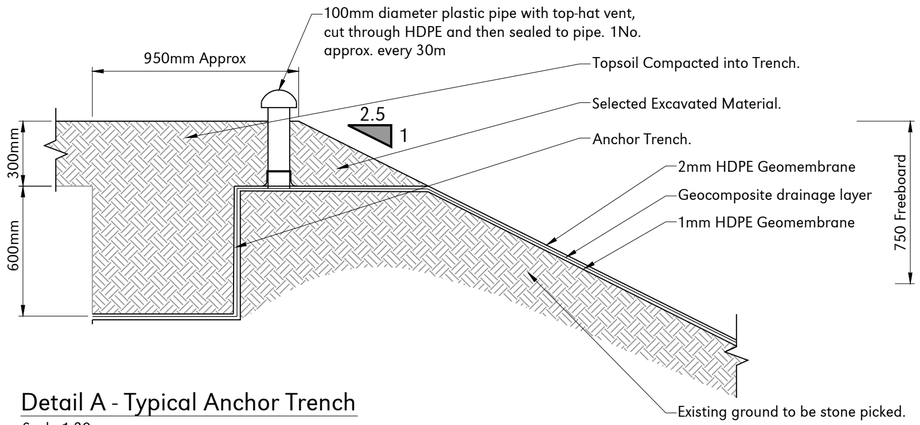
LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

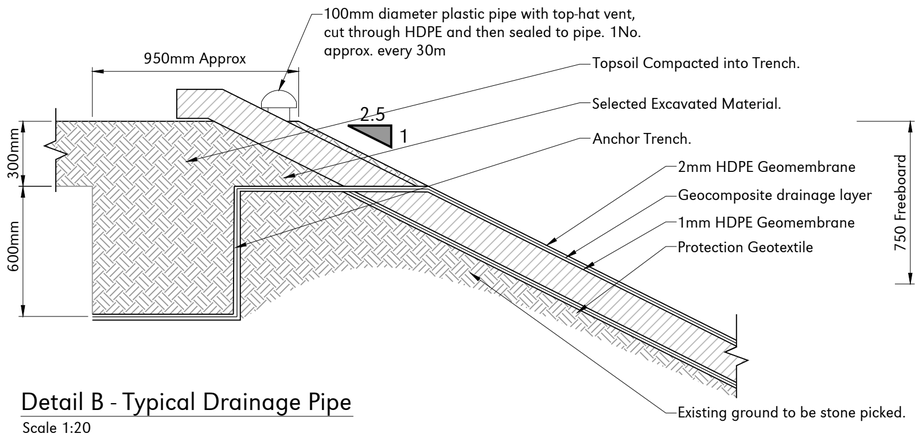
Upland Farm Lagoon

Appendix 7: Lagoon Embankment and Lining

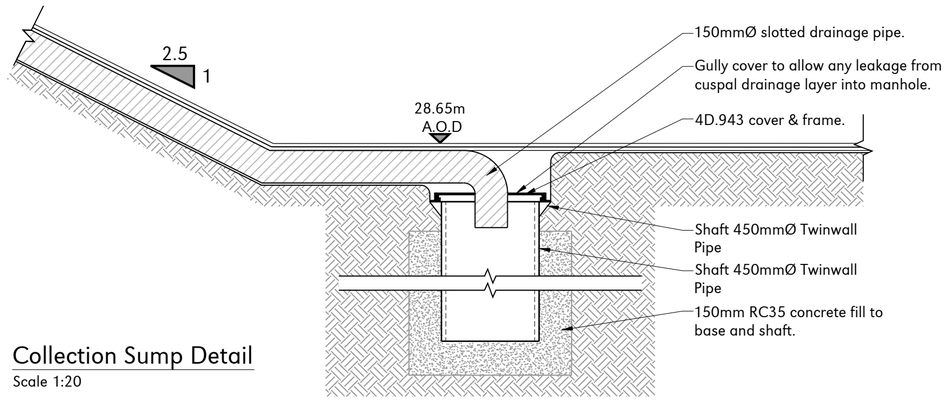
November 2022



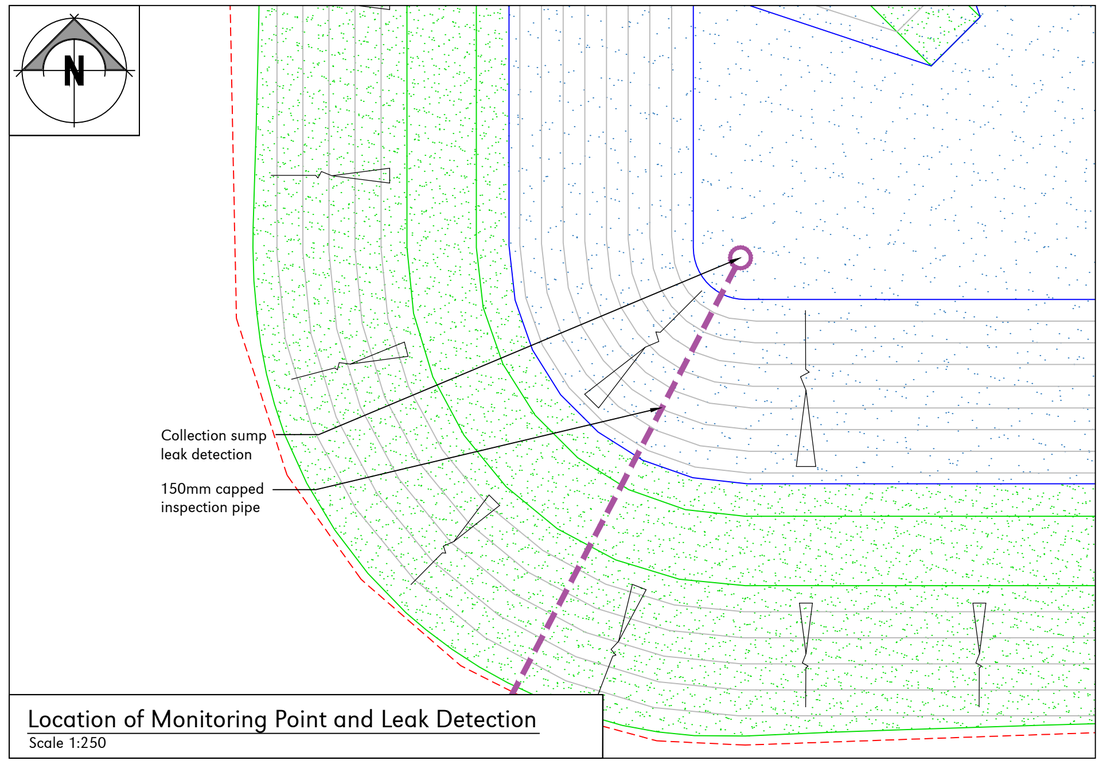
Detail A - Typical Anchor Trench
Scale 1:20



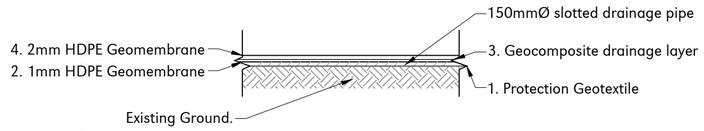
Detail B - Typical Drainage Pipe
Scale 1:20



Collection Sump Detail
Scale 1:20

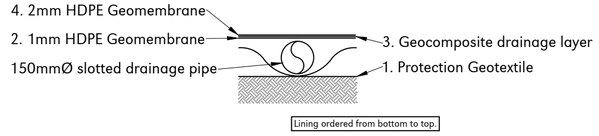


Location of Monitoring Point and Leak Detection
Scale 1:250



Typical Lining Detail
Scale 1:20

Lining ordered from bottom to top.



Leak Detection Detail
Scale 1:20

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1:20 - DRAWING SCALE REFERENCE (m)
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Note:

1. All dimensions noted are in millimetres unless stated otherwise.
2. Do not scale from this drawing, if dimensions are not clear ask.
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5. This drawing is to be read in conjunction with all other relevant documents relating to the project.

ISSUED FOR CONSTRUCTION

Rev	Date	Chkd	Description
B	10-01-18	OAJ	Minor Amendments
A	18-12-17	OAJ	Minor Amendments
0	19-09-17	OAJ	First Issue

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Client
M. Gaze

Project
Upland Farm,
Rectory Road, Stockton,
Beccles, Norfolk, NR34 0HH

Drawing Title
Lagoon Construction Details

Scale U.N.O.	Date	Drawn By
As Noted(A2)	September 2017	LJS

Drawing No. 22146/501 Rev B

LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

Upland Farm Lagoon

Appendix 8: Engineering Report

November 2022

With Compliments

Folder contains 27 leaves, all should be forwarded to parties with a bona-fide interest in the matter, would recommend Royal Mail Recorded Delivery rather than e-mail. If there is a problem with this method, we will make sure it is hand delivered on your behalf to the appropriate Norwich site.

30 July 2019

Eur Ing Brian R. Knight C.Eng., F.I.Mar EST
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ENGINEERS REPORT - UPLAND FARM LAGOON

Please read and consider content along with added sections, so far as they apply to the 'Application for Permit-to-Operate'.

Report on the instructions of M. Gaze & Co Ltd, Thurlton,Norfolk. In the matter of a Report for submission to the Environment Agency, relating to the installation of a Lagoon at Upland Farm, Stockton Norfolk NR34 OHH.

Requirements of the report are effectively to provide explanation and expansion of definitions and procedures carried out by contractors and to provide answers to questions posed in table "IC19", items 1 to 5 inclusive reproduced herewith as an aid-memoire..

References to quote in all matters of enquiry relating to this Report:- Oilfield Testing Services Reference :-17931/ 2018/2019 and contact numbers in final panel on final page.

.....

Table IC19 :- (See paragraph 2 above)

Item 1:- An outline of the materials of construction and construction techniques for the lagoon.

Item 2:- An outline of the permeability of the liner materials used.

Item 3:- An assessment of whether the lagoon is in continuity with the existing groundwater and any requirements needed to protect groundwater.

Item 4:- Confirmation that the lagoon has been designed and constructed to the specifications in guidance document "CIRIA C736" :- "Containment Systems for the control of Pollution".

Item 5:- Commissioning Report *[De facto, this is appropriate answers for 1 to 4 inc]*

.....

Item 1 of IC19: above is dealt with in a thoroughly professional way by Land Drainage Consultancy Ltd in their report of August 2017 headed Slurry Lagoon Design Upland Farm OS Grid Reference : TM 404533 93757. In the report all valid avenues of enquiry have been dealt with and observations during construction showed the contractors involved were well up to the tasks set. The LDC Report of August 2017 is appended for perusal.
Any queries that arise, please advise this office for further Explanation. *[See panel at full report end for contact details, OTS Reference number 17931]*
Construction Method for the Lagoon is dealt with in Section 6.0 on page 5 of 12 and onward of the LDC Report, the methods out lined have been adhered to in the execution of the works.

Item 2 of IC19: Permeability of liner materials is covered in the Report from "Enviroseal Lining Solutions", this is a very well known company in the field and other installations known are listed on page 4, we have carried out tests on the tensile strength of the material which is 1.5mm thick, supplied in rolled sheet form, the published figure of 45kN per 1 metre width strip is recognised as 'in-order' The permeability of the liner material in as much as permeability is the ability to be permeated, is zero, the exceptions being severe acidic attack or mechanical puncturing or tearing from stresses exceeding the tensile stress of the material, fire etc.

Item 3 of IC19: Given that the permeability as dealt with in "2" is zero, continuity or any other possible contact with ground-water is nil. Hence protection of ground water does not have to be considered, other than the unlikely event that the lagoon should overflow, this must be guarded against. Groundwater:- See Section 8.15, 8.16 page 11 of 12 LDC Report of August 2017.

Item 4 of IC19: Plandescil Consulting Engineers of Attleborough, Norfolk, a long established professional office have produced all the necessary drawings for the project and dealt with the Planning Departments concerned, all with a positive response, hence any requirements under CIRIA C736 are satisfactorily covered.

Item 5 of IC19: Prior to taking into use, Section 7.0** "System Management" in LDCL August 2017 Report should be accepted as a basis for a Commissioning Programme, changing the tense of the wording to suit. Paying particular attention to guidelines in DEFRA Water Code 1998 (7.3 in **). Additionally Escape ladders/ropes/ tread boards should be installed. Full surface visual examination of the liner should be effected [In order first week in July 2019]. Re-check for vermin holes in embankments. Check completeness of fencing.

OTS Reference :- 17931 2018 / 2019 Date 30 July 2019

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With Compliments

Reference to Section 7.0 of this report is made under "Item 5 of IC19" in the main report "Application for Permit Upland Farm" July 2019.

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Table of Contents

1.0 BACKGROUND

1.1 Land Drainage Consultancy Ltd. has been asked to provide an assessment and design option for a proposed slurry lagoon at Upland Farm which lies off Rectory Road, Gillingham, Beccles, NR34 0HH.

1.2 Upland Farm is a 70 ha arable enterprise, owned and managed by M Gaze and Company, and forms part of a 225 ha holding. The 10 fields at Upland Farm are primarily used for the growing of winter and spring combinable crops with occasional break crops of sugar beet and/or potatoes.

1.3 Upland Farm extends to around 70 ha (170 acres) and has a significant annual requirement for nitrogen fertiliser and seasonal irrigation water. The farm proposes to enter into an agreement with a producer for the supply of anaerobic digestate (PAS110) produced nearby at an anaerobic digestion (AD) facility. The digestate is produced from the processing of maize and cereals which are digested anaerobically to produce gas and electricity. The resultant digestate, which is PAS110 accredited, is recycled to the land where the crops are grown as a valuable source of fertiliser.

1.3 The use and incorporation of digestate into the nutrient management plan for Upland Farm will provide a significant saving on proprietary fertiliser when applied to the crops being grown. Maximising the efficacy of the nutrients in the digestate will be achieved mainly through spring application to winter sown crops. This will necessitate a period of storage to allow sufficient material to be delivered to the farm prior to its use in spring. In addition, the use of water for use in irrigation is proposed for crops during the dry summer months to offset summer moisture deficits. The siting of a new lagoon to the northeast of the existing Upland Farm property will allow an existing lagoon to be moved which will improve the marketability of the current property.

1.4 The construction of a slurry lagoon is proposed to allow a sufficient quantity of digestate and/or water to be temporarily held at the farm pending its use.

2.0 AIMS AND OBJECTIVES

2.1 This report provides the following:

- A review of current farm waste production.
- An assessment of ground conditions in the area proposed for slurry storage.
- A design specification for the lagoon in terms of location, dimensions, capacities and construction.
- Recommendations for compliance with relevant regulations.

3.0 SITE SURVEY AND INVESTIGATION

3.1 The following has been undertaken:

- A detailed survey of the proposed lagoon site has been completed by LDCL and is shown on the plans at Appendix 1-4.
- Preliminary discussions were held in 2015 with the Environment Agency, to determine the feasibility of installing an earth banked slurry lagoon at the site and whether the Agency would foresee any issues, in particular with regard to site location, groundwater, odour potential and environmental permitting.
- A design and specification have been prepared for a proposed earth banked slurry store with an engineered HDPE liner.
- Trial pits have been excavated in the site area and samples of superficial geological strata collected. These have been subjected to particle size distribution, permeability and compaction testing, at a suitably accredited laboratory, to determine the ground characteristics and likely suitability for the storage of liquid fertilisers.

4.0 FINDINGS

Farm area

4.1 Upland Farm comprises 70 hectares in arable production including stewardship boundaries and land in set-aside. There are no wastes currently produced at the farm other than a very small quantity (10tonne/yr) of solid manure from the bedding of calves in one of the outbuildings and yard run off which is collected in an existing lagoon.

Cropping

4.3 Cropping on the holding is a mixed rotation of winter combinables, primarily winter wheat, winter oilseed rape and winter barley together with a proportion of spring crops of sugar beet, potatoes and maize.

Digestate import

4.3 It is proposed to provide up to 10,000m^3 of storage for the import of digestate together with storage of water intended for irrigation.

5.0 PROPOSED SYSTEM DESIGN

5.1 It is proposed that liquids be stored through construction of an earth banked slurry lagoon. The rationale and design for this scheme are described below.

Rainfall data (Met Office data & calculations)

Table 1 Climate data

Site OS Grid Reference	TM 40433 93757
Altitude (AOD m)	32
Annual Rainfall (approx mm)	620
6 months excess winter rainfall (approx mm)	400

Table 2 Digestate and rainfall arisings

Waste Type	(m^3)
Digestate (Imported @ 100m^3/ha)	7,000
Rainfall (Excess winter x internal surface area)	1,500
Total	**8,500**

Lagoon site

5.2 It is proposed that the lagoon be located approximately 250m northeast of the buildings at Upland Farm and be centred over OS National Grid Reference TM 40433 93757. A location plan of the proposed site is shown at Appendix 1 together with a site layout at Appendix 2.

5.3 The site is located approximately 650m equidistant from the nearest dwellings at Winston Cottage and Lodge Farm which lies to the southwest and northeast of the site. The nearest villages are located 1.75 km southeast of the site at Gillingham and 2.8 km to the southwest at Geldeston.

5.4 The site slopes very gently with a fall of approximately 1.5m east to west across its 84m length and <1m north to south along its 72m width. There is a ditch present to the south and a 10m standoff will be maintained between this and the proposed storage area.

5.5 Access to the site is proposed off Rectory Lane using the existing access track into Upland Farm and thereafter along an internal farm road

5.6 It is understood, from the owners, that there are no other buried services at the site. Prior to any earthworks it is recommended a thorough site service search be undertaken.

Lagoon capacity

5.7 The aim is to provide as large a lagoon as the site will permit to allow maximum flexibility with digestate recycling and/or irrigation, particularly to avoid the need to spread when crop, weather or ground conditions are unsuitable and to provide sufficient storage for spring or summer application to adjacent arable land.

5.8 The lagoon is proposed to be sufficiently large to accommodate 7,000m^3 of digestate together with a provision for approximately 1,500m^3 for rainfall. The design will provide a gross capacity of 10,000m^3 to allow for variability in digestate composition and also to provide irrigation water in summer.

5.9 The net capacity in Table 3 should be considered as a minimum since no allowance has been made for evaporation. Digestate, particularly containing rainfall, will be subject to summer evaporation depending on prevailing weather conditions. The result being that the effective volume of the lagoon will be slightly greater than the net capacity shown.

5.10 There are 70 ha of land available for spreading at Upland Farm which can be accessed by either umbilical spreading equipment or farm tanker from the lagoon location. At a typical annual application rate of 100-150m^3/ha the capacity of the proposed lagoon can be accommodated within the land area available. M Gaze also own further land in the immediate vicinity of Upland Farm and this land could also be spread with digestate from the lagoon site.

Lagoon design

5.11 Drawings of the proposed lagoon embankment and construction details are shown at Appendices 3 and 4 and these are summarised overleaf in Table 3.

Lagoon filling

5.12 Slurry and dirty water will be pumped from delivery tankers from the southwest corner of the site. Liquids should ideally be introduced into the lagoon via a concrete spillway, or pipework, extending from bank top and flumed at the base to reduce potential erosion or liner damage on the internal wet slope.

5.13 Any valves at the lagoon end should be capable of being locked and/or tamper proof and should be checked regularly prior to pumping.

Planning permission

5.14 The proposed lagoon will be notified under a general development order for agricultural development to Norfolk County Council prior to construction.

Table 3 Summary of lagoon dimensions and capacities

Capacity and Dimensions	Lagoon
Gross capacity (m^3)	10,167
Freeboard (m)	0.75
Bank height (m)	2.25
Bank top width (m)	4.00
Dry slope	1:2
Wet slope	1:2.5
Liquid depth (m)	5.00
Depth of dig (m)	3.50
Overall dimensions (m)	84x72
Slurry line (m)	64x51
Base dimensions (m)	39x26
Rainfall – (m^3)	1,500
Capacity minus rainfall (m^3 approx)	8,500
Volume excavated (m^3)	5,896
Embankment volume (m^3)	5,883
Access Ramp minimum gradient (if required)	1:10
Cut and fill volume (m^3 approx)	1,000

6.0 LAGOON CONSTRUCTION

Construction method

6.1 The lagoon is to be constructed using a 'cut and fill' method whereby excavated soil is used to form the embankments. The design ensures that, as far as possible, excavated soil equals soil required for embankments. The construction detail for the embankments is shown at Appendix 3.

6.2 The integrity and stability of the lagoon relies upon achieving impermeable banks and base. This can only be achieved if the excavated clay is thoroughly compacted using a vibrating roller. Alternative forms of compaction – e.g. wheeled or tracked vehicles - will not ensure even compaction and tracked vehicles do not compact since they are designed to apply low ground pressure. The clay subsoil and drift at this site has a high clay content (44-73% clay) and might be prone to cracking during very dry periods and for this reason it should be re-worked prior to compaction to produce a homogenous mass. Below 1.5m all stones above 75mm diameter must be removed, and the sides scarified for a depth of 300mm, stones removed and then re-compacted. For the basal area it is recommended that 500mm of the clay be excavated, the lower layer reworked and compacted to 500mm and then the original 500mm be re-laid and compacted as above.

6.3 The lagoon can be constructed using tracked excavators and/or dumper and dozer, with the latter being used to finish shaping the banks, and in conjunction with a vibrating roller.

Selection of equipment is the responsibility of the contractor excepting that a vibrating roller of the minimum weight (2,300kg/m) specified must be used.

6.4 The design assumes that the lagoon will be constructed off a level subsoil platform and that a graded site has been prepared in terms of cut and fill. Embankment heights are estimated to be 2.25m from a level platform and a small amount of bulkage (10% or thereabouts) will occur following excavation and placement. If the contractor elects to build without a cut and fill operation then it will be essential to set an appropriate site datum height and location. This should be based on the mean height of the site proposed under the cut and fill. This will avoid any shortfall of excavation arisings relative to embankment volumes.

6.5 The recommended method of working is:-

6.5.1 Install a deep 160mm diameter interceptor drain to all sides at a depth of 1.60m from the formation level to pick up any land drains and bands of sand and gravel < 2m depth as required keeping the drain at least 10m from the outside of the internal slurry line. The drains should be graded east-west and north-south being directed to the southwest corner of the site to outfall into the ditch at this point. An agricultural underdrainage system may be in place and it will be important to ensure that all laterals are picked up and connected into the new main.

6.5.2 Strip and store topsoil to a depth of 300-350mm from whole of the working area with the exception of those areas that are to remain completely undisturbed or are to be used for topsoil storage.

6.5.3 Level the build formation through a cut and fill operation using a dozer from west to east and southwest to northeast to provide a level graded platform for construction .

6.5.4 Excavate cut off/key trench to 2.50m depth and remove any drains within 10m of the embankment. This trench should be excavated to seal any land drains and pores and fissures in the better structured upper subsoil. The clay excavated from the cut off trench can be used in the adjacent embankment. Excavated clay from the lagoon site should be re-laid into the trench in 150-200mm layers and compacted as below.

6.5.5 Scarify or plough and compact embankment areas to provide a key for construction working along the line of the embankment.

6.5.6 Construct embankments with clay deposited in 150-200 mm layers - each layer compacted with a minimum of 6 passes of a vibrating roller with a minimum weight of 2,300 kg/m width.

6.5.7 Soil layers to be fully overlapped/interlocked and compacted at corners

6.5.8 Scarify wet slope to a depth of 300mm, remove stones and re-compact as (6.1.4) above. Dig out any land drains to 1.5m and recompact using clay from excavation.

6.5.9 Grade the base formation with a slight fall north-south (or as preferred) to allow slurry to migrate towards the filling/emptying point.

6.5.10 Excavate 500mm from base, scarify below to a depth of 500mm, remove stones and re-compact as (6.1.4-5) above, replace 500mm in two/three layers, scarify and recompact.

6.5.11 Form tanker access (if required) to a maximum gradient of 1:10 with access compacted with a minimum of 4 passes of the roller detailed above.

6.5.12 Install welded HDPE liner (min 2mm) welded at all joints and overlapped by 500mm into trench at top of embankment.

6.5.13 Respread topsoil on dry slope, top and wet slope to slurry level to a depth of 150mm and seed with a suitable low maintenance grass seed mixture. Make provision for re-using, or relocating, surplus topsoil on site.

6.5.14 Erect safety fence, install egress points and warning notices as required by Health and Safety Regulations.

Seeding

6.6 On completion the banks should be seeded at a rate of 5g/m².with a low maintenance grass seed mix, a typical mix is shown in Table 4.

Table 4 Typical grass seed mixture

Grass species	Composition
Strong Creeping Red Fescue	40
Slender Creeping Red Fescue	30
Sheeps Fescue	20
Browntop Bent	5
Chewings Fescue	3
Smooth Stalked Meadow Grass	2

Safety

6.7 The site of the lagoon must be fenced, and approved notices warning of the risks of entering the lagoon displayed at each entry point and on the lagoon aides (see Appendix 2). The fence must be of the 'child restraint' type - close spaced mesh allowing no hand or footholds - topped with at least 2 strands of barbed wire to give a minimum height of 1.3m. Gates must be lockable and climb proof or be sheeted/solid. An impenetrable hedge – Hawthorn/Blackthorn can be planted alongside the fence which will afford some screening, and help to restrict access and prolong fence life. There should be no tree or shrub planting on the embankments or lagoon top.

6.8 Egress or climbing points are recommended at 15m intervals around the lagoon sides. These can consist of rope ladders or tyres fitted to ropes/chains anchored to a steel pin assembly on the bank top.

7.0 SYSTEM MANAGEMENT

7.1 Access to the lagoon will be via the track and access ramp in the southwest corner of the field.

7.2 The system must be operated using the guidelines contained in DEFRA's Water Code (1998 as amended). It is imperative that a minimum freeboard of 750mm is maintained at all times.

7.3 Digestate may separate with liquid on the surface and sludge on the bottom when stored for prolonged periods. Before emptying, the digestate may need to be thoroughly agitated/mixed. Agitation is normally by PTO driven propeller type agitators, but floating or submerging electric types are also available.

7.4 Periodically, the lagoon may need to be de-silted using an excavator or a tracked shovel hence the need for less severe internal banks for access and a 4.00m bank width to allow 360° excavator access. Care must be taken not to disturb the base, sides or liner during de-silting.

7.5 Digestate transferred by tanker and/or pipeline directly to the lagoon should make use of a channel constructed from GRC units on the internal slope to minimise the risk of erosion during discharge. Alternatively a piped system of effluent introduction will be acceptable.

7.6 Earth embankments must be inspected regularly for signs of deterioration particularly after heavy rain. Embankments must be kept clear of trees and shrubs, grass cover kept short and vermin controlled. The conditions of the liner should be monitored regularly together with drainage outfalls from the field.

7.7 The lagoon should be inspected each year when full, for signs of leakage. Inspection should involve a close examination of the embankments and ground up to 3m away from the external foot of the embankment. The most vulnerable areas are the foot of the embankment and points where it is pierced by pipework (which are not proposed).

8.0 ADDITIONAL CONSIDERATIONS

Geology and soils

8.1 Five trial pits (TP1-TP5) were excavated in the location of the proposed lagoon. The location of trial pits is shown on the plan at Appendix 1 and they are described at Appendix 5.

8.2 The Geological Survey of Great Britain (BGS Website) shows that solid geology consists of sand of the Crag Group. This is a sedimentary bedrock formed up to 5 million years ago in

the Quaternary and Neogene periods. In turn, this has been overlain by superficial deposits of glacial till and head typical of the Lowestoft formation. These are Diamicton clays with local inclusions of glacial head including clay, silt, sand and gravel formed up to 3 million years ago in the Quaternary Period.

8.3 Soils are mapped by the Soil Survey of England and Wales (1:250,000) as medium to heavy textured and comprised of seasonally waterlogged soils typical of the Beccles Soil Association. Soils were fairly uniform and consist of a mean depth of 30cm (range: 26-32cm) of slightly stony (<2% flint/chalk) medium to heavy clay loam topsoil directly overlying heavy textured and slightly silty clay to 80-120cm depth grading into darker clay which extends to a depth of more than 4.50m. A shallow layer of water bearing glacial sand and gravel was identified at around 1.80-2.50m depth

8.4 The site is not in a zone influenced by deep mine workings and is at a low risk of subsidence and it is very unlikely that any future deep mining activity will take place in this area.

8.5 Soil profile stone contents were generally low to moderate containing few small and medium soft weathering chalks and flints in the topsoil. Subsoils were generally slightly stony to 1.00m depth. Below this depth the proportion of ;larger flints and chalks increased. The subsoil and drift was moderately to very compact and strongly mottled and gleyed indicating low permeability

Particle size distribution, permeability and compaction test results

8.6 Samples of clay subsoil (sample 1 – 1.00-2.50m) and underlying clay (sample 2 - 3.00-4.50m) were collected and submitted for analysis for PSD, permeability, compaction and soil strength tests in a consolidated state. The results are shown at Appendix 5 and are summarised in Table 5.

8.7 The results demonstrate that the materials proposed for lining the lagoon and for embankment construction had a slightly elevated clay content of 23-44% compared to the 20-30% recommended in CIRIA 126.

8.8 Following compaction and testing in a triaxial cell, the permeability of sample 1 was 4.30 x 10^{-11} and in sample 6.40 x 10^{-11}. These materials therefore have the potential to be compacted with a resultant permeability at least 10 times lower than the $1x10E^{-9}$ permeability required for a lined construction of this type. It can be concluded that, providing appropriate compaction is undertaken, the superficial deposits underlying the lagoon will provide an acceptable and extremely low permeability media for its construction. The use of an HDPE liner overlying the compacted base and sides will introduction further mitigation.

8.9 Maximum density results and shear strengths (natural) indicate that these materials will be suitable for the provision of stable embankments.

8.10 The optimum moisture contents for maximum compaction were 18% (sample 1), and 16% (sample 2) and field moisture contents were 15% and 13% respectively. This indicates that the materials will be broadly at their optimum as excavated and there should be no requirement to augment the clay with water prior to embankment construction unless conditions are very dry during construction.

Table 6 Summary of analysis results – subsoil and superficial deposits

Sample Reference & Depth	Sample 1 (1.00-2.50m)	Sample 2 (3.00-4.50m)	Recommended Optimum (CIRIA 126)*
Sand (%)	13	9	-
Silt (%)	43	18	-
Clay (%)	44	73	20-30
Texture	clay	clay	clay loam
Permeability ((kv) m/s)	$4.30x10^{-11}$	$6.40x10^{-11}$	$1x10^{-9}$
Compaction achieved (dry Mg/m^3)	2.75	2.65	-
Maximum bulk density (Mg/m^3)	1.79	1.79	-
Optimum moisture (%)	18	16	-
Field Moisture (%)	15	13	-
Shear strength field (kpa)	>140	>140	-

* CIRIA report 126 'Farm waste storage - guidelines for construction.

Surface water and flood risk assessment

8.11 There is a field ditch to the south of the proposed lagoon site and it will be important to ensure that a 10m stand off is maintained between the ditch and the southern edge of the lagoon slurry line.

8.12 Interrogation of the Interrogation of the Environment Agency's flood risk map (shown at Appendix 7) shows that the proposed site does not lie within a flood risk zone. The risk that the lagoon might affect flood water, or be subject to flood incidence, is considered low.

8.13 The field in which the lagoon stands is likely to contain an underdrainage system. All header and lateral drains will need to be severed and picked up by a 160mm cut off drain installed around the site. This drain will should be installed at the depths shown on the plan at Appendix 4. Any lateral drains encountered during excavation should be appropriately connected to the main and be severed and capped with a minimum of 1m of clay on the internal lagoon side.

8.14 Land drainage should be completed prior to or during lagoon construction and sufficient space retained between the outer lagoon batters and drains for construction work to proceed without affecting the newly installed drains.

Groundwater

8.15 Interrogation of the Environment Agency's groundwater vulnerability maps (SPZ, vulnerability and abstraction points) are shown at Appendix 8 and indicate that the proposed lagoon site does not lie within a sensitive aquifer designation and that there are no surface or groundwater water abstractions within 1km of the site. The site area has been reviewed with the Environment Agency who have not raised any objection to the proposed siting of the lagoon.

8.16 The site overlies a minor aquifer with variable and generally low permeability, described as having geological formations which do not have a high primary permeability. Provided the lagoon is constructed to appropriate standards, the risk posed to groundwater is considered low.

Farm waste management plan and NVZ Regulations

8.17 M Gaze and Co have been advised to maintain records of all digestate imported and applied and to reconcile this with their NVZ records.

Site designations and sensitive receptors

8.18 The lagoon is located in an arable field and the site is considered to have a limited ecological status. A rural designation site check report has been produced using DEFRA's MAGIC website. This is shown at Appendix 9 and demonstrates that there are no sensitive environmental designations with a 1,000m radius of the site.

8.19 The nearest residential housing/receptors to the site lie 650m to the southwest and northeast and are sufficiently remote so as not to be affected by potential odours from digestate storage.

Environmental Permitting

8.20 The Digestate will be produced according to PAS110 standard and will be recycled as a non waste material. The Environment Agency have previously confirmed on similar sites that, when used in this context, further controls or permits will not be required under the Environmental Permitting Regulations (2010 as amended) for digestate storage and spreading.

8.21 It is recommended that an auditable trail of digestate deliveries and spreading be kept in order to satisfy PAS100 protocols, ensure NVZ records are maintained and to aid in Cross Compliance inspections.

Notification of construction to Environment Agency

8.22 Subject to approval by the Local Planning Authority, the Environment Agency must be notified of the intention to commence lagoon construction at least 14 days prior to the start using the application form WQE3 shown at Appendix 10. A further notification of 10 days prior to the build must be undertaken according to 2013 NVZ Regulations Guidance.

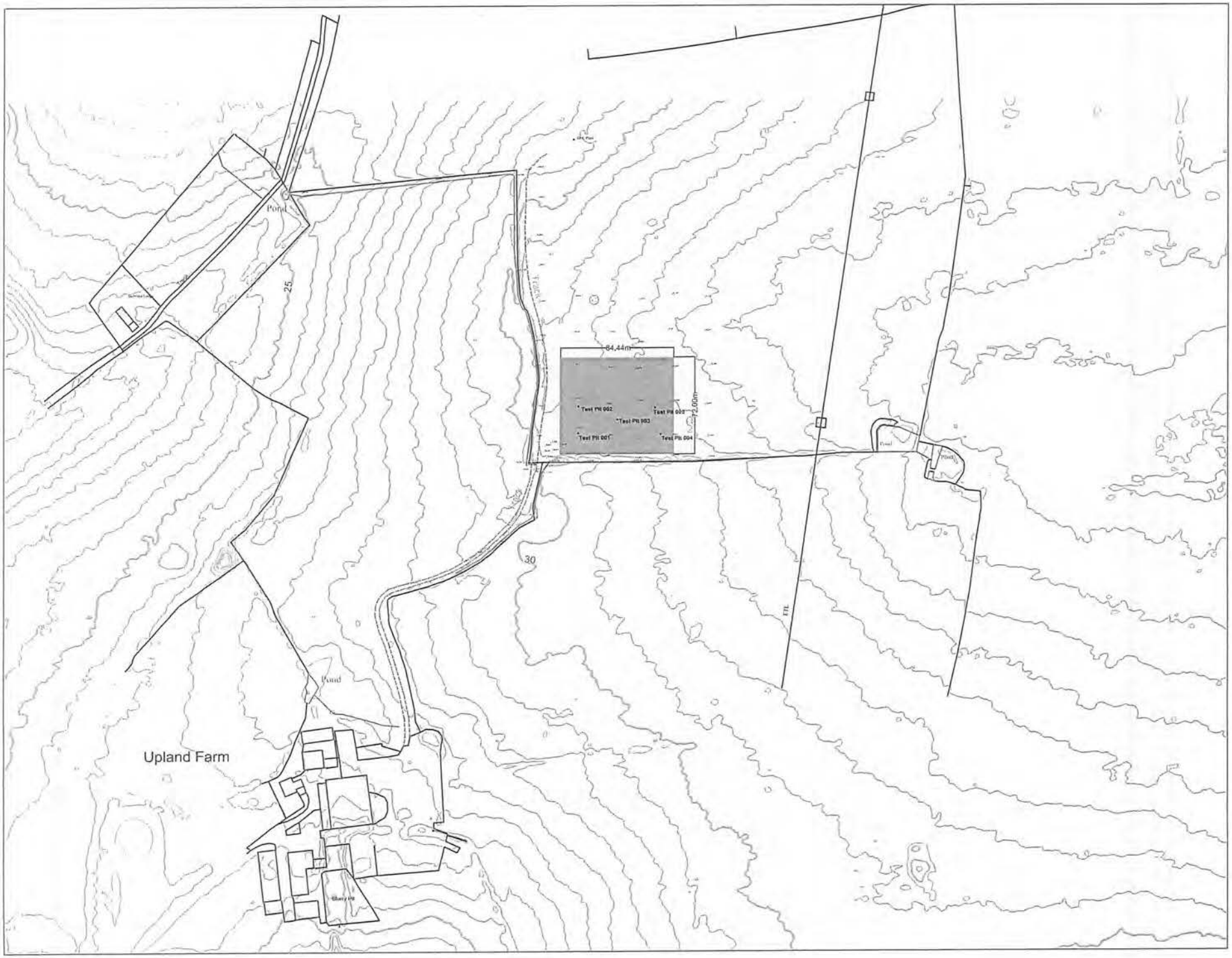
Design and construction validation

8.23 The enclosed design must be reviewed and validated by an appropriately qualified structural engineer prior to the build. In addition, construction should be undertaken under the supervision of a civil engineer to ensure that required permeability and structural specifications are satisfied and that relevant Health and Safety and Construction Design and Management (CDM) Regulations 2015 are followed at all times.

Guidance and standards

8.24 The following are relevant for the construction and maintenance of the lagoon.

- The Construction (Design and Management) Regulations (CDM) 2015.
- CIRIA report 126 'Farm waste storage - guidelines for construction'.
- BS 5502 Buildings and Structures for Agriculture.
- Specifications Part 50: 1989 Code of Practice for design, construction and use of reception pits and storage tanks for slurry Part 41.
- ADAS/Acorus CGN002 - Guidance for earth bank slurry stores – See Appendix 11.
- DEFRA Codes for Air, Water and Soil (1998 and 2009).
- Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations1991. SI. 1991, No 324, HMSO (ISBN 0 11 013324 2) as amended 1997 SI 1997, No 547.
- The NVZ Regulations (2002 as amended) and associated guidance.



UPLAND FARM, GILLINGHAM, NORFOLK

E 640429, N 293749

LDCL JOB REFERENCE NUMBER
DR_LAN_18_15

JOB DESCRIPTION
SLURRY LAGOON DESIGN

PLAN TITLE
APPENDIX 1 - LOCATION PLAN

SURVEY DATE
15TH SEPTEMBER 2015

LAGOON DETAILS
LOCATION: E 640429, N 293749
VOLUME: 10,167.84m³
LENGTH: 84.44m
WIDTH: 72.86m
WATER DEPTH: 3.60m

PROPOSED LAGOON LOCATION

LEGEND

BASED ON OS DETAIL MAP BACKGROUND

BUILDING
ROAD / PATH
FENCE
BANK
VEGETATION
WATER

BASED ON SURVEYED FEATURES

CULVERT ON PIPE
SPOT LEVELS
TREE
0.2m CONTOUR (solid) / 1.0m CONTOUR (dashed)
TEST PIT NO1 — DUAL TEST PIT
ABBREVIATIONS
D — DRAINAGE
WL — WATER LEVEL
GL — GROUND LEVEL
TOP — TOP OF BANK LEVEL
B — BASE LEVEL

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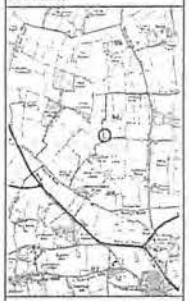

CLIENT
M GAZE & CO LTD
CROSSWAYS FARM,
THURLTON RD,
THURLTON,
NORWICH, NORFOLK, NR14 6NZ
01508 548543

DESIGN CONTRACTOR
LDC

SURVEYING CONTRACTOR
LDC

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DRAWING NUMBER LDC_DR_LAN_18_15_A01	REVISION A
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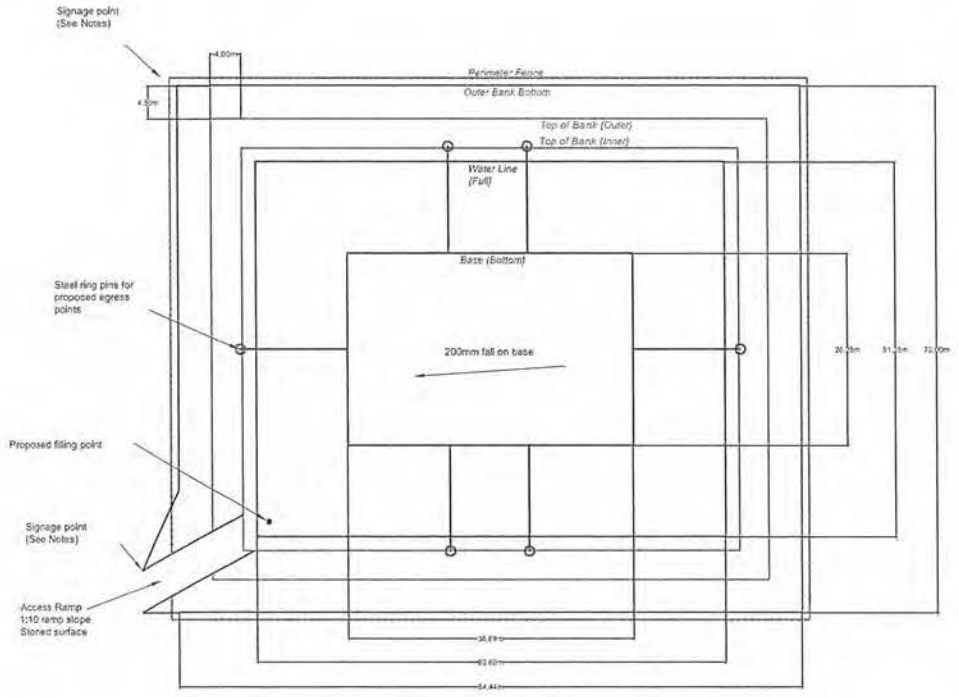

* Design assumes level platform constructed to 31.320mAOD (i.e. average existing ground level across proposed lagoon footprint)

N

Nominal Capacities

	Lagoon
Liquid	10,167.04m³
Excavation	5,896.10m³
Platform/ building level	31.250m AOD
Embankments	5,882.98m³
Basal Area	6,079.68m²
Surplus Soil Material	Approx. 13.12m³

Dimensions (m)

	Lagoon
Overall	64.44m x 72.00m
Slurry / Water Line	63.60m x 51.25m
Bottom	38.89m x 26.25m
Freeboard	0.75m
Liquid Depth	5.00m
Assumed platform datum	31.320m AOD
Bank Height	2.25m
Bank Width (Top)	4.00m
Depth of Dig	3.50m
Wet Slope	2.50
Dry Slope	2.00

Danger
Dairy Slurry

Slurry pit
Toxic gas
No entry

LDC

LDC

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QUALITY LINING SOLUTIONS

With Compliments

Reference to this report is made under
"Item 2 of IC19" in the main report "Application for Permit
Upland Farm" July 2019.

Eur Ing Brian R. Knight C.Eng., F.I.Mar EST
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AGRICULTURAL LAGOONS

PAGE 1

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LINING SOLUTIONS FOR AGRICULTURAL LAGOONS

Slurry lagoon liners

- Materials comply with Environment Agency guidance
- Installed and tested on site

Water storage lagoon liners

- Compliance with SSAFO regulations
- Varying thickness and material type to suit application

Digestate storage lagoons liners, gas balloons and storage clamp linings.

- Geosynthetic leakage detection systems
- Bespoke design and fabrication

Floating covers for slurry lagoons and water storage.

- Permanent covers with integral floats
- Flexible design to either vent or extract gas

ENVIROSEAL LINING SOLUTIONS

LINING SOLUTIONS FOR AGRICULTURAL LAGOONS

ABOUT ENVIROSEAL

Enviroseal Lining Solutions are one of Europe's leading contractors in the supply and installation of geosynthetics.

Providing our clients with the best technical and most cost effective solutions to their project requirements is the key to our business.

To ensure this is delivered our experienced team provide design input during the project development stage as part of our service. Installation of geosynthetics is completed, using market leading products, by qualified and highly skilled site teams.

Enviroseal supply and install a comprehensive range of geosynthetic liner products including HDPE, LLDPE, FPP, EVA in both smooth and textured varieties and in a wide range of thicknesses to meet the client's needs.

We also supply and install other geosynthetics components including geosynthetic clay liners, geotextiles, and geocomposites where multiple layers are required.

These materials are all made of high quality base resins with proven stabilisation packages to ensure long-term durability and which are extremely resistant to the chemical and mechanical effects required in most liner applications.

APPLICATIONS

Enviroseal provides lining solutions across a number of sectors and project types including-

Landfill basal liners & Landfill capping lining
Anaerobic Digestion and bio gas tank linings
Bund Liners for spill containment
Farm slurry lagoon and digestate lagoon liners
Floating covers
Containment liners

Lake and Pond liners
Golf course lake liners
Reed bed liners
Reservoirs liners
Golf course lakes, and pond liners
Petrochemical and Mining

MEMBERSHIPS AND ACCREDITATIONS

SAFEcontractor APPROVED

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UKAS QUALITY MANAGEMENT 001

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AGRICULTURAL LAGOONS

RECENT PROJECTS IN AGRICULTURAL SECTOR



Apsley Farm, Andover	Three silage clamps and three water storage lagoons
Peaslow Farm, Buxton	Slurry lagoon and pipe works
Stanleys' Quarry, Gloucestershire	Leakage detection to digestate lagoon
Northbrook Farm, Dorset	Slurry lagoon
Well House Farm, Cheshire	Slurry lagoon
Court Farm, Hereford	Liner to two silage clamps
Piggeries Farm, Norfolk	40,000 m² Reservoir for rain water storage
Long Lane Farm, Isle of White	Wildlife and water storage pond



Sheeplands Farm, Wargrave	20,000 m² Water storage reservoir for agricultural irrigation
Pimlico Farm, Grimbsy	Lining for two lagoons and floating cover
Walnut Tree Farm, Norwich	Slurry Lagoon
Springhill Farms, Pershore	Lining of two lagoons with holding pads and silage clamps
Hallon Farm, Shropshire	Slurry Lagoon
Overton Farm, Scotland	Slurry Lagoon
Wild Woods Farm	Water storage lagoon for agricultural irrigation
Lemington Farm, Scotland	Slurry Lagoon

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LINING SOLUTIONS FOR
AGRICULTURAL LAGOONS

AGRICULTURAL LAGOONS

Enviroseal work closely with farmers and contractors across the country to help them comply with SSAFO Regulations and EA Guidance when they have a requirement for slurry, digestate or water storage..

Lagoon liners are used for the containment of agricultural waste such as manure on farms. Today there are many restrictions when it comes the containment of agricultural by products on farms and dairies. Our line of membranes complies with the Environment Agency guidelines.

Geomembrane features

- Environmentally friendly
- High puncture resistance
- Withstands heat/cold weather fluctuations
- High strength & durability
- High impermeability, and high yield and welded seam strengths

The most commonly used membrane for lining farm lagoons is high density polyethylene HDPE in either 1mm or 2mm. Our high density polyethylene geomembranes provide an impermeable barrier against a wide range of solids and liquids. They have excellent chemical and UV resistance, impermeability, and high yield and welded strengths. Our liners are guaranteed to withstand the harsh effects of nature. Enviroseal's liners can withstand extreme weather conditions such as high heat levels and below freezing conditions.

Soil conditions should be taken into consideration when choosing a membrane for a lagoon liner. Enviroseal can provide a geotextile underlay to protect against sharp or angular stones which could damage the membrane. Enviroseal also offer comprehensive range on fixings for pipe entries and concrete structures

Working closely with engineers, clients and Environment Agency officers we have developed a number of lining solutions to provide leakage detection systems for lagoons and tanks that can be adapted to suit most applications.

Our skilled welders and fabricators have also made steel and HDPE fittings, valves, manifolds and many other bespoke items for projects.

MATERIALS

Enviroseal only supply and install materials from the leading manufactures across the world. The geomembranes used for containment are manufactured using the highest quality resins and are specified for installation based on the application, mechanical properties required and chemical resistance. The geomembranes meet or exceed the recommended specifications from the Geosynthetic Institute, Environment Agency recommendations and SSAFO regulations.

We also supply and install other geosynthetics components including geosynthetic clay liners, geotextiles, and geocomposites where multiple layers are required. The most common product that is used alongside a geomembrane is a protection geotextile. The material is often used below and above the geomembrane to protect is from damage. The type and specification of the geotextile varies depending upon a number of factors including, most notably, the ground conditions on which the materials are to be installed.

TESTING & WARRANTY

When Enviroseal undertake a project the materials and welds are supplied, installed and tested to meet the engineers' requirements. A fully documented and traceable record of each roll of material, each weld and all tests are handed over upon completion. Were an engineer is not appointed to a project our internal QA procedures are followed which are similar, if not more stringent, to that of an external engineer. In many cases Enviroseal have developed bespoke testing schedules in conjunction with the Environment Agency and clients to ensure all regulations and requirements are fully met.

ENVIROSEAL PROVIDE A 25 YEAR WARRANTY ON ALL PROJECTS

QUALITY AND HEALTH & SAFETY

The materials are installed and tested to specification by our highly experienced staff who are CSWIP certified by TWI. CSWIP is the nationally recognised qualification for geosynthetic installers and welders within the industry. TWI operates a Department of Trade and Industry accredited scheme for personnel certification in accordance with ISO/IEC 17024 through the United Kingdom Accreditation Service (UKAS).

All of our site staff hold CSCS cards, first aid certificates as well as other task specific health and safety certificates. Supervisors hold Construction Site Supervisors Safety Certificates (SSSTS). Enviroseal are accredited to Safecontractor. Safecontractor is a leading third party accreditation scheme which recognises very high standards in health and safety management amongst UK contractors.

Enviroseals management procedures are accredited to ISO9001 and provide fully traceable material documentation, installation reports and test records. We also offer independent UKAS accredited Laboratory testing for material conformance and weld strength.

INSTALLATION

The double hot metal wedge weld is by far the most reliable, and is currently the state of the art internationally. A heated wedge is pulled in intimate contact between two lapping liner surfaces, melting the molecules to the correct depth and temperature. Pinching rollers at the tip of the wedge compress the two molten surfaces onto each other allowing the molecules to bond before cooling down. A test channel between the two continuously welded tracks allows the weld seam to be pressurised to determine the integrity of the weld seam. Long lengths of welds can be tested reliably, but non-destructively. This preferred method of welding is used wherever possible.

Extrusion welding is used for detailed work with two lapping edges of lining heat tacked together to prevent differential movement, and surface oxidation is removed by grinding the area to be welded. Resin identical to the liner is molten and deposited over the edge of the top liner. This method is also used for closure welds, repairs, patches and around penetrations.

ENVIROSEAL
LINING SOLUTIONS

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LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

Upland Farm Lagoon

Appendix 9: Risk Assessment

November 2022

Appendix 9

Risk Assessment Derived Using Standard Rule set SR2010No17

Activity type:	Waste Operation: Storage in Lagoon
Permit Holder:	M Gaze and Co Ltd
Location:	Upland Farm
Location of environmentally sensitive sites (km / m):	Not within 200m (see below)
Risk assessment carried out by:	Environment Agency and LDC
Date:	21st November 2022

The scope of the standard permit is defined by the following risk criteria:

Parameter 1	Permitted activities - Storage (R13)
Parameter 2	Permitted waste types - non-hazardous wastes suitable for land treatment under standard rules
Parameter 3	Permitted quantity of wastes - maximum throughput 75000 tonnes per year
Parameter 4	The activities shall not be carried out within groundwater source protection zone 1, or if a Source Protection Zone has not been defined then within 50 metres of any well spring or borehole used for the supply of water for human consumption. This should include private water supplies.
Parameter 5	The activities shall not be carried out within 200m of a European site (SAC, SPA), Ramsar site of Site of Special Scientific Interest (SSSI).
Parameter 6	All wastes are stored separately

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Harm**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
What is at risk? What do I wish to protect?	**What is the agent or process with potential to cause harm?**	**What are the harmful consequences if things go wrong?**	**How might the receptor come into contact with the source?**	**How likely is this contact?**	**How severe will the consequences be if this occurs?**	**What is the overall magnitude of the risk?**	**On what did I base my judgement?**	**How can I best manage the risk to reduce the magnitude?**	**What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).**
Local human population as per sensitive receptor plan at Appendix 2.	Release of particulate matter (dust)	Harm to human health - respiratory irritation and illness	Air transport then inhalation	Low	Low	**Low**	Nearest residential receptors > 700m from site. There is very limiuted potential for exposure if anyone living or working close to the site (excluding operator and employees)	Permit not available if within 200 metres of any off-site building used by the public, including dwelling houses. No emissions - (emissions of substances not controlled by emission limits). If required - emissions management plan. Dusts, powders or loose fibre wastes not to be included in acceptable wastes. No buildings on site. Wastes limited to effluents or sludges with low particulate matter potential. Monitoring and management as per permit	Low
Local human population as per sensitive receptor plan at Appendix 2.	Release of particulate matter (dust)	Nuisance - dust on property (cars, clothing etc.)	Air transport then deposition	Low	Low	**Low**	As above. Materials to be stored are liquyids with limited dust potential. Dust can be generated by delivery traffic	As above. Remote site. Appropriate vehicle routeing and speed limitss. Keep roads clean and employ roadsweeper as/if required. Dust suppression optional or suspend deliveries in very dry/hot conditions. Monitoring and management as per permit	Low
Local human population and environment	Releases of methane/ammonia	Harm to human health - respiratory irritation and illness.	Air transport then inhalation	Low	Low	**Low**	Materials to be stored generally have low methane potential	Permit not available within 200 metres of any off-site building used by the public, including dwelling houses No point source emissions Storage of high readily available nitrogen wastes not currently proposed.	Low
Local human population, livestock and wildlife	Litter	Nuisance, loss of amenity and harm to animal health	Air transport then deposition.	Low	Low	**Low**	Litter not associated with permitted wastes. Primarily liquids with sealed tanker deliveries	Permit requires an emissions management plan when appropriate - appropriate measures may include litter picking affected areas/ rejection of waste loads. Monitoring and management, waste acceptance criteria as per working plan	Very low
Local human population.	Waste, litter and mud on local roads	Nuisance, loss of amenity and road traffic accidents	Vehicles entering and leaving the site.	Low	Low	**Low**	As above. Sealed delivery in tankers. Local residents often sensitive to mud on roads.	As above. Appropriate measures could include clearing waste, litter and mud arising from the activities from affected areas outside the site. Roadsweeper available at Crossways Farm as required. Monitoring and management as per permit and working plan.	Low
Local human population	Odour	Nuisance, loss of amenity. Emforcement.	Air transport then inhalation	Medium	Medium	**Medium**	Remote site Local residents often sensitive to odour, If waste not stable or stored for long periods gases may be vented. Remote site. Low RAN wastes	Appropriate measures taken to prevent odour. Odour management plan provided at Appendix 10 of working plan. Monitoring and management as per permit and working plan. Avoid weekend and bank holiday filling/emptying/spreading.	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Harm**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
Local human population	Noise from machinery	Nuisance, loss of amenity, loss of sleep	Noise through the air and vibration through the ground.	Low	Low	**Low**	Remote site. Local residents often sensitive to noise and vibration. Houses adjacent access. 1-2 vehicle deliveries per day	Appropriate measures taken to ensure levels of noise and vibration unlikely to cause annoyance outside the site are prevented or minimised. Noise and vibration management plan (if required). Monitoring and management of nopise and vibration as per permit and working plan.	Low
Local human population	Scavenging animals and scavenging birds	Harm to human health from waste carried off site and faeces. Nuisance and loss of amenity.	Air transport and over land.	Low	Medium	**Low**	Scavenging birds and animals not normally associated with permitted activity.	Appropriate measures taken to prevent or minimise nuisance from scavenging birds or animals. Monitoring and permit compliance as per permit and working plan	Very low
Local human population	Pests (e.g. flies)	Harm to human health, nuisance, loss of amenity	Air transport and over land.	Low	Medium	**Low**	Insect pests not normally associated with permitted activity	As above.	Very low
Local human population and local environment.	Flooding of site	Potential for erosion of deposited waste.	Flood waters	Low	Low	**Low**	Permitted waste types are non-hazardous and contained. Flood zone 1 - Appendix 5	The operator is required to maintain and implement an accident management plan as part of the management system. No flood risk on site	Low
Local human population and/or livestock after gaining unauthorised access to the waste operation.	All on-site hazards. Wastes, machinery and vehicles.	Bodily injury	Direct physical contact	Medium	Medium	**Medium**	Permitted waste types are non-hazardous.	Operations must be managed and operated in a coordance with a management system (this includes site security measures to prevent unauthorised access. See working plan	Low
Local human poulation and local environment	Arson and or vandalism causing the release of polluting materials to air (smoke or fumes), water or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff or firefighters. Pollution of water or land.	Air transport of smoke. Spillages and contaminated firewater by direct run-off from site and via surface water drains and ditches.	Very Low	Very Low	**Very Low**	Waste is not readily combustible. Permitted waste types are non-hazardous.	As above. The operator is required to maintain and implement an accident management plan.	Very Low
Local human population and local environment.	Accidental fire causing the release of polluting materials to air (smoke or fumes), waste or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff or firefighters. Pollution of water or land.	As above.	Low	Low	**low**	Many permitted wastes are normally moist so not readily combustible. Permitted waste types are organic and non-hazardous.	As above. Permitted activities do not include the burning of waste.	Low
All surface waters close to and downstream of the site.	Contaminated run-off from waste	Acute effects; oxygen depletion, fish kill and algal blooms.	Direct run-off from site across ground surface, via surface water drains, ditches etc.	Medium	Medium	Medium	Recognised potential for many of the listed wastes to produce contaminated run-off if preventative measures are not taken.	All wastes to be contained with no point source of emissions to water or land. Non-stackabkle waste to be stored in facility constructed to CIRIA 759 specification SR. 750mm freeboard specified for open containers and lagoons at all times. Approrpriate construction and containment as per Appendix 6-8. Monitoring and permit compliance as per permit and working plan	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Harm**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
All surface waters close to and downstream of the site.	Contaminated run-off from waste	Chronic effects; deterioration of water quality	As above. Indirect run-off via the soil layer.	Medium	Medium	Medium	Recognised potential for many of the listed wastes to produce contaminated run-off if preventative measures are not taken. Watercourse to south of site	As above.	Low
Abstraction from watercourse downstream of facility (for agricultural or potable use)	Contaminated run-off from waste	Acute effects; closure of abstraction intakes.	Direct run-off from site across ground surface, via surface water drains, ditches etc. then abstraction.	Medium	Medium	Medium	Recognised potential for many of the listed wastes to produce contaminated run-off if preventative measures are not taken. No abstraction points within 1km	As above.	Low
Groundwater	Contaminated run-off from waste	Chronic effects; contamination of groundwater, requiring treatment of water or closure of borehole.	Transport through soil/groundwater then extraction at borehole.	Medium	Medium	Medium	Recognised potential for many of the listed wastes to produce contaminated run-off if preventative measures are not taken. SPZ3 - Appendix 4. No boreholes of abstratctions within 1km	As above	Low
Groundwater and surface water	Fire on site leading to run-off from polluted fire fighting waters.	Contamination of groundwater and aquatic ecosystems.	Direct and indirect run-off	Low	Low	**Low**	Risk of deliberate or accidental combustion of waste is low. Appendix 4-5	Permit may require an accident management plan that will cover fire prevention and control measures etc. Permitted activities do not include the burning of waste.	Very Low
Local human population	Smoke from burning waste	Nuisance, loss of amenity, loss of sleep; respiratory irritation / illness	Air transport	Low	Low	**Low**	Risk of deliberate or accidental combustion of waste is low.	Permit requires as part of management system an accident management plan that will cover fire prevention and control measures etc. Permitted activities do not include the burning of waste.	Very Low
Protected sites - European sites and SSSIs	Any	Harm to protected site through toxic contamination, nutrient enrichment, smothering, disturbance, predation etc.	Any	Low	Medium	Medium	Waste disposal or recovery operations can cause deterioration of nature conservation sites. No sensitive sites within 1km - Appendix 3	SR not available within 200 metres of designated sites. Residual risk dealt with by containment measured detailed above i.e. impermeable surface with sealed drainage, use of CIRIA 759 construction standards, covered storage for high readily available nitrogen wastes, storage of dusts powders and loose fibres in a building, no point source emissions to water or land . Monitoring and permit compliance as per permit and working plan	Low

Notes: Red triangle indicates comment containing supporting information
Yellow columns contain drop down menus that allow automatic evaluation of risk in green column

	Very low	**Low**	**Medium**	**High**
High	4	8	12	16
Medium	3	6	9	12
Low	2	4	6	8
Very low	1	2	3	4

	Very low	Low	Medium	High
Very low	1	2	3	4
Low	2	4	6	8
Medium	3	6	9	12
High	4	8	12	16

LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

Upland Farm Lagoon

Appendix 10: Odour Management Plan

November 2022

Environmental Management System

Upland Farm Lagoon

Permit Reference: EPR/LB3504GC/A001

Appendix 10: Odour Management Plan

November 2022

Table of Contents

1.0 Site Information

Name of installation:	Upland Farm

Operator:	M. Gaze & Co Ltd.

WML/Permit Reference:	EPR/LB3504GC/A001
Date of Issue:	TBC

Location of site:	Upland Farm, Rectory Road, Thurlton, Norfolk, NR34 0HH

National Grid Reference:	TM 40425 93755 (640425, 293755)

Location plan attached:	Yes – Appendix 10.1

Site reference:	Upland Farm lagoon
Permitted activities:	R13

Description of activities:	Temporary storage of biodegradable liquid effluent produced at Crossways Farm depackaging plant

Document revision number:	1

Document Description:	Odour Management Plan

Date:	30th November 2022

2.0 Introduction

2.1 M Gaze and Company Ltd. operate a controlled waste packaging recycling and composting facility at their Crossways Farm site. The facility is managed according to Environmental Permit NP 3994NA/003.

2.2 A liquid effluent (LoW Code 19 02 03) produced from the Crossways Farm facility is currently applied to land at Upland Farm according to deployments agreed with the Environment Agency under mobile plant permit GP3992SC/V004. M Gaze and Co Ltd propose to temporarily store liquid waste in an appropriately designed and constructed HDPE lined earth banked slurry store located at Upland Farm. The lagoon has been used for the storage of liquid wastes deployed for the last 2 years under the terms of this permit

2.3 The facility will be operated according to the principles and guidance set out in EPR Standard Rule Set No 17, 2010 for the Storage of Wastes to be Used in Land Treatment. Whilst SR No 17, 2010 includes a provision to store Waste Code 19 02 03, the descriptive element of the LoW code, i.e. '*premixed wastes composed only of non-hazardous wastes'* is not included in Table 2.3 of SR No 17, 2010. This necessitates a bespoke permit application to regularise the disparity in the 19 02 03 LoW Code descriptions.

3.0 Aims and Objectives

3.1 This document details an Odour Management Plan (OMP) which M Gaze and Company Ltd. will implement to demonstrate compliance with the proposed bespoke permit. It includes the procedures that will be adopted with due regard to the following guidance:

- Getting the Basics Right, April 2008 as amended
- Environment Agency Technical Guidance Note H4, Odour Management
- EPR/LB3504GC/A001: Permit working plan

3.2 This Odour Management Plan is a working document with the specific aim of ensuring that:

- Odour impact is routinely considered as part of regular monitoring and inspection,
- Odour is primarily controlled at source by appropriate waste production, transfer and storage according to good practice,
- Potentially sensitive receptors are identified and fully considered, and
- Appropriate measures are implemented to ensure that, as far as reasonably practicable, odorous emissions are monitored, managed and mitigated

3.3 This plan considers the potential impact of odour release using a source-pathway-receptor approach and describes the control measures to be implemented supported by monitoring procedures and how potential complaints, should they arise, are to be addressed.

4.0 Source (s)

Site

4.1 Upland Farm is a 160 ha arable enterprise located 5.5km south east of Loddon, Norfolk and is centred over OS National Grid Reference (NGR) TM 40260 93475. The land is situated to the north and south of Rectory Road.

4.2 The lagoon is located at OS NGR TM 40425 93755 and lies approximately 700-750m equidistant between Winston Cottage to the southwest and Lodge Farm to the northeast. The nearest dwelling is located some 300m east of the lagoon, comprising a farm property with land used for outdoor pigs. The nearest villages are located 1.75 km southeast of the site at Gillingham and 2.8 km to the southwest at Geldeston. A site location plan is shown at Appendix 10.1.

4.3 Prior to construction consultation were made to the local Environment Agency Office at Norwich to discuss and review the location. The site was deemed suitable and not further consultation or objections received in determining the planning application..

4.4 Access to the lagoon is proposed off Rectory Lane using an existing concrete access track into Upland Farm and thereafter along an internal farm road The lagoon site is accessed via a track and ramp.

4.5 The lagoon will be operated by M Gaze and Co for the storage of organic waste pending spreading on adjacent agricultural land. The lagoon site and land on which it is proposed to spread are owned and farmed in their entirety by M Gaze and Co Ltd.

4.6 The lagoon design and capacities are detailed in the site working plan and provide a suitable size to allow flexibility for recycling and/or irrigation, particularly to avoid the need to spread when crop, weather or ground conditions are unsuitable and to provide sufficient storage for spring or summer application to adjacent land which is in arable and grassland use..

4.7 The lagoon has sufficient capacity to accommodate 8,500m^3 of effluent at any one time together with a provision for approximately 1,500m^3 of rainfall.

4.8 The surface area of the lagoon when full will be approximately 3,260 m^2.

Waste

Physical characteristics

4.9 An understanding of the primary waste source to be stored in the lagoon is fundamental to the OMP. Table 1 provides a summary of the physical characteristics of the effluent (Low Code 19 02 03) which is the primary material proposed for storage.

Table 1: M Gaze and Co: Waste characteristics and odour potential	
Low Code:	19 02 03
Description:	Premixed wastes not including hazardous substances
Feedstock:	Only wastes considered suitable for landspreading and as specified in Permit NP 3994NA/003. Typically this includes a variety of food, brewery, catering, vegetables and dairy based products undergoing mechanical reduction and washing with water to produce recyclates. Odorous waste streams are screened from the production process at source using waste acceptance criteria
Uniformity:	Uniform low dry matter effluent with <10% dry solids. Appendix 10.2 and Table 2 refers
Waste treatment:	Correction using caustic soda to pH 5.00-8.00 prior to delivery.
Biological treatment:	Not subject to biological treatment.
Current recovery:	Recycled to agricultural land according to permit GP 3992SC. Currently stored at Upland Farm in 2 lagoons as per deployed tonnage limits.
Odour potential:	Medium to low. Based on H4 guidance (Page 33) which classifies food wastes as less or moderately offensive. The waste is significantly diluted with water and subject to pH correction at source but does contain very small food particulates and low levels of organic matter.. Material has been applied to land for > 20 years with no odour complaints history
Odour type:	Earthy to mildly putrescible
Seasonal variability:	Limited but odour strength may have potential to increase in warm or hot weather.

Chemical composition

4.10 The effluent has been sampled and analysed for landspreading during the last 20 years. A summary of analysis (2016-2022) is shown in Table 1, at Appendix 10.2a and in the laboratory report sheets at Appendix 10.2b.

4.11 The waste is derived from a wet process of mechanical reduction of packaged food wastes. It is pH corrected to a near neutral pH (pH 5.00-8.00) at the site of production. It has a low dry solids content, low electrical conductivity and a low fats and oils content.

4.12 Total nitrogen, ammoniacal nitrogen and total sulphur levels are low. The organic matter status of the waste is typically low and levels of major plant nutrients are low in comparison to farmyard slurries, bio-solids or digestates stored and applied to land The BOD is moderately high.

4.13 Analysis has consistently demonstrated that the effluent contains low levels of Potentially Toxic Elements.

Table 2. M Gaze and Co: Summary of 19 02 03 chemical analysis 2016-2022				
Analysis	**Unit**	**Max**	**Min**	**Mean**
pH	-	8.00	3.60	5.55
Dry solids	%	10.80	0.80	4.66
BOD	mg/l	60,450	8,550	27,287
Fats & Oils	mg/kg	3,680	18	1,393
Conductivity	uS/cm	2,550	362	1,243
Major plant nutrients				
Total Nitrogen	%	0.06	0.03	0.04
Ammonium - Nitrogen	mg/l	30.00	23.40	26.70
Total Phosphorus	mg/l	106.00	18.00	67.47
P_2O_5	kg/m^3	0.24	0.04	0.16
Total Potassium	mg/l	1,334	97	499
K_2O	kg/m^3	1.61	0.12	0.60
Total Sulphur	mg/l	181	38	84
Total Sulphur	kg/m^3	0.45	0.10	0.22
Potentially Toxic Elements				
Total Copper	mg/l	12.00	0.23	3.08
Total Nickel	mg/l	0.41	0.31	0.37
Total Zinc	mg/l	14.60	0.68	4.24
Total Cadmium	mg/l	<0.05	0.01	0.01
Total Chromium	mg/l	0.79	0.22	0.46
Total Lead	mg/l	1.93	0.68	1.31
Total Mercury	mg/l	<0.05	<0.05	<0.05
Microbiological analysis				
E-coli	cfu/g	<10	<10	-
Salmonella	Presence	ND	ND	-

4.14 The material has been recycled to land for around 20 years and has been stored and spread at Upland Farm throughout this period. There has been no odour complaint history for the site.

4.15 pH balancing at the site of production will reduce the potential for production of organic acids at low pH and ammonia in alkaline conditions. The material does not produce hydrogen sulphide or methane when stored.

4.16 M Gaze and Co Ltd control the feedstock they process using defined waste acceptance criteria. Screening out of malodorous or biologically active wastes is undertaken before delivery as they are both undesirable and are not typical feedstock. This provides a good level of quality control in effluent production in terms of uniformity and consistency which carries through the process into storage and landspreading. .

4.17 In comparison to most types of farmyard slurry and/or digestate. low levels of nutrients and organic matter in the waste will lead to comparatively low levels of biological activity during storage. This reduces the potential of the waste to become anaerobic and malodorous when stored, albeit that it would be unrealistic to expect no odour potential.

Operation and maintenance

4.18 Lagoon operation and management are set out in the permit working plan. The following are considered to be the sources of potential odour during operation.

- Delivery
- Unloading
- Storage, evaporation, biodegradation and decomposition
- Emptying and associated spreading activities.
- Maintenance, cleaning and repairs
- Accidental releases

4.19 Management controls are outlined later in this plan and a risk assessment has been prepared for these activities, which and is shown at Appendix 9 of the working plan.

5.0 Pathway (s)

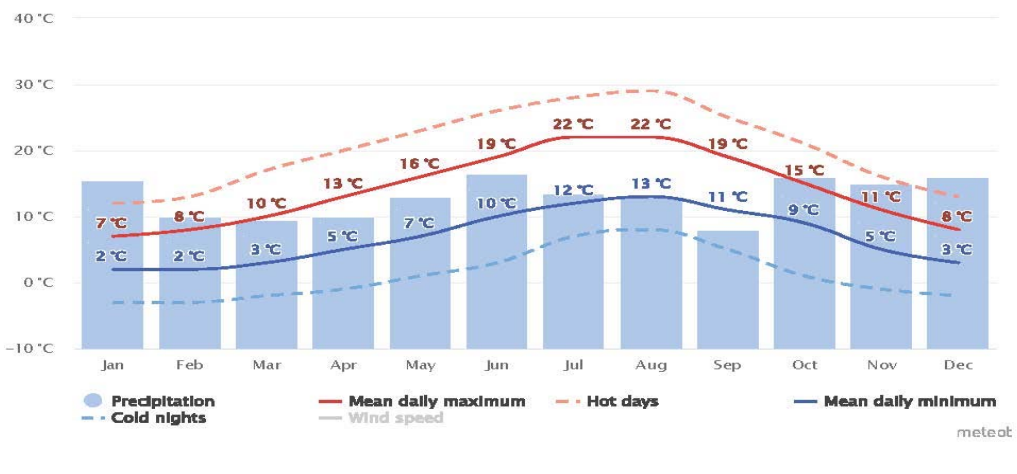
5.1 The pathway for the transport of potentially odorous emissions will be through the air. Factors that influence this pathway and which have been used to inform this plan include the site, topography, nature of exposed surfaces and importantly atmospheric conditions of temperature, humidity, wind direction and speed and these are described below

Climate, weather and relief

5.2 Figure 1 provides average annual monthly rainfall and temperature data for a weather station site 2km to the south of the lagoon. Data has been derived from 30 year average agro-climatic datasets sourced from Met Office and Meteoblue website.

Temperature and precipitation

Figure 1. Geldeston: Monthly average temperature and precipitation



5.3 The relief of the land is gently undulating with very slight slopes of less than 1° with a slight fall from 31-30m AOD North-South across the lagoon site. There are no significant topographical features that might lead to funnelling of potential odour.

5.4 This area has a moderately high mean long term annual rainfall of 620mm/yr. The average Accumulated Temperature Above 0°C (ATO) between January and June is 1,397 day°C, which indicates a moderately long and mild growing season. The land is typically at field capacity, (when the land is wet and field drains would be expected to flow), for 122 days (i.e. 4 months) in a normal year.

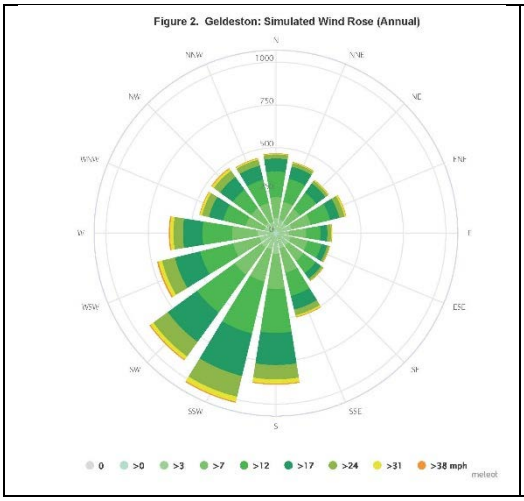
5.5 Warm air can, by convection, carry potentially odorous air upwards and impact areas remote from the site. Warmer temperatures further promote biological activity in the stored waste and increase odour potential.

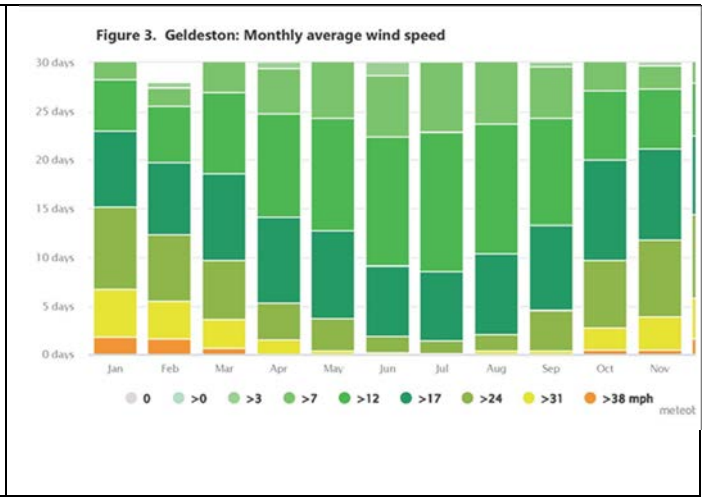
5.6 Certain atmospheric conditions, including very hot, humid or still conditions associated with temperature inversion can lead to odour deposition more remotely from the site.

5.7 Warm sunny weather is also the period of likely highest interaction with potentially sensitive human receptors.

Wind direction and speed

5.8 Figure 2 provides an annual wind rose/direction and Figure 3 the typical wind speed for this geographical area





5.9 The prevailing wind direction for the lagoon site is south to south-westerly and the highest wind speeds are typically during the winter period between August and March

5.10 Wind speed and direction will affect the distance odours will travel, but conversely, can promote dispersal and dilution .

5.11 The data in Figures 1-3 provides the following information for odour management planning

5.12 Prevailing wind direction is south and southwest and potential receptors to the north and northeast are likely to be at higher risk of exposure if emissions were to occur. This does mean infer that receptor's to the south and east are not at risk but that the frequency of exposure will

be lower.

5.13 The highest temperatures, rates of evaporation and waste biodegradation during storage are most likely to be experienced during the period May-August. This is also a period of generally lower wind speed and dispersion and of conditions conducive to odour production. Furthermore, it is a period of higher odour risk due to a likelyhood of interaction with sensitive residential or transient receptors.

5.14 Management of the risk pathway, in terms of long term climate and short term weather patterns, will be possible to an extent by monitoring, timing of works and avoidance of odour sensitive periods. The OMP will require an interactive approach focussing on the pathway and on mitigation at source.

6.0 Receptor(s)

6.1 A plan showing the lagoon site location together with the proximity of potentially sensitive residential and transient receptors within a radius of 1km is shown at Appendix 10.1.

Residential

6.2 The lagoon site lies in a rural context with 8 residential receptors within 1km located between 300-975m of the boundary of the lagoon. There are no dwellings within 200m and only a single farm, including outdoor pigs, within 500m located 375m to the east (Receptor 2). With the exception of Lodge Farm to the northeast, receptors are concentrated predominantly to the west, south and southeast of the lagoon and are generally downwind of a prevailing west, southwest or southeast wind direction.

6.3 Sensitive receptor's will include permanent residents, visitor's and those working as part of their daily activities.

Transient

6.4 There are three potential locations for transient receptors within 1km of the lagoon, the closest being a bridleway which runs to the east and within 50m. Raveningham Road lies 550m to the east and Rectory Road some 800m to the south.

6.5 Sensitive Receptors are likely to include bridleway users, pedestrians and vehicle occupants.

Ecological

6.6 A rural designation site check report has been prepared using Natural England's MAGIC website and is shown at Appendix 3 of the working plan. This indicates that that there are no International, National or locally sensitive designations within 1km of the lagoon site.

Conclusion

6.7 The site is compliant with the recommended proximity criteria outlined in SR No17, 2010.

7.0 Impacts

7.1 Odour impacts can be acute and short term, perhaps in response to an accident or process control failure, or chronic and longer term due, for example, by a failure to adequately control emissions.

7.2 Impacts can affect the individual or wider community and have consequences for health, amenity and social well-being.

7.3 There are potential impacts for the operator in terms of adverse publicity, community relations, regulatory compliance and, ultimately, enforcement together with economic and logistical impacts on their business..

7.4 It is important when assessing the potential impact of odours at both an individual and local community scale to assess both the concentration of odours and their frequency of occurrence by adopting an integrated approach taking account of both active and passive forms of odour management and monitoring.

8.0 Odour Management Plan

Site management responsibility

8.1 A Technically Competent Manager (Mitchell Gaze, WAMITAB) will have overall responsibility for implementation of this OMP.

8.2 Waste deliveries, unloading, loading, stirring (if required) and storage will be carried by trained personnel and according to an agreed Risk Assessment and Method Statement (RAMS).

8.3 M Gaze and Company Ltd. will ensure that all employees or contractors engaged in storage operations are fully informed of their responsibilities, are provided with all necessary maps and RAMS detailing where operations are to be carried out and have a clear understanding of their instructions.

Waste production and feedstock

8.4 M Gaze and Co will remove odorous feedstock by careful and considered screening during their waste acceptance criteria assessment according to permit NP 3994NA/003.

8.5 Effluent will continue to be pH balanced prior to dispatch to the lagoon to prevent extremes of alkalinity or acidity to limit malodour during storage..

8.6 Co-mixing of wastes with a different LoW Code in the lagoon will be avoided wherever possible to minimise the risk of biological activity or fermentation.

System Management

Design

8.7 The lagoon is earth banked and the external embankment and internal freeboard form a natural

wind break to the internal sides and slopes. The narrower width is aligned east to west which will reduce air to liquid contact in prevailing southerly or southwest winds.

8.8 The internal wet slopes are lined with an impermeable HDPE liner which promotes immediate drainage into the lagoon and effectively minimises the surface area and potential evaporation from the wet slope. The wet slopes are black in colour, non-porous and dry quickly which reduces the potential surface area.

8.9 In the longer term, M Gaze and Co propose to plant a hedge and marginal trees at the toe of the embankments to provide screening, act as a further wind break and facilitate dispersion through increasing turbulence and filtration.

Lagoon filling

8.10 The system will be operated according to the guidelines contained in DEFRA's Water Code (1998 as amended) and SSAFOS Regulations. A minimum freeboard of 750mm will be maintained at all times

8.11 Deliveries will be made in sealed articulated or 8 wheel rigid tankers which are maintained in a roadworthy and leak proof condition according to road traffic Regulations. These will be made by M Gaze and Co Ltd who are a registered waste carrier.

8.12 Vehicles will be appropriately routed and will not be overloaded or overfilled and at approximate frequency of 1-2 movements per day. There will be no spillage of liquids on highways and if spills do occur they will be immediately cleaned up.

8.13 All deliveries will first report to the Crossways Farm weighbridge and quantities of waste recorded in tonnes to an accuracy of 0.02 tonnes. A weighbridge ticket number will be issued and shall be used in conjunction with the waste transfer note for audit and tracking purposes.

8.14 The weight ticket details will be uploaded onto M Gaze and Co.'s bespoke weighbridge tracking system and this will be used to maintain a record of site storage capacity and current throughput. Deliveries into Upland Farm will be made from an established concrete road and access from Rectory Road to a discharge point via a ramp onto the western embankment.

8.15 Liquids will be introduced into the lagoon via pipework located on a double HDPE lined discharge apron extending from bank top and flumed at the base to reduce potential liner damage and agitation on the internal wet slope. The discharge pipe will be submerged, typically to a minimum of 500mm below the slurry line except when the lagoon is empty. Unloading of liquids will be completed to an agreed protocol as per the risk assessment shown at Appendix 10.3. Tankers will be vented at the discharge point and all coupling will be sealed until completion of the delivery.

8.16 Tanker discharge will only take place until all couplings have been connected and secured. All valves on delivery vehicles are to be checked regularly prior to pumping to ensure locking systems are correctly functioning. The valve from the tanker will be sealed until all coupling are made. Tanker discharge will be managed to slow the rate of flow to reduce surface agitation or disturbance

8.17 When the load is discharged the vehicle valve will be closed and connecting pipe to the tanker, when fully drained, will be decoupled and left in situ for the next delivery.

8.18 For external loads, a tare weight and load weight will be taken on the weighbridge and recorded electronically. The driver will be presented with a weight ticket prior to exiting the site. Internal transfers from Crossways Farm will be recorded electronically according to a waste transfer note season ticket managed by M Gaze and Company Ltd.

8.19 Tanker venting will be carefully controlled and the exhaust can, exceptionally, be fitted with carbon filters if required.

8.18 Accidental spillages will be immediately cleaned up using spill kits/absorbent and liquids will not be to in and around the discharge point. Spill kits will be carried in all delivery vehicles.

Lagoon emptying

8.19 There are 160 ha of land available for spreading at Upland Farm which can be accessed by either umbilical spreading equipment or farm tanker from the lagoon location. At a typical annual application rate of 250 m^3/ha the capacity of the proposed lagoon can be accommodated within the land area available. M Gaze also own further land in the immediate vicinity of Upland Farm and this land could also be spread from the lagoon site, subject to appropriate deployments being agreed with the Environment Agency in advance.

8.20 Lagoon emptying will be coincident with periods of crop need for nutrients which will, for most crops, be coincident with periods of lower temperature and moist conditions, typically spring or early summer. This will form an indirect and passive form of risk management.

8.21 Waste removal will be completed using a sealed submerged pipe placed on the side/base of the lagoon and with minimal surface disturbance. The waste will be pumped using secure couplings and applied to land by a tractor drawn applicator/injector fed by an umbilical pipe system and using a low trajectory system of application. A copy of the working plan for the proposed landspreading, including proposals for odour management and a risk assessment is included with the permit application.

8.22 Deployments for the spreading activity will be in agreed in advance with the Environment Agency and bespoke mobile plant permit GP 3992SC, which will include specific risk assessments for the control of odour for the landspreading activity.

8.23 The effluent does not readily form a crust when stored and should not require aggressive stirring or agitation of the surface prior to emptying.

8.24 Effluent can separate due to sedimentation of solids leading to liquid on the surface and sludge on the bottom when stored for prolonged periods. Before emptying, the lagoon contents may need to be lightly agitated/mixed. Agitation is normally by PTO driven propeller type agitators but floating or submerged electric pumps using aeration might be considered.

Timing

8.25 Potentially odorous activities will be assessed against prevailing weather conditions and a Met Office 5 day forecast. Particular emphasis will be placed on taking account of the strength and direction of the wind on the day of spreading and ambient temperatures together with those forecast for the planned work period. If wind direction is unfavourable to neighbours, housing or sensitive receptors, operations will be suspended or further mitigation implemented.

8.26 Lagoon emptying or maintenance work will avoid sensitive periods including school holidays, bank holidays, weekends and/or periods of warm humid weather or unfavourable wind direction when there is an increased likelyhood of exposure.

Duration of storage

8.27 M Gaze and Company Ltd will maximise the turnaround of waste materials delivered to the site and the lagoon is likely to be filled and emptied at least once and more likely twice yearly

8.28 The duration of storage will typically be for less than six months and for no more than 12 months and will coincide with agreed deployments.

8.29 The lagoon will not be overfilled and managed to ensure 750mm of freeboard all times.

Cleaning and maintenance

8.30 Periodically, the lagoon may need to be de-silted using a specialised excavator or pumps to remove basal accumulations of solids. Care must be taken not to disturb the base, sides or liner during this activity and odour suppression techniques employed for this operation as below..

Odour suppression systems

8.31 Active forms of odour suppression will be considered in the event of unforeseen emission events or during lagoon emptying in particular. This might include one or more of the following

- Aeration of stored waste,
- Odour suppression using a misting system with ecologically based absorbent chemicals,
- Vegetable oil to provide a surface film to reduce air to liquid contact, and/or
- Lightweight floating lagoon aggregate to provide an artificial crust.

Risk Assessment

8.32 A risk assessment for the control of odour under this permit is included at Appendix 9 of the working plan.

9.0 Emissions and Monitoring

Odour

9.1 Emissions from the operation of the lagoon will be free from odour at levels likely to cause annoyance outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, including those specified in this odour management plan.

9.2 M Gaze and Company Ltd. Will:

(a) If notified by the Agency that the activities are giving rise to annoyance outside the site due to odour, submit to the Agency for approval within the period specified, an odour management plan;

(b) Implement the approved odour management plan including subsequent revisions, from the date of approval, unless otherwise agreed in writing by the Agency.

Monitoring

9.3 Odour monitoring will be completed using sniff tests in line with the Environment Agency's H4 Odour Management Guidance.

9.4 M Gaze and Co. have in-house odour monitoring procedures at their Crossways Farm site which are embedded in their site permit and EMS. The lagoon site will be monitored under similar provisions.

9.5 Regular odour monitoring is proposed by M Gaze and Co Ltd at the Upland Farm site which is a very short drive (<5 minutes) from their Crossways Farm facility.

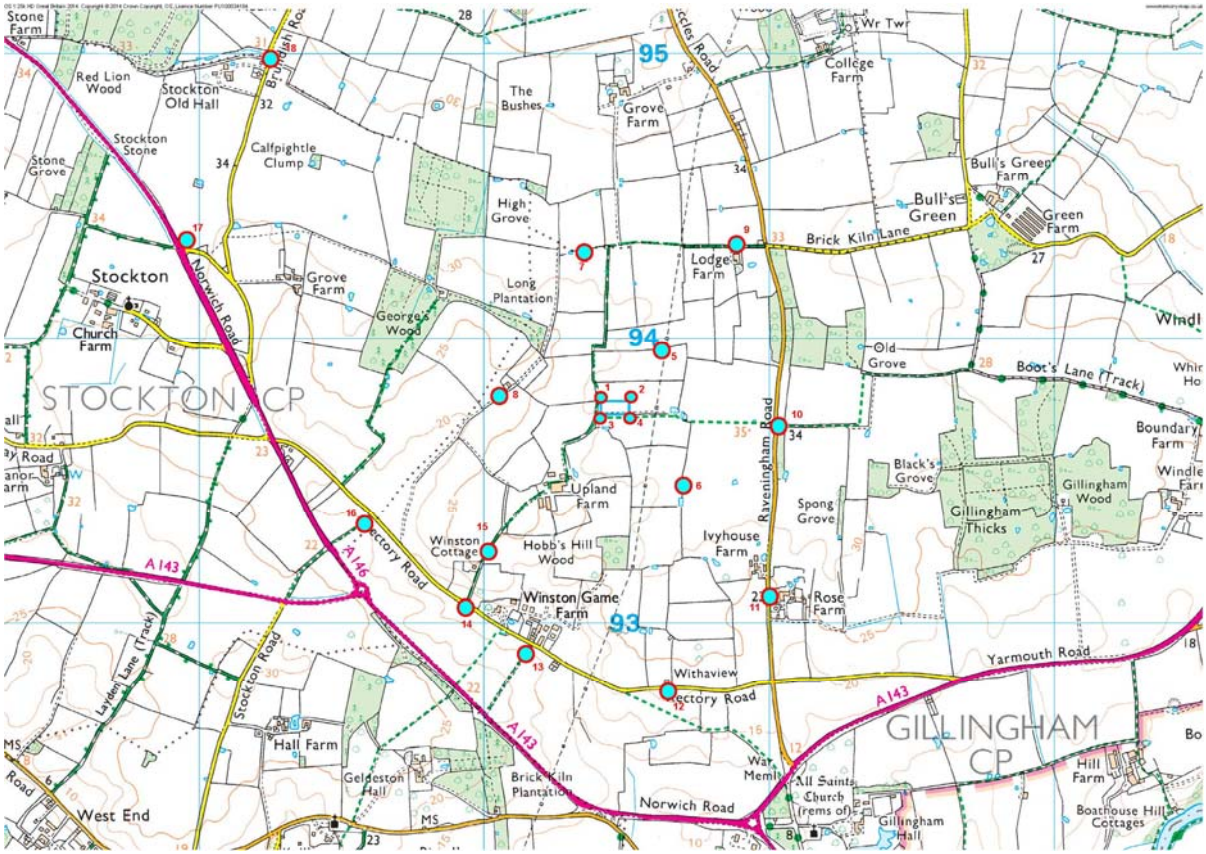
9.6 A daily weather report will be obtained to inform monitoring points, potential adverse weather conditions and to use in the odour assessment.

9.7 The TCM, or nominated and trained employee, will firstly monitor a single selected upwind site to gauge ambient conditions, followed by downwind locations as shown in Figure 1 before moving to the lagoon site. As assessment will then be completed at the lagoon site at bank top and within 25m of each embankment.

9.8 Monitoring visits will be completed once fortnightly during periods of lagoon filling and storage. The frequency of monitoring will intensify to daily assessment during lagoon emptying and spreading activities or during maintenance works.

9.9 Personnel responsible for monitoring will visit the site in the morning and preferable from home after a period of non-odour exposure. Recordings will then be logged and reported using the odour monitoring forms and assessment criteria shown at Appendix 10.4.

Figure 1. Upland Farm Lagoon: Proposed monitoring points



9.11 In the event of a process failure, fugitive emission or unfavourable monitoring report the TCM will notify he Environment Agency and any other relevant parties, including downwind receptors, of the potential issue, likely duration and mitigation proposed. Monitoring will continue until the issue is resolved.

Complaints

9.12 If an odour complaint or adverse comment is received from any source, M Gaze and Co Ltd (TCM) will respond immediately. An odour complaint form will be completed as per Appendix 10.4, the complaint investigated and corrective actions initiated where appropriate according to their EMS.

9.13 Complaint investigation and resolution will include the following

- All complaints will be recorded in M Gaze and Co Ltd.'s EMS.
- An investigation will be conducted to identify the source of odour, the cause and mitigation proposed.
- If required , third party and independent specialist advice will be commissioned to assess the nature and extent of the emission.
- Suspension of deliveries until corrective actions are in place. Diversion of wastes to

alternative treatment or other deployed sites.

- Transparent communication with the complainant (if desired), statutory agencies and stakeholders to inform them of the status of the complaint and mitigation proposed.
- Complaint follow up to gauge resolution, or otherwise..
- Process change and design review to include mitigation and avoid re-occurrence
- A review including lesson's learned and corrective actions for future reference

Engagement

9.14 M Gaze and Co Ltd will engage with the local community at all stages of their permit and odour management planning. Receptors are neighbours and/or friends to the Director's and they are recognised as being extremely important stakeholders.

10.0 Contingencies and Emergency Planning

Major incidents

10.1 The lagoon has been engineered for containment and the risk of catastrophic failure is extremely low. The structure is double lined and has been formed with appropriate compaction of the basal area and embankments with an expected lifespan of at least 20 years. Compliance with the working plan and this OMP will mitigate against major incidents but M Gaze recognise that they must plan for the eventuality. A major incident management plan is in place for the Crossways Farm site and subject to continuous review. The lagoon at Upland Farm will be included as an extension to the protocols contained therein.

10.2 M Gaze and Co. Ltd operate a 24 hour emergency phoneline and should an emergency occur outside of normal operating hours, a nominated representative will be on site within one hour of notification.

10.3 If an emergency occurs during silent hours the on call operative will contact the Directors immediately via mobile telephone. A decision will be made as to whether a major incident and recovery plan should be implemented. The emergency services and statutory bodies will be immediately informed and, if required, will be asked to attend site

10.4 If a catastrophic failure or lagoon breach were to occur all deliveries would cease. A second lagoon located at Uplands Farm of 3,000 tonnes capacity into which effluent could, exceptionally, be pumped to relieve pressure. Furthermore, it would be possible to empty the lagoon by spreading onto adjacent agricultural land within 36-48 hours or to remove and dispose via tanker to water treatment works over a longer timeframe. These works would be subject to an emergency approval from the Environment Agency.

Meteorological Conditions

10.5 Unforeseen and prolonged unusual meteorological conditions such as low wind strength, low pressure, high temperatures may promote elevated levels of odour either on the site or at nearby sensitive receptors. Depending on prevailing conditions this might necessitate odour suppressions measures, as outlined at 8.31.

Equipment and staffing

10.6 In the event of machinery breakdown, or failure, replacement machinery is available for use or hire from neighbouring farms or outlets.

10.7 M Gaze and Co. Ltd. Operate an in house workshop with experienced engineering capability to expedite repairs.

10.8 M Gaze and Co. operates a routine maintenance and inspection policy for all vehicles and equipment. Machinery will be checked daily by site operatives and will be regularly serviced and repaired as per manufacturer's warranties.

10.9 If staff are absent or unable to work there is sufficient capacity at the Crossways Farm site for temporary storage or, in extreme cases, production can be suspended and feedstock safely stored until resolution.

10.10 M Gaze operate a fleet of tankers and deliveries can be re-routed to other regulated facilities, for instance wastewater treatment works using in house resource.

LB304GC/A001/M Gaze and Co Ltd

Odour Management Plan

Upland Farm Lagoon

Appendix 10.1

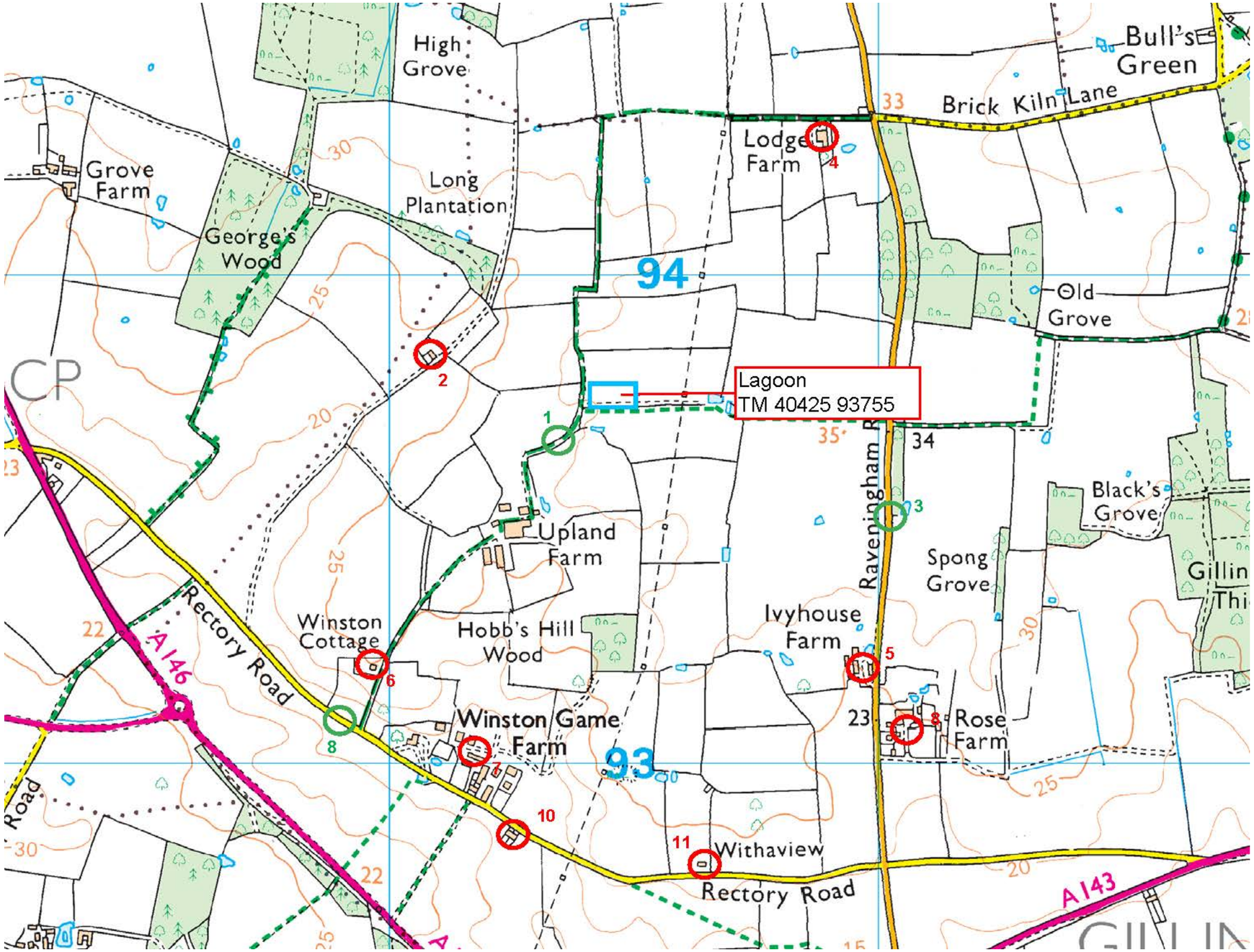
Location of Sensitive Receptors

November 2022

LB3504GC/A001/M Gaze and Co: Upland Farm Lagoon

Location of Sensitive Residential and Transient Receptors < 1 km

Appendix 10.1



Key

Residential **receptors**

Transient receptors

Receptor	Distance (m)	Description
1	0	Site workers/ bridleway
2	325	Unnamed Farm (Pigs)
3	550	Raveningham Road
4	670	Lodge Farm
5	725	Ivy House Farm
6	730	Winston Cottage
7	760	Winston Game Farm
8	860	Rectory Road
9	875	Rose Farm
10	915	Unnamed residence
11	975	Withaview

N

Site: Upland Farm Lagoon
NGR (Centre) TM 40425 93755
Scale: 1:15,000 approx
Client: M Gaze and Company Ltd
Date: 15.08.2022

LB304GC/A001/M Gaze and Co Ltd

Odour Management Plan

Upland Farm Lagoon

Appendix 10.2

Waste Analysis

November 2022

M Gaze and Co Ltd **Appendix 10.2a**

Odour Management Plan: Waste Analysis Summary 2016-2022

Liquid Effluent Proposed for Storage (LoW Code 19 02 03)

Analysis	Unit	Apr-16	Jul-17	Jun-18	Nov-19	Jan-20	Jan-21	Jan-22	Max	Min	Mean
pH	-	3.60	8.00	4.19	6.23	4.98	5.86	5.98	8.00	3.60	5.55
Dry solids	%	4.67	10.8	5.49	0.8	5.87	3.15	1.83	10.80	0.80	4.66
BOD	mg/l	53,300	10,300	38,100	8,550	60,450	10,290	10,020	60,450	8,550	27,287
Fats & Oils	mg/kg	3,680	480	<200	<200	18	<200	<0.01	3,680	18	1,393
Conductivity	uS/cm	1,038	2,550	1,430	432	2,022	362	869	2,550	362	1,243
Major plant nutrients											
Total Nitrogen	%	0.03	0.05	<0.04	<0.01	0.03	0.06	0.03	0.06	0.03	0.04
Ammonium - Nitrog	mg/l	23	30	<50	<25	<25	<25	<0.25	30.00	23.40	26.70
Total Phosphorus	mg/l	75	87	19	18	106	106	61	106.00	18.00	67.47
P_2O_5	kg/m^3	0.17	0.20	0.04	0.04	0.24	0.24	0.14	0.24	0.04	0.16
Total Potassium	mg/l	384	1334	240	97	484	467	490	1334.00	97.00	499.43
K_2O	kg/m^3	0.46	1.61	0.29	0.12	0.58	0.56	0.59	1.61	0.12	0.60
Total Sulphur	mg/l	80	181	38	50	118	63	60	181.00	38.00	84.09
Total Sulphur	kg/m^3	0.20	0.45	0.10	0.12	0.30	0.16	0.15	0.45	0.10	0.22
Potentially Toxic Elements											
Total Copper	mg/l	0.91	2.22	0.79	0.41	12.00	0.23	4.97	12.00	0.23	3.08
Total Nickel	mg/l	0.31	0.40	<0.20	<0.20	0.41	<0.20	<0.20	0.41	0.31	0.37
Total Zinc	mg/l	4.43	5.38	2.03	0.68	14.60	0.85	1.74	14.60	0.68	4.24
Total Cadmium	mg/l	0.01	0.01	0.01	<0.01	0.02	<0.01	<0.01	<0.05	0.01	0.01
Total Chromium	mg/l	0.51	0.50	0.29	0.22	0.79	<0.20	<0.20	0.79	0.22	0.46
Total Lead	mg/l	0.68	1.93	<0.50	<0.50	1.32	<0.50	<0.50	1.93	0.68	1.31
Total Mercury	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Microbiological analysis											
E-coli	cfu/g	<10	<10	-	-	<10	<10	-	<10	<10	-
Salmonella	Presence	ND	ND	-	-	ND	ND	-	ND	ND	-

ND - Not detected
D - Detected

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M GAZE AND CO
CROSSWAYS FARM

EFFLUENT

EFFLUENT ANALYSIS RESULTS

Sample Reference :

EFFLUENT APRIL 2016

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	14785
Sample Number	43050

Date Received	19-APR-2016
Date Reported	26-APR-2016

The sample submitted was small and made it difficult to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	4.67	%
E Coli [Fresh]	<10	cfu/g
Conductivity 1:6	1038	uS/cm
Total Nitrogen	0.03	% w/w
Ammonium Nitrogen	23.4	mg/kg
Total Phosphorus (P)	75.3	mg/kg
Total Potassium (K)	384	mg/kg
Total Magnesium (Mg)	58.8	mg/kg
Total Copper (Cu)	0.91	mg/kg
Total Zinc (Zn)	4.43	mg/kg

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Date ..... 26/04/16 .....

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Sulphur (S)	79.6	mg/kg
Total Calcium (Ca)	587	mg/kg
Total Molybdenum (Mo)	0.08	mg/kg
Total Lead (Pb)	0.68	mg/kg
Total Cadmium (Cd)	0.01	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	0.31	mg/kg
Total Chromium (Cr)	0.51	mg/kg
Total Sodium (Na)	539	mg/kg
pH 1:6 [Fresh]	3.60	

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Fluoride [100:1 H2S04 Soluble]	<10	mg/kg
Total Arsenic (As)	<0.5	mg/kg
Total Selenium (Se)	<0.02	mg/kg
B.O.D. [fresh]	53300	mg/l
Oils,Fats and Grease	3680	mg/kg
Salmonella spp [fresh]	Negative	
Oven Dry Matter Duplicate	4.67	% w/w
Duplicate DM 2nd weight	4.68	% w/w
Stones > 5mm	0	%
Other Contaminants > 2mm	0	%

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Plastics > 2mm	0	%
Total Glass > 2mm	0	%
Total Metals > 2mm	0	%
Sharps > 2mm	0	%

Released by ..... *J Doyle* .....

Date ..... *26/04/16* .....

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EFFLUENT ANALYSIS RESULTS

Laboratory References	
Report Number	65470
Sample Number	57190

Sample Reference :

EFFLUENT 05/07/17

Sample Matrix : EFFLUENT

Date Received	06-JUL-2017
Date Reported	18-JUL-2017

The sample submitted was small and made it difficult to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	10.8	%
E Coli [Fresh]	<10	cfu/g
Conductivity 1:6	2550	uS/cm
Total Nitrogen	0.05	% w/w
Ammonium Nitrogen	30.0	mg/kg
Total Phosphorus (P)	87.0	mg/kg
Total Potassium (K)	1334	mg/kg
Total Magnesium (Mg)	76.8	mg/kg
Total Copper (Cu)	2.22	mg/kg
Total Zinc (Zn)	5.38	mg/kg

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Sulphur (S)	181	mg/kg
Total Calcium (Ca)	2523	mg/kg
Total Molybdenum (Mo)	0.12	mg/kg
Total Lead (Pb)	1.93	mg/kg
Total Cadmium (Cd)	0.01	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	0.40	mg/kg
Total Chromium (Cr)	0.50	mg/kg
Total Sodium (Na)	1100	mg/kg
pH 1:6 [Fresh on receipt]	8.00	

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Fluoride [100:1 H2S04 Soluble]	<10	mg/kg
Total Arsenic (As)	<0.5	mg/kg
Total Selenium (Se)	<0.02	mg/kg
B.O.D. [fresh]	10,300	mg/l
Oils,Fats and Grease	480	mg/kg
Salmonella spp [fresh]	Negative	
Oven Dry Matter Duplicate	10.8	% w/w
Duplicate DM 2nd weight	10.5	% w/w
Stones > 5mm	<0.01	%
Other Contaminants > 2mm	<0.01	%

Released by *Joe Cherrie* Date *18/07/17*

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Plastics > 2mm	<0.01	%
Total Glass > 2mm	<0.01	%
Total Metals > 2mm	<0.01	%
Sharps > 2mm	0	%

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LIQUID EFFLUENT WASTE

EFFLUENT WASTE

Sample Reference :

LIQUID EFFLUENT

Sample Matrix : EFFLUENT WASTE

Laboratory References	
Report Number	16487
Sample Number	69676

Date Received	15-JUN-2018
Date Reported	11-JUL-2018

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	5.49	%
Total PAH	<10	mg/kg
TPH [C5-C35]	19200	mg/l
Aliphatic TPH C5-C6	<0.01	mg/l
Aliphatic TPH C6-C8	0.42	mg/l
Aliphatic TPH C8-C10	72.3	mg/l
Aliphatic TPH C10-C12	444	mg/l
Aliphatic TPH C12-C16	2110	mg/l
Aliphatic TPH C16-C21	2800	mg/l
Aliphatic TPH C21-C35	3610	mg/l

Released by *Darren Whitbread* Date *11/07/18*

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Aromatic TPH C5-C7	<0.01	mg/l
Aromatic TPH C7-C8	6.40	mg/l
Aromatic TPH C8-C10	30.1	mg/l
Aromatic TPH C10-C12	107	mg/l
Aromatic TPH C12-C16	862	mg/l
Aromatic TPH C16-C21	1280	mg/l
Aromatic TPH C21-C35	4500	mg/l
Conductivity 1:6	1430	uS/cm
Total Nitrogen	<0.04	% w/w
Ammonium Nitrogen	<50	mg/kg

Released by *Darren Whitbread* Date *11/07/18*

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Phosphorus (P)	19.3	mg/kg
Total Potassium (K)	240	mg/kg
Total Magnesium (Mg)	31.8	mg/kg
Total Copper (Cu)	0.79	mg/kg
Total Zinc (Zn)	2.03	mg/kg
Total Sulphur (S)	37.5	mg/kg
Total Calcium (Ca)	2262	mg/kg
Total Molybdenum (Mo)	0.08	mg/kg
Total Lead (Pb)	<0.5	mg/kg
Total Cadmium (Cd)	0.01	mg/kg

Released by *Darren Whitbread* Date *11/07/18*

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	<0.2	mg/kg
Total Chromium (Cr)	0.29	mg/kg
Total Sodium (Na)	302	mg/kg
pH 1:6 [Fresh]	4.19	
Organic Matter LOI	5.74	% w/w
Fluoride [100:1 H2S04 Soluble]	<10	mg/kg
Total Arsenic (As)	<0.5	mg/kg
Total Selenium (Se)	<0.02	mg/kg
B.O.D. [fresh]	38100	mg/l

Released by *Darren Whitbread* Date *11/07/18*

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oils,Fats and Grease	<200	mg/kg
Oven Dry Matter Duplicate	5.48	% w/w
Duplicate DM 2nd weight	5.50	% w/w
Naphthalene	0.06	mg/kg
Acenaphthylene	<0.01	mg/kg
Acenaphthene	0.11	mg/kg
Fluorene	0.19	mg/kg
Phenanthrene	0.39	mg/kg
Anthracene	0.04	mg/kg
Fluoranthene	0.18	mg/kg

Released by *Darren Whitbread* Date *11/07/18*

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Pyrene	0.31	mg/kg
Benzo[a]anthracene	0.12	mg/kg
Chrysene	0.05	mg/kg
Benzo[b]fluoranthene	0.08	mg/kg
Benzo[k]fluoranthene	<0.01	mg/kg
Benzo[a]pyrene	0.07	mg/kg
Indeno[1,2,3-cd]pyrene	<0.01	mg/kg
Dibenzo[a,h]anthracene	<0.01	mg/kg
Benzo[g,h,i]perylene	<0.01	mg/kg
Stones > 5mm	<0.01	%

Released by *Darren Whitbread* Date *11/07/18*

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The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Other Contaminants > 2mm	<0.01	%
Total Plastics > 2mm	<0.01	%
Total Glass > 2mm	<0.01	%
Total Metals > 2mm	<0.01	%
Sharps > 2mm	0	%

Released by *Darren Whitbread* Date *11/07/18*

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M GAZE AND CO

EFFLUENT ANALYSIS RESULTS

Sample Reference :

EFFLUENT

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	79537
Sample Number	89489

Date Received	29-NOV-2019
Date Reported	12-DEC-2019

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	0.80	%
TPH [C5-C35]	0.41	mg/l
Aliphatic TPH C5-C6	<0.01	mg/l
Aliphatic TPH C6-C8	<0.01	mg/l
Aliphatic TPH C8-C10	<0.01	mg/l
Aliphatic TPH C10-C12	<0.01	mg/l
Aliphatic TPH C12-C16	<0.01	mg/l
Aliphatic TPH C16-C21	<0.01	mg/l
Aliphatic TPH C21-C35	<0.01	mg/l
Aromatic TPH C5-C7	<0.01	mg/l

Released by *Katie Dunn* Date *12/12/19*

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Aromatic TPH C7-C8	<0.01	mg/l
Aromatic TPH C8-C10	<0.01	mg/l
Aromatic TPH C10-C12	<0.01	mg/l
Aromatic TPH C12-C16	<0.01	mg/l
Aromatic TPH C16-C21	<0.01	mg/l
Aromatic TPH C21-C35	<0.01	mg/l
Total PAH	<10	ug/l
Conductivity 1:6	432	uS/cm
Total Kjeldahl Nitrogen	<0.01	% w/w
Ammonium Nitrogen	<25	mg/kg

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Phosphorus (P)	18.1	mg/kg
Total Potassium (K)	97.4	mg/kg
Total Magnesium (Mg)	15.7	mg/kg
Total Copper (Cu)	0.41	mg/kg
Total Zinc (Zn)	0.68	mg/kg
Total Sulphur (S)	49.5	mg/kg
Total Calcium (Ca)	745	mg/kg
Total Molybdenum (Mo)	<0.05	mg/kg
Total Lead (Pb)	<0.5	mg/kg
Total Cadmium (Cd)	<0.01	mg/kg

Released by *Katie Dunn* Date *12/12/19*

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The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	<0.2	mg/kg
Total Chromium (Cr)	0.22	mg/kg
Total Sodium (Na)	79.3	mg/kg
pH 1:6 [Fresh]	6.23	
Organic Matter LOI	0.56	% w/w
Fluoride [100:1 H2S04 Soluble]	<10	mg/kg
Total Arsenic (As)	<0.5	mg/kg
Total Selenium (Se)	<0.02	mg/kg
B.O.D. [fresh]	8550	mg/l

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Date Received	29-NOV-2019
Date Reported	12-DEC-2019

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The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oils,Fats and Grease	580	mg/kg
Naphthalene	1.64	ug/l
Acenaphthylene	<0.01	ug/l
Acenaphthene	0.08	ug/l
Fluorene	0.08	ug/l
Phenanthrene	0.18	ug/l
Anthracene	0.13	ug/l
Fluoranthene	0.04	ug/l
Pyrene	0.05	ug/l
Benzo[a]anthracene	<0.01	ug/l

Released by *Katie Dunn* Date *12/12/19*

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Chrysene	<0.01	ug/l
Benzo[b]fluoranthene	<0.01	ug/l
Benzo[k]fluoranthene	<0.01	ug/l
Benzo[a]pyrene	<0.01	ug/l
Indeno[1,2,3-cd]pyrene	<0.01	ug/l
Dibenzo[a,h]anthracene	<0.01	ug/l
Benzo[g,h,i]perylene	<0.01	ug/l
Stones > 5mm	<0.01	%
Other Contaminants > 2mm	<0.01	%
Total Plastics > 2mm	<0.01	%

Released by *Katie Dunn* Date *12/12/19*

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The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Glass > 2mm	<0.01	%
Total Metals > 2mm	<0.01	%
Sharps > 2mm	0	%

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SLURRY/SLUDGE ANALYSIS RESULTS

Sample Reference :

LIQUID EFFLUENT

Sample Matrix : SLURRY/SLUDGE

Laboratory References	
Report Number	82906
Sample Number	90834

Date Received	10-JAN-2020
Date Reported	30-JAN-2020

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	5.87	%
E Coli [Fresh]	<10	cfu/g
Total PAH	405	ug/l
TPH [C5-C35]	18.0	mg/l
Aliphatic TPH C5-C6	1.45	mg/l
Aliphatic TPH C6-C8	0.11	mg/l
Aliphatic TPH C8-C10	0.19	mg/l
Aliphatic TPH C10-C12	0.58	mg/l
Aliphatic TPH C12-C16	2.61	mg/l
Aliphatic TPH C16-C21	3.40	mg/l

Released by *Myles Nicholson* Date *30/01/20*

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SLURRY/SLUDGE ANALYSIS RESULTS

Sample Reference :

LIQUID EFFLUENT

Sample Matrix : SLURRY/SLUDGE

Laboratory References	
Report Number	82906
Sample Number	90834

Date Received	10-JAN-2020
Date Reported	30-JAN-2020

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Aliphatic TPH C21-C35	9.77	mg/l
Aromatic TPH C5-C7	1.97	mg/l
Aromatic TPH C7-C8	0.19	mg/l
Aromatic TPH C8-C10	0.10	mg/l
Aromatic TPH C10-C12	1.22	mg/l
Aromatic TPH C12-C16	1.21	mg/l
Aromatic TPH C16-C21	2.20	mg/l
Aromatic TPH C21-C35	4.67	mg/l
Conductivity 1:6	2022	uS/cm
Total Kjeldahl Nitrogen	0.03	% w/w

Released by *Myles Nicholson* Date *30/01/20*

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Sample Matrix : SLURRY/SLUDGE

Date Received	10-JAN-2020
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The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Ammonium Nitrogen	<25	mg/kg
Total Phosphorus (P)	106	mg/kg
Total Potassium (K)	484	mg/kg
Total Magnesium (Mg)	77.2	mg/kg
Total Copper (Cu)	12.0	mg/kg
Total Zinc (Zn)	14.6	mg/kg
Total Sulphur (S)	118	mg/kg
Total Calcium (Ca)	3226	mg/kg
Total Molybdenum (Mo)	0.12	mg/kg
Total Lead (Pb)	1.32	mg/kg

Released by *Myles Nicholson* Date *30/01/20*

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Sample Reference :

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Sample Matrix : SLURRY/SLUDGE

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Cadmium (Cd)	0.02	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	0.41	mg/kg
Total Chromium (Cr)	0.79	mg/kg
Total Sodium (Na)	502	mg/kg
pH 1:6 [Fresh]	4.98	
Organic Matter LOI	2.48	% w/w
Fluoride [100:1 H2S04 Soluble]	<10	mg/kg
Total Arsenic (As)	<0.5	mg/kg
Total Selenium (Se)	<0.02	mg/kg

Released by *Myles Nicholson* Date *30/01/20*

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
B.O.D. [fresh]	60450	mg/l
Oils,Fats and Grease	<200	mg/kg
Salmonella spp [fresh]	Negative	in 25g
Naphthalene	161	ug/l
Acenaphthylene	0.91	ug/l
Acenaphthene	18.7	ug/l
Fluorene	28.7	ug/l
Phenanthrene	68.3	ug/l
Anthracene	75.5	ug/l
Fluoranthene	20.8	ug/l

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ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Pyrene	14.4	ug/l
Benzo[a]anthracene	3.80	ug/l
Chrysene	4.39	ug/l
Benzo[b]fluoranthene	2.68	ug/l
Benzo[k]fluoranthene	1.22	ug/l
Benzo[a]pyrene	1.95	ug/l
Indeno[1,2,3-cd]pyrene	1.03	ug/l
Dibenzo[a,h]anthracene	0.30	ug/l
Benzo[g,h,i]perylene	1.20	ug/l
Stones > 5mm	<0.01	%

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The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Other Contaminants > 2mm	<0.01	%
Total Plastics > 2mm	<0.01	%
Total Glass > 2mm	<0.01	%
Total Metals > 2mm	<0.01	%
Sharps > 2mm	0	%

Released by *Myles Nicholson* Date *30/01/20*

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Sample Reference :

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Sample Matrix : EFFLUENT

Laboratory References	
Report Number	36171
Sample Number	103156

Date Received	08-JAN-2021
Date Reported	18-JAN-2021

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	3.15	%
E Coli [Fresh]	<10	cfu/g
Conductivity 1:6	362	uS/cm
Total Kjeldahl Nitrogen	0.06	% w/w
Ammonium Nitrogen	<25	mg/kg
Total Phosphorus (P)	106	mg/kg
Total Potassium (K)	467	mg/kg
Total Magnesium (Mg)	44.0	mg/kg
Total Copper (Cu)	0.23	mg/kg
Total Zinc (Zn)	0.85	mg/kg

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Sample Reference :

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Sample Matrix : EFFLUENT

Laboratory References	
Report Number	36171
Sample Number	103156

Date Received	08-JAN-2021
Date Reported	18-JAN-2021

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Sulphur (S)	62.5	mg/kg
Total Calcium (Ca)	260	mg/kg
Total Molybdenum (Mo)	<0.05	mg/kg
Total Lead (Pb)	<0.5	mg/kg
Total Cadmium (Cd)	<0.01	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	<0.2	mg/kg
Total Chromium (Cr)	<0.2	mg/kg
Total Sodium (Na)	166	mg/kg
pH 1:6 [Fresh]	5.86	

Released by J Doyle Date 18/01/21

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Sample Matrix : EFFLUENT

Laboratory References	
Report Number	36171
Sample Number	103156

Date Received	08-JAN-2021
Date Reported	18-JAN-2021

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Organic Matter LOI	3.01	% w/w
Fluoride [100:1 H2S04 Soluble]	<10	mg/kg
Total Arsenic (As)	<0.5	mg/kg
Total Selenium (Se)	<0.02	mg/kg
B.O.D. [fresh]	10290	mg/l
Oils,Fats and Grease	<200	mg/kg
Salmonella spp [fresh]	Negative	in 25g

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Sample Reference :

EFFLUENT 17/01/22

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	84193
Sample Number	117324

Date Received	19-JAN-2022
Date Reported	08-FEB-2022

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	1.83	%
TPH [C5-C35]	<0.01	mg/l
Aliphatic TPH C5-C6	0.12	mg/l
Aliphatic TPH C6-C8	<0.01	mg/l
Aliphatic TPH C8-C10	<0.01	mg/l
Aliphatic TPH C10-C12	<0.01	mg/l
Aliphatic TPH C12-C16	<0.01	mg/l
Aliphatic TPH C16-C21	<0.01	mg/l
Aliphatic TPH C21-C35	0.43	mg/l
Aromatic TPH C5-C7	<0.01	mg/l

Released by *Gina Graham* Date *08/02/22*

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Tel: +44 (0) 1344 886338 **Fax:** +44 (0) 1344 890972 **Email:** enquiries@nrm.uk.com **www**.nrm.uk.com

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J143

Please quote above code for all enquiries

DAVID ROYLE

EFFLUENT

EFFLUENT

Laboratory References

Report Number	84193
Sample Number	117324

Sample Reference :

EFFLUENT 17/01/22

Sample Matrix : EFFLUENT

Date Received	19-JAN-2022
Date Reported	08-FEB-2022

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Aromatic TPH C7-C8	<0.01	mg/l
Aromatic TPH C8-C10	0.02	mg/l
Aromatic TPH C10-C12	<0.01	mg/l
Aromatic TPH C12-C16	<0.01	mg/l
Aromatic TPH C16-C21	<0.01	mg/l
Aromatic TPH C21-C35	<0.01	mg/l
Conductivity 1:6	869	uS/cm
Total Kjeldahl Nitrogen	0.03	% w/w
Ammonium Nitrogen	<25	mg/kg
Total Phosphorus (P)	60.6	mg/kg

Released by ..... *Gina Graham* ..... Date ..... *08/02/22* .....

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Laboratory References	
Report Number	84193
Sample Number	117324

Date Received	19-JAN-2022
Date Reported	08-FEB-2022

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Potassium (K)	490	mg/kg
Total Magnesium (Mg)	43.6	mg/kg
Total Copper (Cu)	4.95	mg/kg
Total Zinc (Zn)	1.74	mg/kg
Total Sulphur (S)	60.2	mg/kg
Total Calcium (Ca)	972	mg/kg
Total Molybdenum (Mo)	<0.05	mg/kg
Total Lead (Pb)	<0.5	mg/kg
Total Cadmium (Cd)	<0.01	mg/kg
Total Mercury (Hg)	<0.05	mg/kg

Released by *Gina Graham* Date *08/02/22*

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Sample Reference :

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Sample Matrix : EFFLUENT

Laboratory References	
Report Number	84193
Sample Number	117324

Date Received	19-JAN-2022
Date Reported	08-FEB-2022

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Nickel (Ni)	<0.2	mg/kg
Total Chromium (Cr)	<0.2	mg/kg
Total Sodium (Na)	118	mg/kg
pH 1:6 [Fresh]	5.98	
Organic Matter LOI	0.86	% w/w
Fluoride [100:1 H2S04 Soluble]	<10	mg/kg
Total Arsenic (As)	<0.5	mg/kg
Total Selenium (Se)	<0.02	mg/kg
B.O.D. [fresh]	10020	mg/l
Oils,Fats and Grease	<200	mg/kg

Released by ..... *Gina Graham* ..... Date ..... *08/02/22* .....

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EFFLUENT

EFFLUENT

Sample Reference :

EFFLUENT 17/01/22

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	84193
Sample Number	117324

Date Received	19-JAN-2022
Date Reported	08-FEB-2022

The sample submitted was of adequate size to complete all analysis requested.

The sample will be kept under refrigeration for at least 3 weeks.

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Stones > 5mm	<0.01	%
Other Contaminants > 2mm	<0.01	%
Total Plastics > 2mm	<0.01	%
Total Glass > 2mm	<0.01	%
Total Metals > 2mm	<0.01	%
Sharps > 2mm	0	%

Released by *Gina Graham* Date *08/02/22*

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LB304GC/A001/M Gaze and Co Ltd

Odour Management Plan

Upland Farm Lagoon

Appendix 10.3

Procedures for Lagoon Filling and Emptying

November 2022

M.Gaze & Co Ltd Local FAST 24 HOURS - 7 DAYS A WEEK			Appendix 10.3 **TASK BASED RISK ASSESSMENT FORM**		
REFERENCE NO	MGAZE/TSTN/005	BUSINESS UNIT	TRANSFER STATION/FIELD SITES	DATE	21/11/2022

TITLE	**Vacuum Tanker Operations Loading Discharging of Tanker to Lagoon**

JOB STEPS	**HAZARDS**	**CONTROL MEASURES**
List the jobs individual tasks in sequence.	Describe all identifiable hazards (consider hazards caused by interaction with other work.) Describe hazard effects for each task.	Describe all controls for each hazard. PPE as a control measure must be task specific. All controls must be valid in that they reduce severity, likelihood or both.
Parking at sites.	Vehicles passing between tanker and other vehicles. Adherence to alternative rules and regulations. Possible injury to driver whilst checking handles/ buttons on tanker, serious injury, broken bones, bruising.	Driver experienced/ competent and aware of hazards. allow sufficient room for working. Drivers to familiarise themselves with site rules – PPE as per site rules.

	INITIAL RISK			**RESIDUAL RISK**		
	Hazard Severity	**Likelihood of Occurrence**	**Risk Rating**	**Hazard Severity**	**Likelihood of Occurrence**	**Risk Rating**
	4	**3**	**12**	**4**	**1**	**4**

Positioning of tanker at loading area.	Limited visibility. Possible collision with personnel or plant resulting in fatality, bruising or broken bones, asset damage.	Driver experienced/ competent and aware of hazards. Seek assistance if required. Vehicles fitted with reversing alarms.

	INITIAL RISK			**RESIDUAL RISK**		
	Hazard Severity	**Likelihood of Occurrence**	**Risk Rating**	**Hazard Severity**	**Likelihood of Occurrence**	**Risk Rating**
	4	**3**	**12**	**4**	**1**	**4**

Access/ egress from cab.	Oil, mud, chemical residue on footwear. Jump from cab onto hard yard surface. Slip or fall from cab height. Broken leg, twisted ankle slip/ fall causing bruising, possible injury to hands.	Experienced and competent drivers, who are aware of the possible hazards. Driver must exit in the safest way possible by climbing down facing forward into cab using grab handle/ steps for access/ egress. Check ground conditions before alighting from cab PPE for site must be worn hard hat, high visibility clothing, coveralls, protective footwear. Driver to remove and excess mud/ oil from footwear prior to access/ egress to/ from cab.

	INITIAL RISK			**RESIDUAL RISK**		
	Hazard Severity	**Likelihood of Occurrence**	**Risk Rating**	**Hazard Severity**	**Likelihood of Occurrence**	**Risk Rating**
	3	**3**	**9**	**3**	**1**	**3**

M.Gaze & Co Ltd
Local FAST
24 HOURS - 7 DAYS A WEEK

TASK BASED RISK ASSESSMENT FORM

REFERENCE NO	MGAZE/TSTN/005	BUSINESS UNIT	TRANSFER STATION/FIELD SITES	DATE	21/11/2022

TITLE	**Vacuum Tanker Operations Loading Discharging of Tanker**

JOB STEPS	HAZARDS	CONTROL MEASURES
Earth lead connection. (ADR barrel only)	Static electricity. Trip hazard. Possible injuries to personnel, electric shock, explosion, possible fatality.	Experienced and competent drivers, who are aware of the possible hazards. Follow correct procedure prior to work commencement, establish secure contact

	INITIAL RISK			**RESIDUAL RISK**		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	4	**3**	**12**	**4**	**1**	**4**

Positioning hoses.	Manual handling. Trip hazard. Injury to personnel, back injury, muscle sprain, cuts, bruises	Manual handling training and assessment. Seek assistance if required.

	INITIAL RISK			**RESIDUAL RISK**		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	3	**3**	**9**	**3**	**1**	**3**

Connecting/ disconnecting hoses and fittings.	Manual handling. Faulty connections. Damaged hoses. Slip, trip and fall on rough/ slippery ground. Trapped fingers, injury to back/ muscles/ sprains/ strains Odour from spillages	Drivers to attend manual handling course and be fully trained and competent. Position vehicle to minimise amount of hose required for connecting. PPE to be worn – material suitable gloves.

	INITIAL RISK			**RESIDUAL RISK**		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	3	**3**	**9**	**3**	**1**	**3**

TASK BASED RISK ASSESSMENT FORM

REFERENCE NO	MGAZE/TSTN/005	BUSINESS UNIT	TRANSFER STATION/FIELD SITES	DATE	21/11/2022

TITLE	**Vacuum Tanker Operations Loading Discharging of Tanker**

JOB STEPS	HAZARDS	CONTROL MEASURES
Commence vacuum on tanker.	Noise of vacuum tanker resulting in limited communication. Injury to persons by pipe work lashing out of loading area due to starting vacuum resulting in bruising.	Noise assessment of tankers and ear protectors to be worn if applicable. Vehicle maintenance and serviced in accordance with the maintenance schedule. Restricted access to working area.

	INITIAL RISK			RESIDUAL RISK		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	3	**3**	**9**	**3**	**1**	**3**

Use of pressurised tank/ tanker operation.	Tank explosion. Serious injury, possible fatality Odour	Experienced and competent drivers, who aware of the tasks and possible hazards. Tanker training, mentoring when required. Vehicle maintenance and serviced in accordance with the maintenance schedule. Monitoring of pressure via the tank pressure gauge. 1. **Never pressurise flammable liquids.** 2. **Never pressurise tanker containing waste to ascertain leaks.**

	INITIAL RISK			RESIDUAL RISK		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	5	**2**	**10**	**5**	**1**	**5**

M.Gaze & Co Ltd Local FAST 24 HOURS - 7 DAYS A WEEK			TASK BASED RISK ASSESSMENT FORM		
REFERENCE NO	MGAZE/TSTN/005	BUSINESS UNIT	TRANSFER STATION/FIELD SITES	DATE	21/11/2022

TITLE	**Vacuum Tanker Operations Loading Discharging of Tanker**

JOB STEPS	HAZARDS	CONTROL MEASURES
Opening closing tanker valve and if required receiving tank valves.	Positioning of handle. Driver positioning. Injury through pinch points. Minor spill/ splash of liquids. Driver stretching, straining muscles. Nips cuts to hands. Splashes to eyes/ face.	Driver experienced/ competent in tanker operations and aware of possible hazards. Position equipment to a suitable location. Chemical safety training. COSHH assessments. Spill kits available. Regular inspections, service and maintenance carried out including valve handle. Appropriate and suitable PPE to be worn.

	INITIAL RISK			RESIDUAL RISK		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	3	**3**	**9**	**3**	**1**	**3**

Use of pressurised lines.	Liquid spilling from burst hoses or connection break. Exposure to skin/ eyes, inhalation, ingestion, broken bones, bruising, serious injury. Odour	Driver experienced/ competent in tanker operations and aware of possible hazards. Low risk material landspread Annual pressure test of hoses and pre-job inspection. Chemical safety training, COSHH Assessments. Spill kits available. PPE to be worn – chemical resistant suit, eye protection, gloves, safety footwear. ADR spec tanker with regular inspection and maintenance.

	INITIAL RISK			RESIDUAL RISK		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	3	**3**	**9**	**3**	**1**	**3**

M.Gaze & Co Ltd
Local FAST
24 HOURS - 7 DAYS A WEEK

TASK BASED RISK ASSESSMENT FORM

REFERENCE NO	MGAZE/TSTN/005	BUSINESS UNIT	TRANSFER STATION/FIELD SITES	DATE	21/11/2022

TITLE	**Vacuum Tanker Operations Loading Discharging of Tanker**

JOB STEPS	HAZARDS	CONTROL MEASURES
Pumping of waste.	Substance exposure. Liquid spilling from burst hose or connection break. Loss of product due to inferior hose connections causing contamination to ground/ personnel, inhalation, skin absorption, ingestion. Odour	Driver experienced/ competent in tanker operations and aware of possible hazards – driver must be ADR trained. COSHH Assessments, MSDS, chemical safety training. Low risk material landspread Spill kits in place. Appropriate and suitable PPE to be worn. Respirator face fit testing for drivers. ADR spec tanker with regular inspection and maintenance. Tanker to connect earthing wire prior to starting operation for flammable substances. Use additional personnel if required.

	INITIAL RISK			RESIDUAL RISK		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	4	3	12	4	1	4

Tipping tanker.	Contact between tanker and overhead power lines.	Electrocution, serious injury, possible fatality.
Reversing tanker at deployed site.	Contact with unseen personnel. Or members of public Contact with stationary vehicles, objects. Personnel injury, fatality, broken limbs, bruising. Damage to property.	Driver HGV trained, they are trained and experienced. Driver awareness training. Vehicles are fitted with reversing alarms. Banksman on sensitive sites.

	INITIAL RISK			RESIDUAL RISK		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	4	3	12	4	1	4

M.Gaze & Co Ltd
Local FAST
24 HOURS - 7 DAYS A WEEK

TASK BASED RISK ASSESSMENT FORM

REFERENCE NO	MGAZE/TSTN/005	BUSINESS UNIT	TRANSFER STATION/FIELD SITES	DATE	21/11/2022

TITLE	**Vacuum Tanker Operations Loading Discharging of Tanker**

JOB STEPS	HAZARDS	CONTROL MEASURES
Tanker blowing line clear.	Force of air blowing product above tank level and over ground. Personnel in close proximity contaminated with product. Odour	Driver awareness of hazards involved and stays a safe distance from blow out. Driver switches off at tanker point once product appears. Tank requires cover to prevent contamination of ground.

INITIAL RISK			RESIDUAL RISK		
Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
2	**5**	**10**	**2**	**2**	**4**

JOB STEPS	HAZARDS	CONTROL MEASURES
Inspection of tank.	Opening of inspection hatches whilst tanker may be under pressure. Perforated eardrums, slip, fall resulting in serious injury, broken bones or possible fatality.	Pressure to be removed before opening hatch. Aware of possible hazards

INITIAL RISK			RESIDUAL RISK		
Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
4	**4**	**16**	**4**	**1**	**4**

JOB STEPS	HAZARDS	CONTROL MEASURES
Completing task cleaning air lines.	Straddling and breaking hose to check product is clear in line. Hose movement whilst purging line. Slip, trip over hoses. Possible injuries to personnel, broken bones, bruising, cuts, trapped fingers	Driver trained and experienced. Driver to request assistance from on site supervisor in completing the task. Spill kits in place and available.

INITIAL RISK			RESIDUAL RISK		
Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
3	**3**	**9**	**3**	**1**	**3**

TASK BASED RISK ASSESSMENT FORM

REFERENCE NO	MGAZE/TSTN/005	BUSINESS UNIT	TRANSFER STATION/FIELD SITES	DATE	21/11/2022

TITLE	**Vacuum Tanker Operations Loading Discharging of Tanker**

JOB STEPS	HAZARDS	CONTROL MEASURES
Replace hoses on tanker.	Manual handling. Injury to personnel, sprains, back injuries.	Manual handling training and assessments carried out. Seek assistance if required.

	INITIAL RISK			RESIDUAL RISK		
	Hazard Severity	Likelihood of Occurrence	Risk Rating	Hazard Severity	Likelihood of Occurrence	Risk Rating
	3	**3**	**9**	**3**	**1**	**3**

Assessors Signature		Responsible Manager's signature	

M.Gaze & Co Ltd
Local FAST
24 HOURS - 7 DAYS A WEEK

Task Based Risk Assessment Hazard Severity Matrix

likelihood of happening	
Highly Unlikely	1
Possible	2
Probable	3
Very Probable	4
Almost Certain	5

	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

severity

unlikely to occur
minor injury / asset damage
single person

possible / probable will occur
lost time injury / severe asset damage
multiple persons

highly probable / will occur
major injury / fatality / severe asset damage
multiple persons / members of public
must improve

Non Treatment Injury.	First Aid Injury	Lost time Injury	Hospital treatment.	Fatality.
Minor Asset Damage	Minor Asset Damage	Severe Asset Damage	Severe Asset Damage	Major Asset Damage
single person	1-3 persons	3-5 persons	5+ persons	5+ persons Members of Public

LB304GC/A001/M Gaze and Co Ltd

Odour Management Plan

Upland Farm Lagoon

Appendix 10.4

Odour Monitoring Forms and Reporting

November 2022

Upland Farm Lagoon: OMP Appendix 10.4
Procedure No. 7.4 Odour Assessment

Purpose: To control and assess odours on Site.

	Odour Assessment		
1.	An assessment should be conducted in accordance with the Odour Management Plan.	Site Operative	Appendix A.6 Odour Management Plan (MS-E-017)
2.	The Assessor must initiate the following stages in order to successfully complete an odour assessment: • Must complete sheet 1 using Tables 1 and 2 prior to conducting the odour assessment. • Must identify and record the wind direction and strength as per Table 1. • Must choose a point upwind downwind of the facility as determined by the weather station data. This could be assisted by the use of the Beaufort Wind Scale, see Table 1 below. • Table 2 and sheet 1 of the subject assessment report form must be completed including; details of the location, wind strength, extent and insensitivity of any odours, sensitivity of the assessment location, description of the odour. • The assessment point must be recorded as per Appendix 1 of OMP. • When assessing the odour, refer to Table 2 Classification System for Odour Determination in order to assess the parameters and classification of the odour. • The assessor must evaluate strategic points where there may have been odour complaints or areas that are likely to have issues with odour at downwind points and to record these if not coincident with Appendix 1 . These are to be assessed. • The assessor must continue past the Site (upwind) pausing at strategic points to take readings. • On completion of the assessment the assessor must conduct an on-Site assessment of the odour abatement systems, whether there are fugitive emissions released.	Site Operative	Form No. 7.4a Subjective Odour Assessment Requisite Form Form No. 7.4b Subjective Odour Assessment Report Form Table 1 Beaufort Wind Scale Table 2 Classification System for Odour Determination Form No. 7.4c Subjective Odour Assessment: Site Inspection Form
3.	All results of the odour assessment must be discussed with a Site Manager / Director. Records relating to the odour assessment will be kept.	Site Operative	

RECOMMENDED CLASSIFICATION SYSTEM FOR ODOUR PARAMETERS

Table 1. Beaufort Wind Scale

Force	Description	km/h	On Land
0	Calm	< 1	Smoke rises vertically
1	Very Light	1 - 5	Smoke drifts, wind direction shown by smoke drifts but not on wind vanes
2	Light breeze	6 - 11	Wind felt on face. Rustles leaves, wind vane moved by wind
3	Gentle breeze	12 - 19	Leaves, twigs and flags in constant motion
4	Moderate breeze	20 - 29	Dust raised, Paper blown about. Small branches move
5	Fresh breeze	30 - 39	Small trees in leaf begin to sway, small branches are moved.
6	Strong breeze	40 - 50	Large branches in motion, umbrellas used with difficulty. Small trees sway
7	Near gale	51 - 61	Large trees sway. Difficult to walk against the wind
8	Gale	62 - 74	Twigs break off, Small trees blown down
9	Strong gale	75 - 87	Structural damage. Chimney pots and slates removed
10	Storm	88 - 101	Trees uprooted. Much structural mage
11	Violent storm	102 - 117	Widespread damage
12	Hurricane	>119	Widespread damage

Table 2. Odour intensity, extent and location

Parameter	Classification	Assessment Criteria
Odour Intensity	**1**	**No detectable Odour**
	2	**Faint Odour** (barely detectable, need to stand still and inhale facing into the wind)
	3	**Moderate Odour** (Odour easily detected while walking and breathing normally).
	4	**Strong Odour** (Strong but bearable).
	5	**Very Strong Odour** (very offensive, possibly causing nausea, particularly if not accustomed to this odour).
Odour Extent	**1**	**Local and Transient** (Only detected on the installation or within the installation boundary during brief periods when wind drops or blows)
	2	**Transient as above, but detected outside the boundary**
	3	**Persistent, but fairly localised**
	4	**Persistent and pervasive up to 50m outside the installation boundary**
	5	**Persistent and widespread** (Odour detected > 50 m from the boundary)
Location	**1**	**Remote** (No housing, commercial/industrial premises or public area within 500m)
	2	**Low sensitivity** (no housing etc within 100m of area affected by odour)
	3	**Moderate sensitivity** (Housing etc within 100m of area affected by odour)
	4	**High Sensitivity** (Housing etc within area affected by odour)
	5	**Extra sensitive** (Complaints arising from residents within area affected by odour)

Odour Diary						Sheet No: 1
Name: Telephone Number:	Address:					
Date of odour:						
Time of odour:						
Location of odour, if not at above address (indoors, outside): Monitoring point						
Weather conditions (dry, rain, fog, snow etc):						
Temperature (very warm, warm, mild, cold or degrees if known):						
Wind strength (none, light, steady, strong, gusting):						
Wind direction (eg from NE):						
What does it smell like? How unpleasant is it? Do you consider this smell offensive?						
Intensity – How strong was it? (see below 1-5):						
How long did go on for? (time):						
Was it constant or intermittent in this period:						
What do believe the source/cause to be?						
Any actions taken or other comments:						

Intensity

0	No odour	3	Distinct odour	5	Very strong odour
1	Very faint odour	4	Strong odour	6	Extremely strong odour
2	Faint odour				

Odour Complaint Report Form:	Sheet 2
Time and date of complaint:	Name and address of complainant:
Telephone number of complainant:	

Date of odour:	
Time of odour:	
Location of odour, if not at above address:	
Weather conditions (i.e., dry, rain, fog, snow):	
Temperature (very warm, warm, mild, cold or degrees if known):	
Wind strength (none, light, steady, strong, gusting):	
Wind direction (eg from NE):	
Complainant's description of odour: o What does it smell like?	
o Intensity (see below):	
o Duration (time):	
o Constant or intermittent in this period:	
o Does the complainant have any other comments about the odour?	
Are there any other complaints relating to the installation, or to that location? (either previously or relating to the same exposure):	
Any other relevant information:	
Do you accept that odour likely to be from your activities?	
What was happening on site at the time the odour occurred?	
Operating conditions at time the odour occurred (eg flow rate, pressure at inlet and pressure at outlet):	
Actions taken:	

Form completed by:	Date	Signed

Intensity

0 No odour
1 Very faint odour
2 Faint odour
3 Distinct odour
4 Strong odour
5 Very strong odour
6 Extremely strong odour

Extract from Environment Agency – How to comply with your permit – H4 Odour

LB304GC/A001/M Gaze and Co Ltd

Appendices to Working Plan

Upland Farm Lagoon

Appendix 11: Technical Competence

November 2022

CIWM

Continuing Competence Certificate

This certificate confirms that

Mitchell Gaze

Has met the relevant requirements of the Continuing Competence scheme for the following award(s) which will remain current for two years from 24/05/2022

TMH	Treatment - Hazardous Waste
TMNH	Treatment - Non Hazardous Waste

Expiry Date: 24/05/2024

Verification date: 18/05/2022

Authorised:

Professional Services Director

Learner ID: 8811

Certificate No.: 5199198

Date of Issue: 24/05/2022

CIWM Chief Executive Officer

The Chartered Institution of Wastes Management

Scan code on reverse to authenticate that this is a genuine paper

LB304GC/A001/M Gaze and Co Ltd

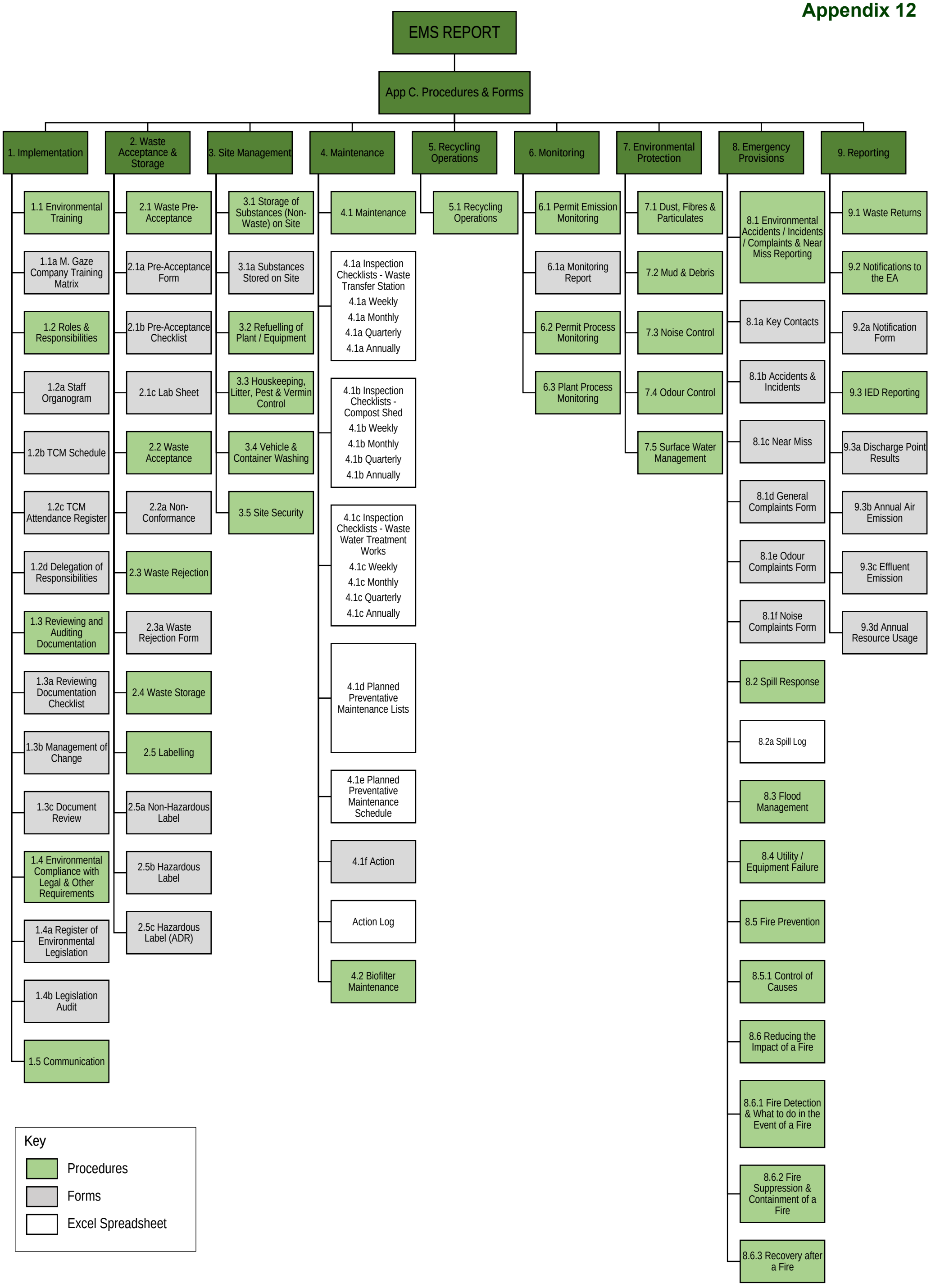
Appendices to Working Plan

Upland Farm Lagoon

Appendix 12: EMS Structure

November 2022

Appendix 12


EMS REPORT
App C. Procedures & Forms
1. Implementation
1.1 Environmental Training
1.1a M. Gaze Company Training Matrix
1.2 Roles & Responsibilities
1.2a Staff Organogram
1.2b TCM Schedule
1.2c TCM Attendance Register
1.2d Delegation of Responsibilities
1.3 Reviewing and Auditing Documentation
1.3a Reviewing Documentation Checklist
1.3b Management of Change
1.3c Document Review
1.4 Environmental Compliance with Legal & Other Requirements
1.4a Register of Environmental Legislation
1.4b Legislation Audit
1.5 Communication
2. Waste Acceptance & Storage
2.1 Waste Pre-Acceptance
2.1a Pre-Acceptance Form
2.1b Pre-Acceptance Checklist
2.1c Lab Sheet
2.2 Waste Acceptance
2.2a Non-Conformance
2.3 Waste Rejection
2.3a Waste Rejection Form
2.4 Waste Storage
2.5 Labelling
2.5a Non-Hazardous Label
2.5b Hazardous Label
2.5c Hazardous Label (ADR)
3. Site Management
3.1 Storage of Substances (Non-Waste) on Site
3.1a Substances Stored on Site
3.2 Refuelling of Plant / Equipment
3.3 Houskeeping, Litter, Pest & Vermin Control
3.4 Vehicle & Container Washing
3.5 Site Security
4. Maintenance
4.1 Maintenance
4.1a Inspection Checklists - Waste Transfer Station
4.1a Weekly
4.1a Monthly
4.1a Quarterly
4.1a Annually
4.1b Inspection Checklists - Compost Shed
4.1b Weekly
4.1b Monthly
4.1b Quarterly
4.1b Annually
4.1c Inspection Checklists - Waste Water Treatment Works
4.1c Weekly
4.1c Monthly
4.1c Quarterly
4.1c Annually
4.1d Planned Preventative Maintenance Lists
4.1e Planned Preventative Maintenance Schedule
4.1f Action
Action Log
4.2 Biofilter Maintenance
5. Recycling Operations
5.1 Recycling Operations
6. Monitoring
6.1 Permit Emission Monitoring
6.1a Monitoring Report
6.2 Permit Process Monitoring
6.3 Plant Process Monitoring
7. Environmental Protection
7.1 Dust, Fibres & Particulates
7.2 Mud & Debris
7.3 Noise Control
7.4 Odour Control
7.5 Surface Water Management
8. Emergency Provisions
8.1 Environmental Accidents / Incidents / Complaints & Near Miss Reporting
8.1a Key Contacts
8.1b Accidents & Incidents
8.1c Near Miss
8.1d General Complaints Form
8.1e Odour Complaints Form
8.1f Noise Complaints Form
8.2 Spill Response
8.2a Spill Log
8.3 Flood Management
8.4 Utility / Equipment Failure
8.5 Fire Prevention
8.5.1 Control of Causes
8.6 Reducing the Impact of a Fire
8.6.1 Fire Detection & What to do in the Event of a Fire
8.6.2 Fire Suppression & Containment of a Fire
8.6.3 Recovery after a Fire
9. Reporting
9.1 Waste Returns
9.2 Notifications to the EA
9.2a Notification Form
9.3 IED Reporting
9.3a Discharge Point Results
9.3b Annual Air Emission
9.3c Effluent Emission
9.3d Annual Resource Usage
Key
Procedures
Forms
Excel Spreadsheet