Certificate No. OCC67391

Operator Competence Certificate

Title:

Mobile Plant for land spreading (land treatment resulting in benefit) (4MTMPL6)

This Certificate is awarded to

Richard George Street

Awarded: 21/12/2016

Authorised

WAMITAB Chief Executive Officer

CIWM Chief Executive Officer

The Chartered Institution of Wastes Management

This certificate is jointly awarded by WAMITAB and the Chartered Institution of Wastes Management (CIWM) and provides evidence to meet the Operator Competence requirements of the Environmental Permitting (EP) Regulations, which came into force on 6 April 2008.

00123142

Agrispread Ltd
22 Coniston Drive
Frodsham
Cheshire
WA6 7LR

Natural Resources Wales
29 Newport Road
Ty Cambria
Cardiff
CF24 0TP

5th August 2017

To whom it may concern

Re: Deployment Applications declarations

I write to confirm that Richard Street of Trade Effluent Services Ltd is authorised to complete deployment applications and sign declarations on behalf of Agrispread Ltd.

Yours sincerely,

Robert Netzband-Piggott
Company Secretary

Agricultural Benefit Statement

Report Index

1. Permit Details and Appropriate Technical Expertise

The following benefit statement has been written by Richard Street on behalf of Agrispread Ltd. (permit no. FB3606GC).

Relevant Qualifications & Experience include:

- FACTs Qualified – Basis registration no. R/FE/5689
- 8 Years' experience of waste to land recycling operations
- Land spreading of non-farm wastes course (3 day course – May 2010)
- BSc. (Hons) Environmental Management (University of Central Lancashire)

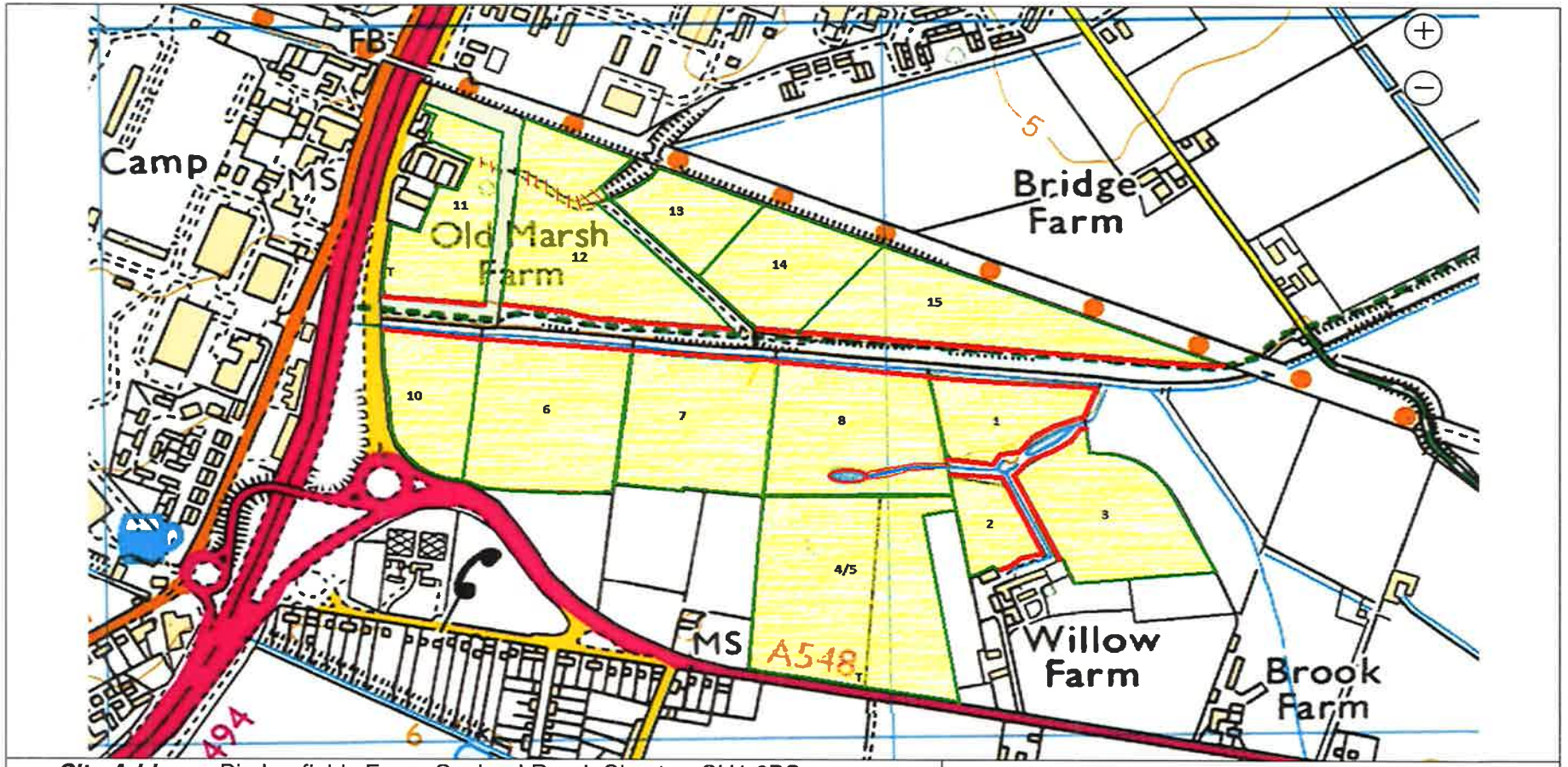
2. Land Details

The following benefit statement proposes to spread up to 10 wastes to land. The land details are listed in Table 1, and the site map can be found in Figure 1. This benefit statement is one of two benefit statements for the land.

Table 1: Farm and Land Details

Farm Name	Birchenfields Farm
Farm Address and Postcode	Sealand Road, Sealand, Chester, CH1 6BS
Farm NGR	SJ 36175 67744
Total Area to be Spread (hectares)	49.1

Up to $30m^3$ of waste will be stored in each mobile storage tank at the land to be spread, with no more than $120m^3$ in total being stored on site. This is suitable storage and the storage tank locations with be situated in appropriate locations. The storage locations are marked on the site map in Figure 1, which are at the following grid reference locations: SJ 33969 69077, and SJ 3335869645.



Site Address: Birchenfields Farm, Sealand Road, Chester, CH1 6BS
Landowner: Mr John Cottle

Environmental Risks:
Watercourses bordering all fields excluding field 4/5 - 10m buffer zone from all watercourses and ponds
Pond and ditch in field 8 - 10m buffer zone

Key
Boundary –
No Spread Zone –
Watercourse/ditch –
Transfer Tank / Storage Lagoon - T
Pond –
Footpath –
SSSI/SPA/SAC-

Figure 1: Site map including the fields to spread, receptors, storage (T), and spreading control measures

3. Waste Details

The wastes generally arise from food and beverage manufacturers and are primarily sludge from on-site effluent treatment plants, and materials unsuitable for consumption and processing. The waste details are displayed in Table 2.

Table 2: Waste Details

Waste Producer	EWC Code	Waste Description
Secanim	02 02 04	Sludges from on-site ETP from abattoirs, poultry preparation plants, rendering plants or fish preparation plants only
English Provender	02 03 01	Sludge from washing, cleaning, peeling, centrifuging and separation
Croda Chemicals Goolel)	07 07 12	Sludges from on-site biological effluent treatment plant at chemical manufacturing sites other than those mentioned in 07 01 11 only
Meadow Foods	02 05 02	Sludge from on-site ETP
Maelor Foods	02 02 01	Sludges from washing and cleaning
Encirc	02 07 05	Sludge from on-site ETP
Burtonwood Brewery	02 07 04	Materials unsuitable for consumption or processing
Croda Widnes	02 03 05	Sludges from on-site ETP
Authentic Food Company	02 03 05	Sludges from on-site ETP
Kelloggs (Kellogs)	02 03 05	Sludges from on-site ETP

The wastes have been analysed by NRM laboratories for nitrogen, phosphorous, potash and PTE's, and individual waste analyses are attached in Appendix D. Additionally, due to the coding of the Secanim (02 02 04), a visual inspection was made to determine if analysis for FOGs was required. It was deemed not necessary. The wastes will be closely monitored during the spreading of this site, and so the requirement for FOGs analysis will be reviewed periodically. The waste is not expected to contain Selenium, Arsenic, Molybdenum and Fluoride, and so has not been tested for such elements.

To avoid the need for multiple deployments when a range of wastes are available, it is necessary to include them all to accommodate such variables as the amount of material produced by the waste producer and the timing of application (before seedbed preparation).

4. Operational Details

The wastes will be delivered to the site by road tanker and off-loaded into the mobile storage tanks. It is intended to spread the wastes by sub-soil injection to reduce the risk of environmental incidents, such as run-off and odour issues; to minimise disbenefit to the growing crop, such as through smothering or leaf scorch; and to provide nutrients to the root zone. Typically, wastes will be applied by deep-leg injector. However, a shallow injector or surface application may be used dependant on soil/weather conditions at the time of application. In drought conditions, wastes with low odour potential and low risk of smothering crop leaf may be surface applied, and will provide additional benefit through irrigation.

It is intended to spread the wastes to arable fields before seedbed preparation. For this application, the wastes are expected to be applied to all fields in January/February 2019. However, this may change due to farmer requirements and weather conditions.

5. Fields and Crop Requirement

The sludges will be applied to all fields and so the crop requirements for all fields, as well as the field sizes and grid references, are displayed in Table 3. Fertiliser requirements are based on figures from the RB209 (9th edition). The magnesium recommendation for all fields is 0 kg/ha.

Table 3: Field Details and Crop Requirements (* denotes crop offtake)

Field	Size	Grid Reference	Current Crop	Next Crop	Expected Yield	Nitrogen	Phosphate	Potash
	ha				t/ha	kg/ha	kg/ha	kg/ha
1	2.8	SJ 34150 69450	Maize	Maize	40	100	***56***	175
2	1.9	SJ 34130 69310	Maize	Maize	40	100	***56***	110
3	3.1	SJ 34240 69330	Maize	Maize	40	100	***56***	145
4/5	7.0	SJ 33959 69206	Maize	Maize	40	100	***56***	145
6	4.3	SJ 33560 69460	Maize	Maize	40	100	***56***	145
7	3.8	SJ 33750 69450	Maize	Maize	40	100	***56***	145
8	4.1	SJ 33970 69440	Maize	Maize	40	100	***56***	145
10	4.8	SJ 33400 69490	Maize	Maize	40	100	***56***	175
11	3.1	SJ 33440 69720	Maize	Maize	40	100	***56***	145
12	5.0	SJ 33620 69670	Maize	Maize	40	100	***56***	145
13	1.6	SJ 33740 69730	Maize	Maize	40	100	***56***	145
14	2.6	SJ 33880 69650	Maize	Maize	40	100	***56***	110
15	5.0	SJ 34140 69580	Maize	Maize	40	100	***56***	145
Total	**49.1**							

The soil nitrogen supply (SNS) for fields 1 - 15 is 1.

6. NVZ Compliance

The site falls within an NVZ designated area, which is illustrated in Figure 2. The wastes do not apply for the closed periods as they contain low percentages of available nitrogen. The application rates of the wastes will comply with crop requirement as no more than crop offtake of all nutrients will be applied to fields. In order to aid the landowner or farmer with their recording requirements, a post-notification of nutrients applied will be provided after spreading.

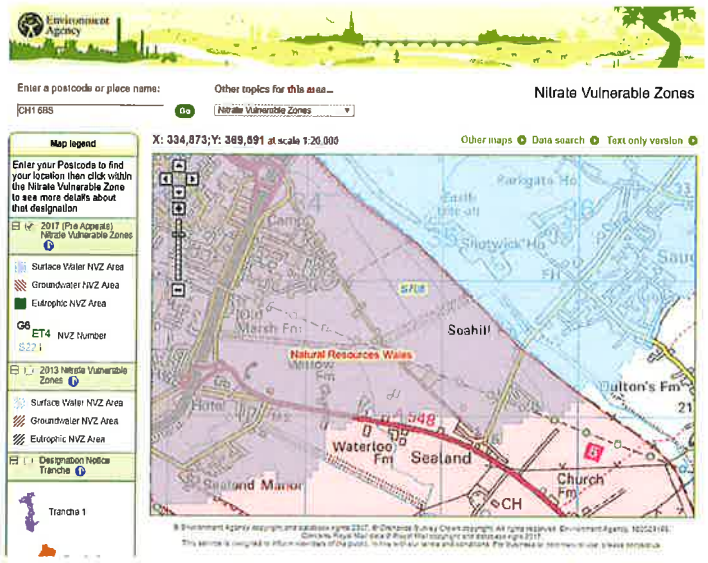


Figure 2: NVZ map for the land to be spread produced from the 'What's in my backyard' mapping service on the EA website (www.environment-agency.gov.uk).

Application rates are limited to a maximum of 250 kg total N/ha, and any other organic waste or manure applications have been accounted for. Previous nutrients applied to the fields within the last 12 months are listed in Table 4. The nutrients in Table 4 are total applied, and the availability of each can be taken from the standard figures in the RB209 (9th edition, section 2). As this is one of two deployments for the land, the total nutrients applied to the crops will be carefully monitored so that no more than crop offtake of all nutrients will be applied to fields.

Table 4: Previous Nutrients Applied

Field	Waste Applied	Month Applied	Application Rate	Nitrogen	Phosphate	Potash
			t/ha	kg/ha	kg/ha	kg/ha
1	Ahlstrom	Winter 2016	25	10	0	78
2	Ahlstrom	Winter 2016	26	10	0	80
3	Ahlstrom	Winter 2016	24	10	0	75
4/5	Ahlstrom	Winter 2016	25	10	0	79
6	Ahlstrom	Winter 2016	22	9	0	68
7	Ahlstrom	Winter 2016	26	10	0	82
8	Ahlstrom	Winter 2016	24	9	0	74
10	Commercial Waste	Winter 2016	107	169	42	21
11	Commercial Waste	Winter 2016	107	169	40	21
12	Commercial	Winter	107	169	40	21

	Waste	2016				
13	Commercial Waste	Winter 2016	100	159	40	20
14	Commercial Waste	Winter 2016	100	159	40	20
15	Commercial Waste/ Ahlstrom	Winter 2016	100	159	40	20

7. Benefits of The Operation

The wastes will be used to provide plant nutrients that will replace a percentage of the fertiliser that the farmer would normally apply to their crop. The wastes will also provide benefit through the addition of organic matter and trace elements. The applied nutrients provided by the wastes may be subject to change: determined by analysis of individual samples during the agreed 12 month deployment period. The sludge is regularly analysed and application rates will be adjusted according to changes in analysis and volumes arising.

A summary of the wastes and the proposed application rates are listed in Table 5.

Table 5: Summary of Waste Nutrients and Application Rate

Waste	Application Rate	Nitrogen		Phosphate		Potash	
	t/ha	(total)	(available) 30%	(total)	(available) 50%	(total)	(available) 90%
Secanim	141	183	55	56	28	31	28
English Provender	121	109	33	56	28	14	13
Croda Chemicals (Goole)	30	120	36	56	28	12	11
Meadow Foods	222	155	47	56	28	22	20
Maelor Foods	151	242	73	56	28	21	19
Encirc	234	140	42	56	28	19	17
Burtonwood Brewery	24	84	25	54	27	32	29
Croda Widnes	250	100	30	5	3	8	7
Authentic Food Company	32	102	31	55	28	6	5
Kelloggs	201	181	54	56	28	31	28

Wastes will be applied on an individual basis and applications, which are established for each waste when applied in isolation, will be carefully managed and monitored to ensure that nutrients are applied at or below crop requirement/offtake values. It may however be necessary to apply the wastes as a mix such as during storage during adverse weather. In this case, the waste with the highest nutrient, PTE or other limiting factor is used as the maximum application rate, and thus wastes will be applied at the lowest individual application rate. Application rates

will be adjusted by variation in tractor speed and or pump speed. As this is one of two deployments for the land, the wastes across both will be carefully monitored and application rates will be adjusted accordingly, as outlined above. It should be noted that if application rates are adjusted, they will not be increased above the application rates stated in this benefit statement (see Table 5).

Nitrogen

The waste analysis shows that the ammoniacal and nitrate nitrogen in the majority of wastes is relatively low; indicating that only a small proportion of nitrogen will be available immediately. The remaining total nitrogen applied will become available to the crop through mineralisation throughout following seasons. The rate of nitrogen release will be affected by several factors including climate, timing and method of application, and soil type.

Phosphorus

Applications of wastes are limited to ensure that phosphate is applied at or below crop off take values, as calculated from the RB209, ensuring that the spreading activities do not increase soil P reserves.

Potash

The wastes applied will supply up to 31kg/ha of potash, which will not meet crop offtake for all fields, but it will allow the landowner/farmer to considerably reduce the amount of chemical fertiliser required to meet the crop need. Applications of wastes are limited to ensure that potash is applied at or below crop off take values, as calculated from the RB209, ensuring that the spreading activities do not increase soil reserves.

Organic Matter

The wastes will also provide a small increase in soil organic matter. This can help to improve soil structure and water, and nutrient holding capacity.

pH

English Provender has a pH of 4.54 which is slightly acidic, the receiving soil have pH ranging from 7.5 to 7.9 and will buffer the waste pH with not detrimental effect anticipated. The soils at Birchenfields Farm are classified on soil scapes as Loamy and clayey soils of coastal flats with naturally high groundwater. These soil types are at a much lower of risk to the effect of pH than other soils such as Non-calcareous sandy soils.

Soils

Additionally, full soil analysis of the proposed fields to be spread has been attached in Appendix C, and a summary table has been included in Table 6.

Table 6: Summary of soil pH and major nutrients for the fields to be spread

Field	Soil pH	Phosphate		Potash		Magnesium	
		mg/l	Index	mg/l	Index	mg/l	Index
1	7.7	52.6	4	176	2-	46.2	1
2	7.7	44.0	3	248	3	55.3	2
3	7.8	49.8	4	206	2+	68.7	2
4/5	7.8	47.4	4	192	2+	98.6	2
6	7.8	50	4	219	2+	58.5	2
7	7.8	49.2	4	216	2+	58.6	2
8	7.5	51.6	4	224	2+	64.0	2
10	7.9	61.6	4	162	2-	46.2	1
11	7.6	49.2	4	207	2+	55.8	2
12	7.7	53.4	4	226	2+	77.8	2
13	7.8	48.4	4	227	2+	74.7	2
14	7.9	49.2	4	247	3	64.7	2
15	7.5	50.6	4	221	2+	60.9	2

The soils were sampled in July 2016 in accordance with the sampling procedures described in the RB209 (9th Edition). Analysis was carried out by NRM laboratories for pH, major plant nutrients, and potentially toxic elements (PTEs) described in the Sludge (Use in Agriculture) Regulations.

Soils were found to be loamy categorised in accordance with RB209 (9th edition) as mineral soils for crop recommendations.

Soil pH ranges from 7.5 to 7.9, and are above the target value, although it shouldn't affect crop performance. Soil P indexes are all 4, and the soils are above the guideline target index of 2. Soil K levels ranged from index 2- to 3 and are at or above the target index level of 2-. The magnesium index for all fields was satisfactory. PTE concentrations for all fields is low and within the typical range of uncontaminated soil.

8. Potential Negative Impacts

There are no known or expected elevated levels of PTEs within the wastes. However, some wastes do contain low pH, although it shouldn't affect crop performance.

Site Hazards

Hazards have been identified on the site plan in Figure 1, and relevant control measures and buffer zones have been identified. Operations are to be carried out in accordance with the company generic risk assessment for landspreading, which will reduce the impacts of the operation on the receiving soil.

Odour and Noise Control

The wastes have the potential to cause odour, however storage will be sited away from dwellings, and it is unlikely to cause nuisance odour issues. Additionally, application of sludge via an umbilical cord sub soil injection system will minimise the risk of odour. The operation will be carried out in accordance within normal agricultural hours to minimise the risk of odour and noise complaints.

Storage Tanks

Storage tanks are inspected daily by the operator and wherever possible left empty at the end of the working day. Storage tanks will not be sited within 10m of watercourses or at the top of a steep embankment. Signage on the tanks identifies the company and activity, and has emergency contact details. Anticipated location of storage tanks are shown in Figure 1, but locations may vary slightly due to unforeseen operational requirements.

9. Sensitive Receptors

There are a number of properties within 500m of the fields proposed to be spread. Odour and noise will be controlled, as detailed in section 8, in order to minimise the disruption caused to residents.

There are no footpaths or tracks crossing the fields to be spread, and no boreholes, wells or springs have been identified within the spreading area.

The site is within a flood prone area and the land is outside a ground water protection zone (Figure 3). The wastes will be spread in appropriate conditions with weather and field conditions continuously examined.

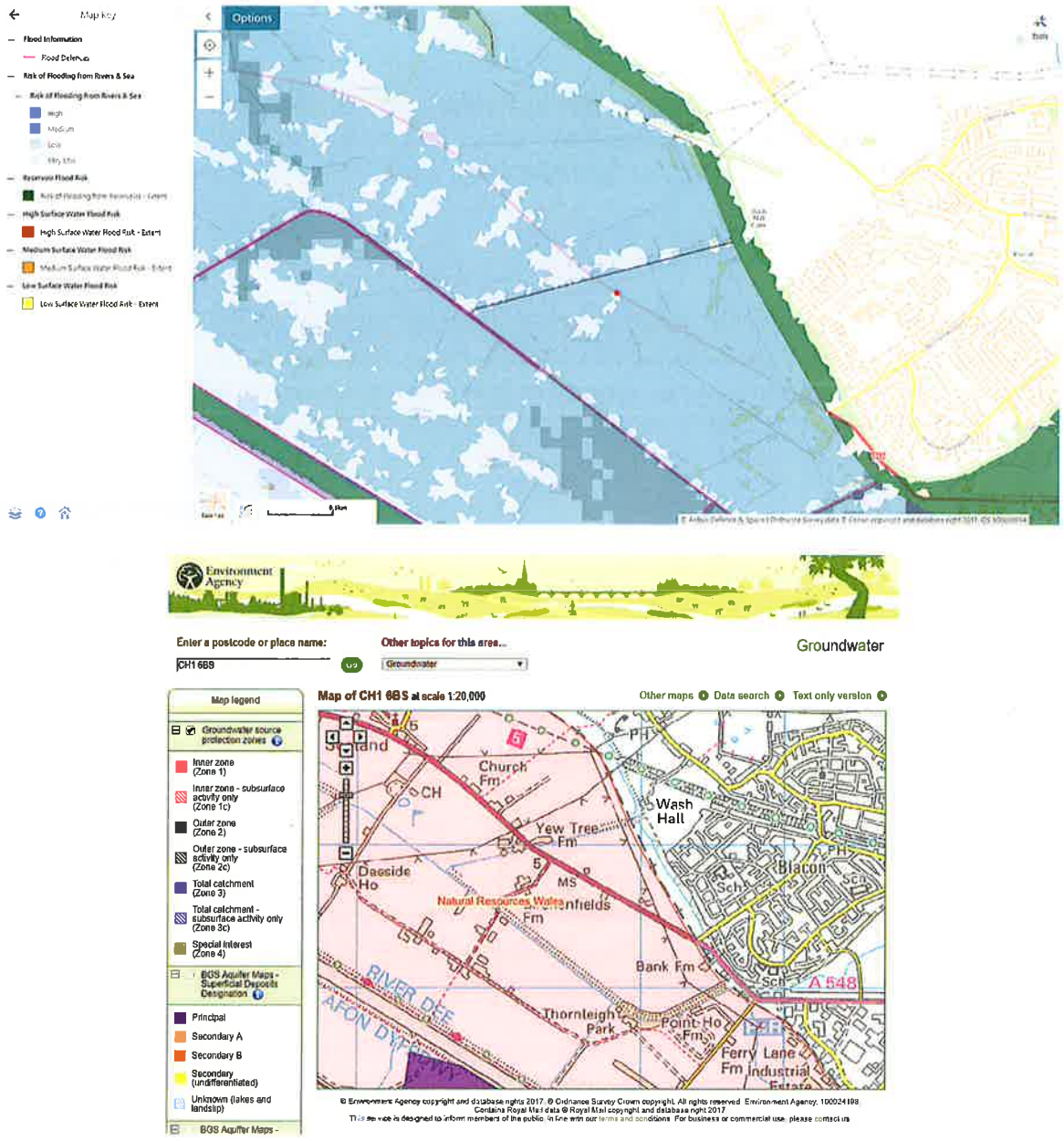


Figure 3: Maps of flood prone areas and ground water protection zones of the land to be spread. These were obtained from the NRW website (naturalresources.wales/evidence-and-data/maps/long-term-flood-risk) and 'What's in my backyard' (www.environment-agency.gov.uk) respectively.

The site is not within 500m of a statutory designated environmentally sensitive area as defined by Magic Maps (magic.gov.uk).

10. Contingency Planning

To cover machinery breakdown, replacement machinery is available or can be hired from suppliers and mobile mechanics are available to attend sites. All machinery is regularly serviced.

There is sufficient trained staff to maintain sickness and holiday cover.

Spreading operations will not be carried out when there are adverse weather conditions that are likely to interfere with the operation. These conditions include; heavy rain, or during periods of heavy snow or frozen ground as defined in the Code of Good Agricultural Practice (COGAP).

SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 1

MR ROB PIGGOTT
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HUGMOOR HOUSE
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WREXHAM LL13 9YE

F990

Please quote above code for all enquiries

MR JOHN COTTLE
PIPPINS CLOSE

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

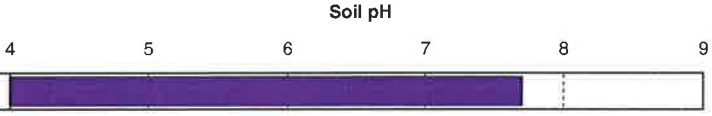
Laboratory References

Report Number	22966
Sample Number	309556

ANALYTICAL RESULTS *on 'dry matter' basis.*

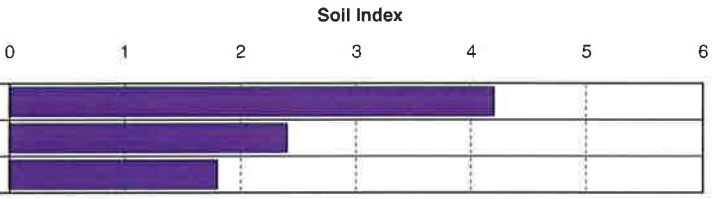
pH (1)

Determinand	Result
Soil pH	7.7



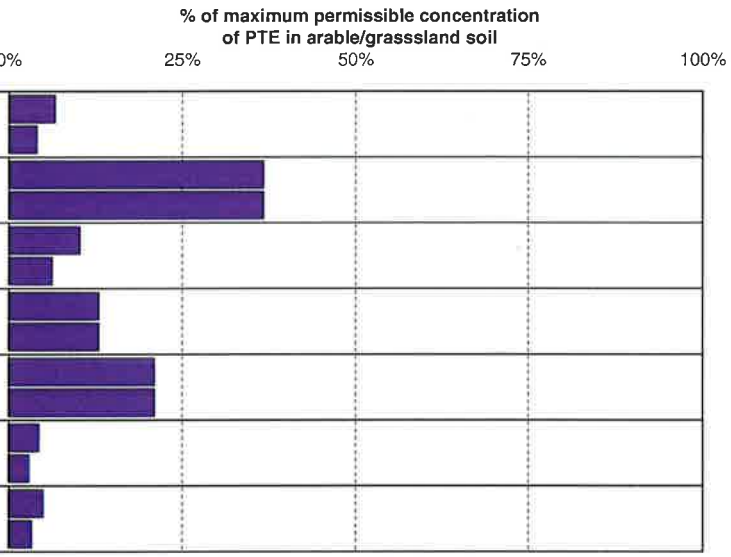
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	52.6	4
Soil Potassium as K	176	2-
Soil Magnesium as Mg	46.2	1



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	13.4	Arable	200
		Grassland	330
Total Zinc as Zn	110	Arable	300
		Grassland	300
Total Nickel as Ni	11.3	Arable	110
		Grassland	180
Total Cadmium as Cd	0.39	Arable	3
		Grassland	3
Total Lead as Pb	63.0	Arable	300
		Grassland	300
Total Chromium as Cr	17.6	Arable	400
		Grassland	600
Total Mercury as Hg	0.05	Arable	1
		Grassland	1.5



(1) Recommendations for liming and fertiliser should be obtained from Defra's Fertiliser Manual (RB209). The analytical methods used are as described in Defra's RB427.

(2) Concentration of Potentially Toxic Elements (PTE, commonly referred to as 'heavy metals') are in mg/kg dry soil. The maximum and the percentage of this maximum permissible concentration of PTE in soil are derived from the values in Defra's Code of Practice for Agricultural Use of Sewage Sludge (England & Wales) 1996. If applying organic manures to this soil it is important to ensure the soil is managed with a pH no less than 5.0, and that the PTE maximum values are not exceeded following the application. For soil where the pH value is less than 5.2, a FACTS Qualified Adviser should be consulted. Further details are provided in the Sludge Code.

Released by ..... *James Skinner* ..... Date *06/07/16*

NRM Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS
Tel: +44 (0) 1344 886338 **Fax:** +44 (0) 1344 890972 **Email:** enquiries@nrm.uk.com **www**.nrm.uk.com

SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 2

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PIPPINS CLOSE

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

Laboratory References

Report Number	22966
Sample Number	309557

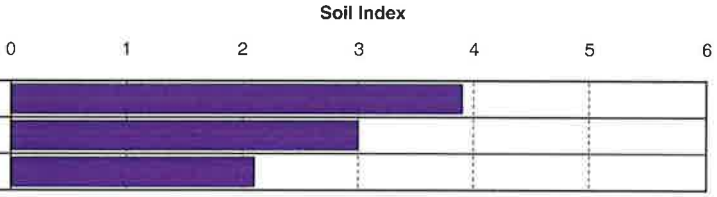
ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)

Determinand	Result
Soil pH	7.7

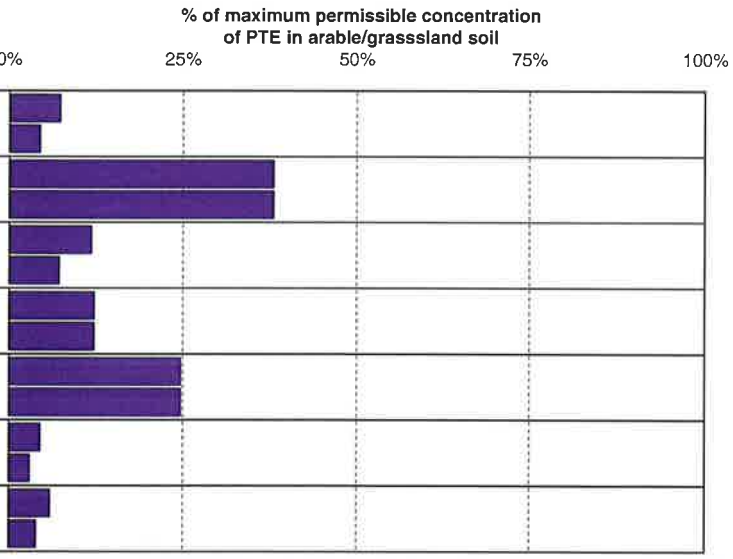
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	44.0	3
Soil Potassium as K	248	3
Soil Magnesium as Mg	55.3	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	14.8	Arable	200
		Grassland	330
Total Zinc as Zn	114	Arable	300
		Grassland	300
Total Nickel as Ni	13.1	Arable	110
		Grassland	180
Total Cadmium as Cd	0.37	Arable	3
		Grassland	3
Total Lead as Pb	74.1	Arable	300
		Grassland	300
Total Chromium as Cr	18.2	Arable	400
		Grassland	600
Total Mercury as Hg	0.06	Arable	1
		Grassland	1.5



(1) Recommendations for liming and fertiliser should be obtained from Defra's Fertiliser Manual (RB209). The analytical methods used are as described in Defra's RB427.

(2) Concentration of Potentially Toxic Elements (PTE, commonly referred to as 'heavy metals') are in mg/kg dry soil. The maximum and the percentage of this maximum permissible concentration of PTE in soil are derived from the values in Defra's Code of Practice for Agricultural Use of Sewage Sludge (England & Wales) 1996. If applying organic manures to this soil it is important to ensure the soil is managed with a pH no less than 5.0, and that the PTE maximum values are not exceeded following the application. For soil where the pH value is less than 5.2, a FACTS Qualified Adviser should be consulted. Further details are provided in the Sludge Code.

Released by James Skinner Date 06/07/16

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

SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 3

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MR JOHN COTTLE
PIPPINS CLOSE

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

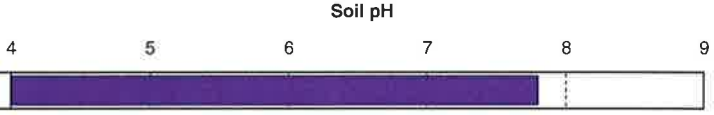
Laboratory References

Report Number	22966
Sample Number	309558

ANALYTICAL RESULTS *on 'dry matter' basis.*

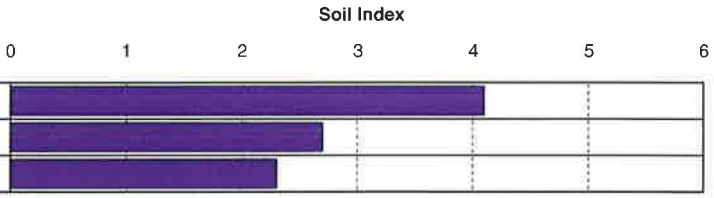
pH (1)

Determinand	Result
Soil pH	7.8



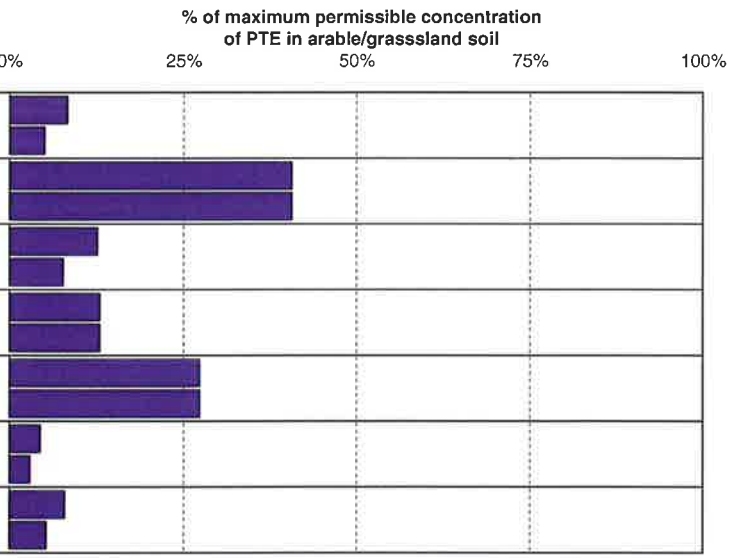
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	49.8	4
Soil Potassium as K	206	2+
Soil Magnesium as Mg	68.7	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	16.6	Arable	200
		Grassland	330
Total Zinc as Zn	122	Arable	300
		Grassland	300
Total Nickel as Ni	13.9	Arable	110
		Grassland	180
Total Cadmium as Cd	0.39	Arable	3
		Grassland	3
Total Lead as Pb	82.1	Arable	300
		Grassland	300
Total Chromium as Cr	17.8	Arable	400
		Grassland	600
Total Mercury as Hg	0.08	Arable	1
		Grassland	1.5



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(2) Concentration of Potentially Toxic Elements (PTE, commonly referred to as 'heavy metals') are in mg/kg dry soil. The maximum and the percentage of this maximum permissible concentration of PTE in soil are derived from the values in Defra's Code of Practice for Agricultural Use of Sewage Sludge (England & Wales) 1996. If applying organic manures to this soil it is important to ensure the soil is managed with a pH no less than 5.0, and that the PTE maximum values are not exceeded following the application. For soil where the pH value is less than 5.2, a FACTS Qualified Adviser should be consulted. Further details are provided in the Sludge Code.

Released by *James Skinner* Date *06/07/16*

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 4/5

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WREXHAM LL13 9YE

F990

Please quote above code for all enquiries

MR JOHN COTTLE
PIPPINS CLOSE

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

Laboratory References

Report Number	22966
Sample Number	309559

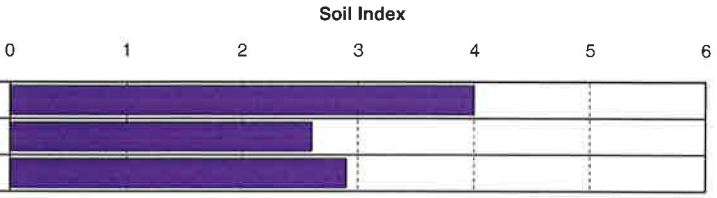
ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)

Determinand	Result
Soil pH	7.8

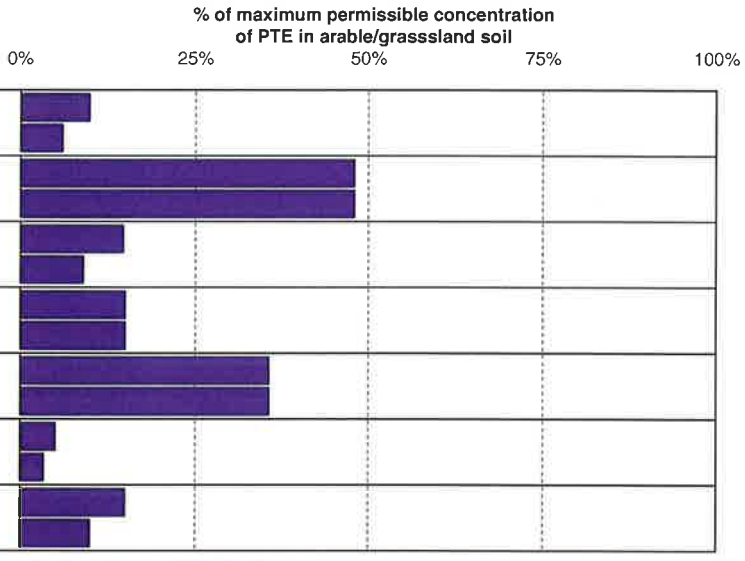
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	47.4	4
Soil Potassium as K	192	2+
Soil Magnesium as Mg	98.6	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	19.7	Arable	200
		Grassland	330
Total Zinc as Zn	144	Arable	300
		Grassland	300
Total Nickel as Ni	16.2	Arable	110
		Grassland	180
Total Cadmium as Cd	0.45	Arable	3
		Grassland	3
Total Lead as Pb	107	Arable	300
		Grassland	300
Total Chromium as Cr	20.1	Arable	400
		Grassland	600
Total Mercury as Hg	0.15	Arable	1
		Grassland	1.5



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Released by James Skinner Date 06/07/16

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 6

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MR JOHN COTTLE
PIPPINS CLOSE

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

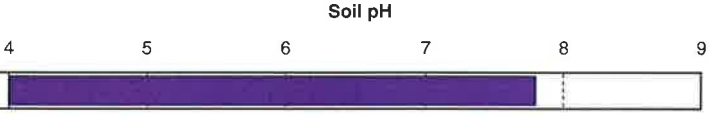
Laboratory References

Report Number	22966
Sample Number	309560

ANALYTICAL RESULTS *on 'dry matter' basis.*

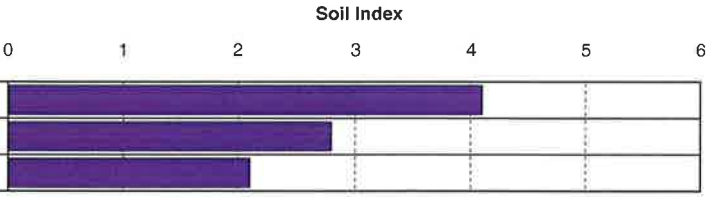
pH (1)

Determinand	Result
Soil pH	7.8



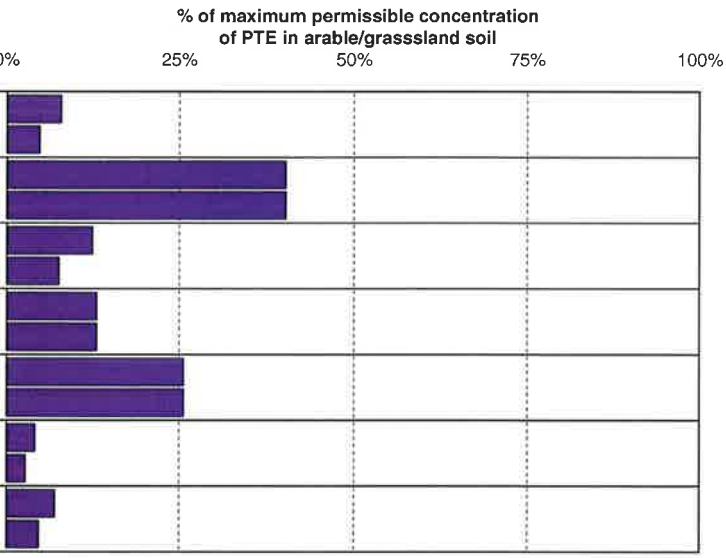
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	50.0	4
Soil Potassium as K	219	2+
Soil Magnesium as Mg	58.5	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	15.7	Arable	200
		Grassland	330
Total Zinc as Zn	121	Arable	300
		Grassland	300
Total Nickel as Ni	13.6	Arable	110
		Grassland	180
Total Cadmium as Cd	0.39	Arable	3
		Grassland	3
Total Lead as Pb	76.9	Arable	300
		Grassland	300
Total Chromium as Cr	16.5	Arable	400
		Grassland	600
Total Mercury as Hg	0.07	Arable	1
		Grassland	1.5



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Released by ..... *James Skinner* ..... Date *06/07/16*

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 7

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MR JOHN COTTLE
PIPPINS CLOSE

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

Laboratory References

Report Number	22966
Sample Number	309561

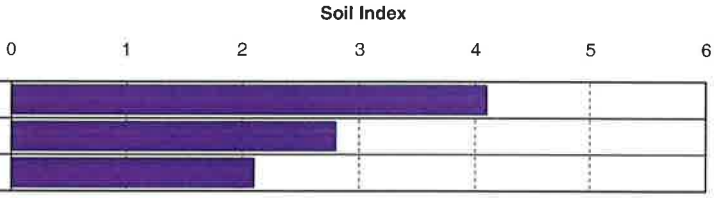
ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)

Determinand	Result
Soil pH	7.8

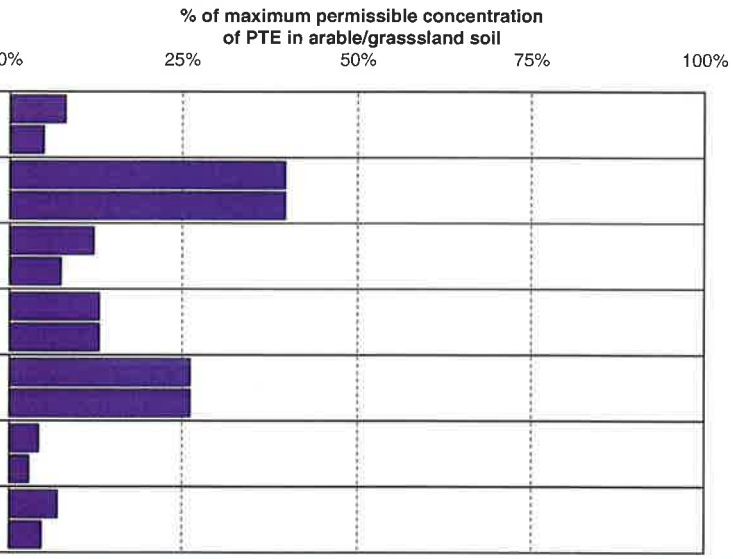
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	49.2	4
Soil Potassium as K	216	2+
Soil Magnesium as Mg	58.6	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	16.1	Arable	200
		Grassland	330
Total Zinc as Zn	119	Arable	300
		Grassland	300
Total Nickel as Ni	13.4	Arable	110
		Grassland	180
Total Cadmium as Cd	0.39	Arable	3
		Grassland	3
Total Lead as Pb	78.4	Arable	300
		Grassland	300
Total Chromium as Cr	17.0	Arable	400
		Grassland	600
Total Mercury as Hg	0.07	Arable	1
		Grassland	1.5



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Released by James Skinner Date 06/07/16

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 8

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MR JOHN COTTLE
PIPPINS CLOSE

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

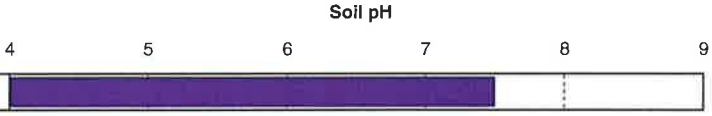
Laboratory References

Report Number	22966
Sample Number	309562

ANALYTICAL RESULTS *on 'dry matter' basis.*

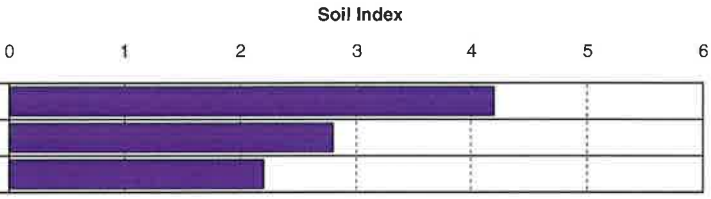
pH (1)

Determinand	Result
Soil pH	7.5



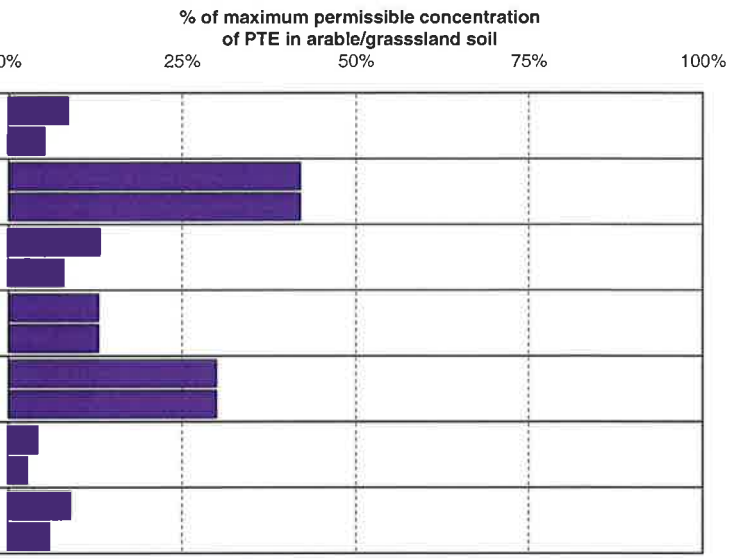
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	51.6	4
Soil Potassium as K	224	2+
Soil Magnesium as Mg	64.0	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	17.3	Arable	200
		Grassland	330
Total Zinc as Zn	126	Arable	300
		Grassland	300
Total Nickel as Ni	14.4	Arable	110
		Grassland	180
Total Cadmium as Cd	0.39	Arable	3
		Grassland	3
Total Lead as Pb	89.8	Arable	300
		Grassland	300
Total Chromium as Cr	17.3	Arable	400
		Grassland	600
Total Mercury as Hg	0.09	Arable	1
		Grassland	1.5



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Released by ..James Skinner.. Date ..06/07/16..

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 10

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MR JOHN COTTLE
MAESGWYN

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

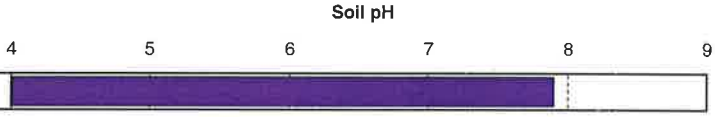
Laboratory References

Report Number	22968
Sample Number	309568

ANALYTICAL RESULTS *on 'dry matter' basis.*

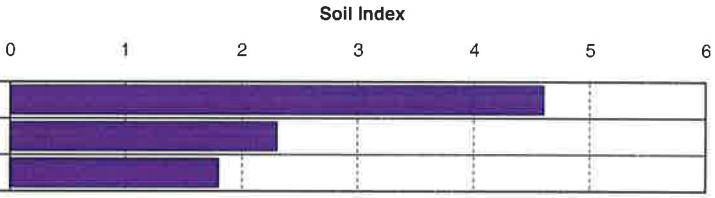
pH (1)

Determinand	Result
Soil pH	7.9



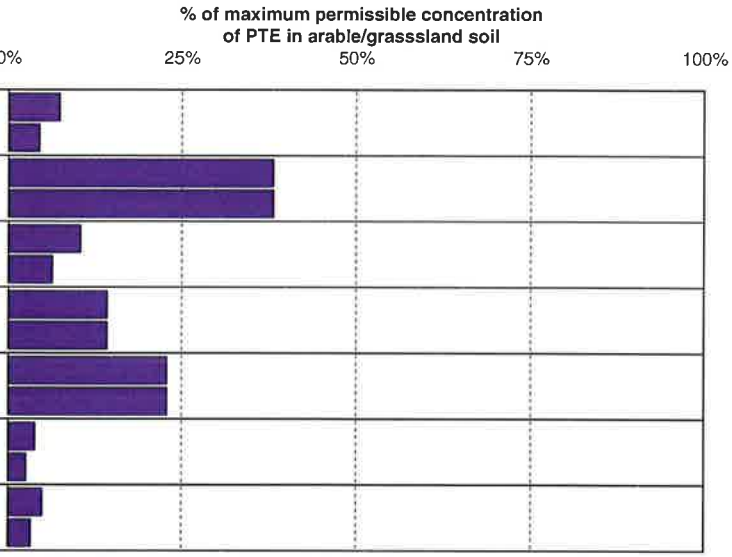
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	61.6	4
Soil Potassium as K	162	2-
Soil Magnesium as Mg	46.2	1



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	14.8	Arable	200
		Grassland	330
Total Zinc as Zn	114	Arable	300
		Grassland	300
Total Nickel as Ni	11.5	Arable	110
		Grassland	180
Total Cadmium as Cd	0.43	Arable	3
		Grassland	3
Total Lead as Pb	68.7	Arable	300
		Grassland	300
Total Chromium as Cr	15.6	Arable	400
		Grassland	600
Total Mercury as Hg	0.05	Arable	1
		Grassland	1.5



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Released by ..James Skinner..... Date 06/07/16

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 11

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WREXHAM LL13 9YE

F990

Please quote above code for all enquiries

MR JOHN COTTLE
MAESGWYN

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

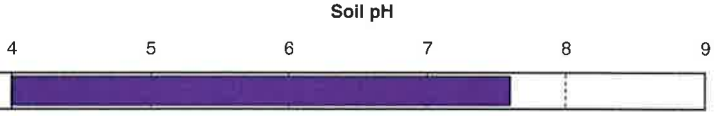
Laboratory References

Report Number	22968
Sample Number	309569

ANALYTICAL RESULTS *on 'dry matter' basis.*

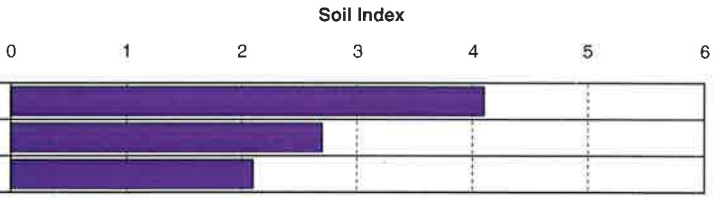
pH (1)

Determinand	Result
Soil pH	7.6



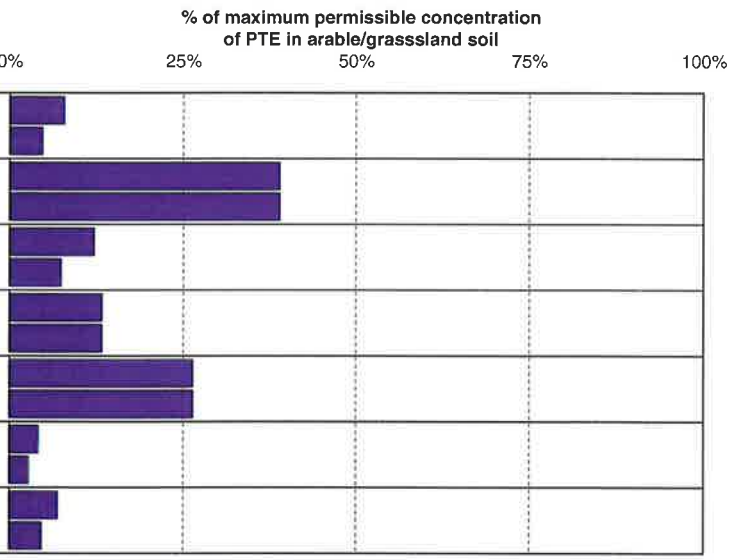
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	49.2	4
Soil Potassium as K	207	2+
Soil Magnesium as Mg	55.8	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	15.7	Arable	200
		Grassland	330
Total Zinc as Zn	117	Arable	300
		Grassland	300
Total Nickel as Ni	13.4	Arable	110
		Grassland	180
Total Cadmium as Cd	0.40	Arable	3
		Grassland	3
Total Lead as Pb	79.2	Arable	300
		Grassland	300
Total Chromium as Cr	16.8	Arable	400
		Grassland	600
Total Mercury as Hg	0.07	Arable	1
		Grassland	1.5



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Released by ..... *James Skinner* ..... Date *06/07/16*

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 12

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MR JOHN COTTLE
MAESGWYN

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

Laboratory References

Report Number	22968
Sample Number	309570

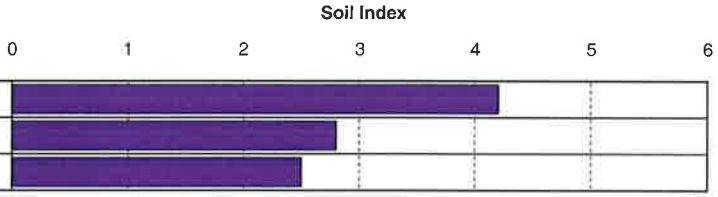
ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)

Determinand	Result
Soil pH	7.7

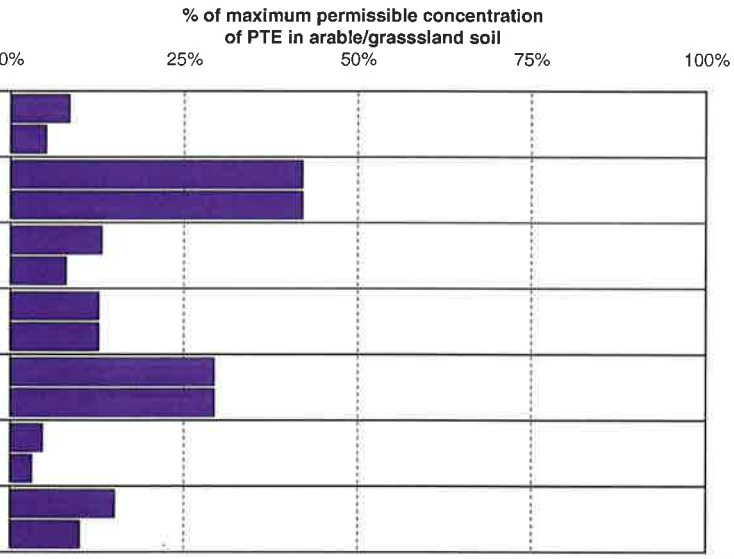
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	53.4	4
Soil Potassium as K	226	2+
Soil Magnesium as Mg	77.8	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	16.9	Arable	200
		Grassland	330
Total Zinc as Zn	126	Arable	300
		Grassland	300
Total Nickel as Ni	14.4	Arable	110
		Grassland	180
Total Cadmium as Cd	0.38	Arable	3
		Grassland	3
Total Lead as Pb	88.1	Arable	300
		Grassland	300
Total Chromium as Cr	18.7	Arable	400
		Grassland	600
Total Mercury as Hg	0.15	Arable	1
		Grassland	1.5



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Released by ..... *James Skinner* ..... Date ..... *06/07/16* .....

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 13

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Please quote above code for all enquiries

MR JOHN COTTLE
MAESGWYN

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

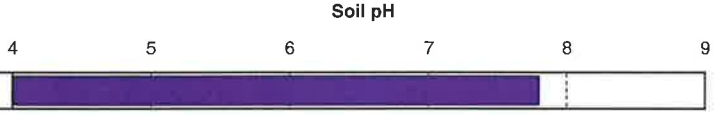
Laboratory References

Report Number	22968
Sample Number	309571

ANALYTICAL RESULTS *on 'dry matter' basis.*

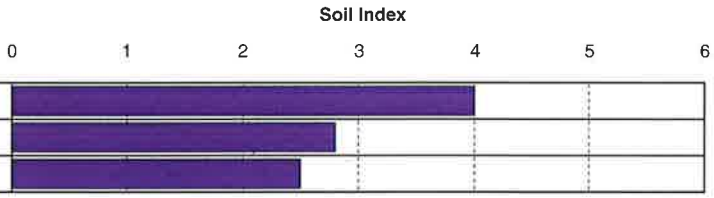
pH (1)

Determinand	Result
Soil pH	7.8



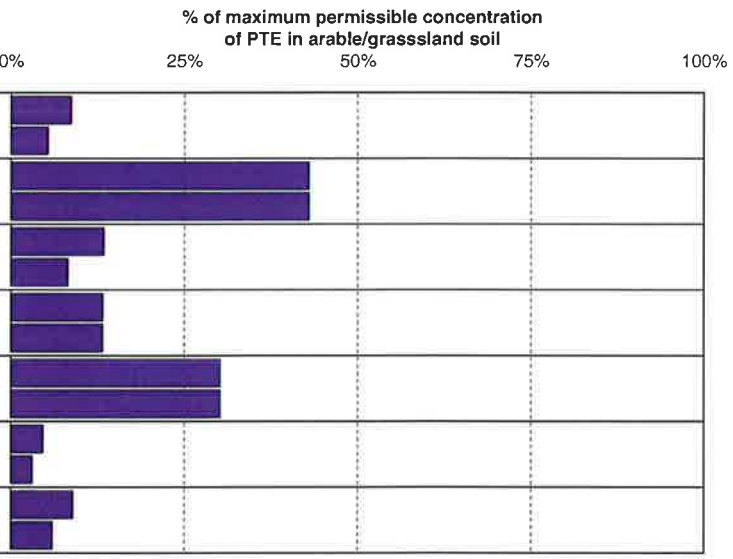
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	48.4	4
Soil Potassium as K	227	2+
Soil Magnesium as Mg	74.7	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	17.4	Arable	200
		Grassland	330
Total Zinc as Zn	129	Arable	300
		Grassland	300
Total Nickel as Ni	14.8	Arable	110
		Grassland	180
Total Cadmium as Cd	0.40	Arable	3
		Grassland	3
Total Lead as Pb	90.6	Arable	300
		Grassland	300
Total Chromium as Cr	18.5	Arable	400
		Grassland	600
Total Mercury as Hg	0.09	Arable	1
		Grassland	1.5



(1) Recommendations for liming and fertiliser should be obtained from Defra's Fertiliser Manual (RB209). The analytical methods used are as described in Defra's RB427.

(2) Concentration of Potentially Toxic Elements (PTE, commonly referred to as 'heavy metals') are in mg/kg dry soil. The maximum and the percentage of this maximum permissible concentration of PTE in soil are derived from the values in Defra's Code of Practice for Agricultural Use of Sewage Sludge (England & Wales) 1996. If applying organic manures to this soil it is important to ensure the soil is managed with a pH no less than 5.0, and that the PTE maximum values are not exceeded following the application. For soil where the pH value is less than 5.2, a FACTS Qualified Adviser should be consulted. Further details are provided in the Sludge Code.

Released by ..James Skinner.. Date ..06/07/16..

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 14

MR ROB PIGGOTT
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HUGMOOR
LLANYPWLL
WREXHAM LL13 9YE

F990

Please quote above code for all enquiries

MR JOHN COTTLE
MAESGWYN

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

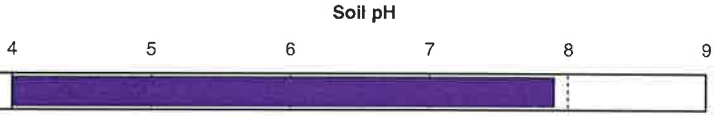
Laboratory References

Report Number	22968
Sample Number	309572

ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)

Determinand	Result
Soil pH	7.9

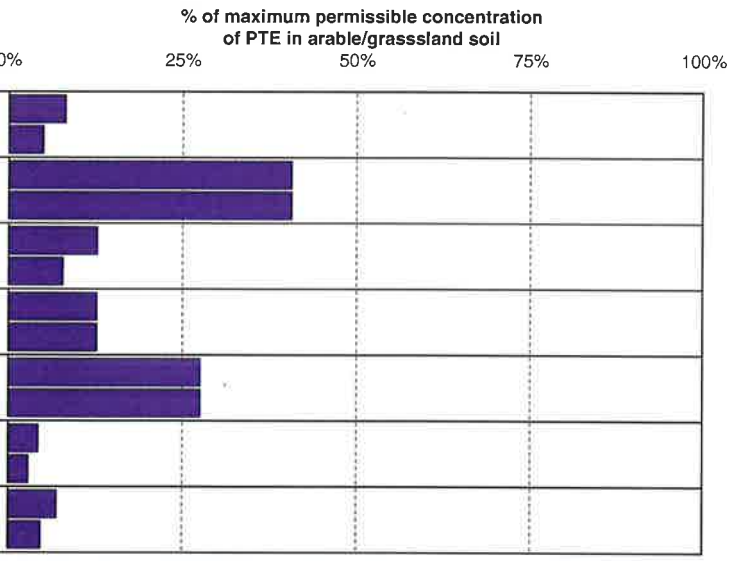


Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	49.2	4
Soil Potassium as K	247	3
Soil Magnesium as Mg	64.7	2

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	16.2	Arable	200
		Grassland	330
Total Zinc as Zn	122	Arable	300
		Grassland	300
Total Nickel as Ni	14.0	Arable	110
		Grassland	180
Total Cadmium as Cd	0.38	Arable	3
		Grassland	3
Total Lead as Pb	82.8	Arable	300
		Grassland	300
Total Chromium as Cr	17.3	Arable	400
		Grassland	600
Total Mercury as Hg	0.07	Arable	1
		Grassland	1.5



(1) Recommendations for liming and fertiliser should be obtained from Defra's Fertiliser Manual (RB209). The analytical methods used are as described in Defra's RB427.

(2) Concentration of Potentially Toxic Elements (PTE, commonly referred to as 'heavy metals') are in mg/kg dry soil. The maximum and the percentage of this maximum permissible concentration of PTE in soil are derived from the values in Defra's Code of Practice for Agricultural Use of Sewage Sludge (England & Wales) 1996. If applying organic manures to this soil it is important to ensure the soil is managed with a pH no less than 5.0, and that the PTE maximum values are not exceeded following the application. For soil where the pH value is less than 5.2, a FACTS Qualified Adviser should be consulted. Further details are provided in the Sludge Code.

Released by ..... *James Skinner* ..... Date *06/07/16*

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 15

MR ROB PIGGOTT
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WREXHAM LL13 9YE

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Please quote above code for all enquiries

MR JOHN COTTLE
MAESGWYN

SOIL

Date Received	01-JUL-2016
Date Reported	06-JUL-2016

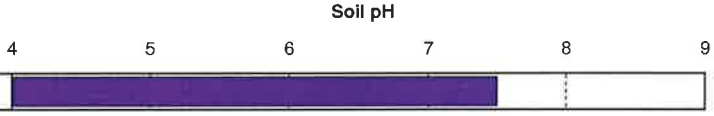
Laboratory References

Report Number	22968
Sample Number	309573

ANALYTICAL RESULTS *on 'dry matter' basis.*

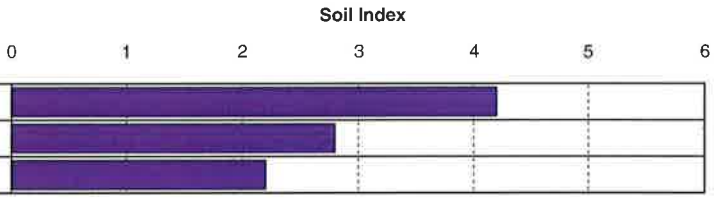
pH (1)

Determinand	Result
Soil pH	7.5



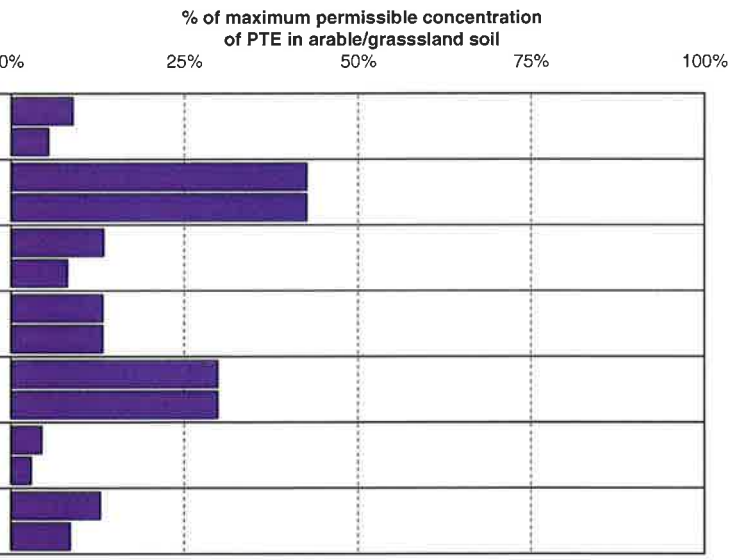
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	50.6	4
Soil Potassium as K	221	2+
Soil Magnesium as Mg	60.9	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	18.0	Arable	200
		Grassland	330
Total Zinc as Zn	128	Arable	300
		Grassland	300
Total Nickel as Ni	14.8	Arable	110
		Grassland	180
Total Cadmium as Cd	0.40	Arable	3
		Grassland	3
Total Lead as Pb	89.5	Arable	300
		Grassland	300
Total Chromium as Cr	18.0	Arable	400
		Grassland	600
Total Mercury as Hg	0.13	Arable	1
		Grassland	1.5



(1) Recommendations for liming and fertiliser should be obtained from Defra's Fertiliser Manual (RB209). The analytical methods used are as described in Defra's RB427.

(2) Concentration of Potentially Toxic Elements (PTE, commonly referred to as 'heavy metals') are in mg/kg dry soil. The maximum and the percentage of this maximum permissible concentration of PTE in soil are derived from the values in Defra's Code of Practice for Agricultural Use of Sewage Sludge (England & Wales) 1996. If applying organic manures to this soil it is important to ensure the soil is managed with a pH no less than 5.0, and that the PTE maximum values are not exceeded following the application. For soil where the pH value is less than 5.2, a FACTS Qualified Adviser should be consulted. Further details are provided in the Sludge Code.

Released by ..James Skinner.. Date ..06/07/16..

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Please quote above code for all enquiries

SECANIM

SLUDGE

SLUDGE (Metric Units)

Sample Reference : ACTIVATED SLUDGE

Sample Matrix : SLUDGE

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

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

Laboratory References	
Report Number	84790
Sample Number	62521

Date Received	13-DEC-2017
Date Reported	12-JAN-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result	Amount per fresh tonne or m3	Amount applied at an equivalent total Nitrogen application of 250 kg N/ha	Units
pH 1:6 [Fresh]		7.35			
Oven Dry Solids	%	1.62	16.20	3115	kg DM
Total Nitrogen	% w/w	0.130	1.30	250	kg N
Ammonium Nitrogen	mg/kg	<50	< 0.01		kg NH4-N
Nitrate Nitrogen	mg/kg	<10	< 0.01		kg NO3-N
Total Phosphorus (P)	mg/kg	173	0.40	76.19	kg P2O5
Total Potassium (K)	mg/kg	181	0.22	41.77	kg K2O
Total Magnesium (Mg)	mg/kg	31.7	0.05	10.12	kg MgO
Total Sulphur (S)	mg/kg	408	1.02	196.16	kg SO3
Total Copper (Cu)	mg/kg	2.00	< 0.01		kg Cu
Total Zinc (Zn)	mg/kg	5.17	0.01	0.99	kg Zn
Total Sodium (Na)	mg/kg	1158	1.56	300.19	kg Na2O
Total Calcium (Ca)	mg/kg	203	0.20	39.04	kg Ca
Equivalent field application rate		—	1.00	192.31	tonnes or m3 / ha

The above equivalent field application rate for total nitrogen of 250 kg/ha has been provided purely for guidance purposes only. Organic manures should be used in accordance with the Defra Code of Good Agricultural Practice and where required within the specific regulatory guidance for the spreading of that material to land. To get the most benefit from your organic manures it is recommended that you follow the principles as set out in Defra's Fertiliser Manual (RB209) or as directed by a FACTS qualified adviser.

Released by *Darren Whitbread* Date *12/01/18*

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MR ROB PIGGOTT TRADE EFFLUENT SERVICES HUGMOOR HOUSE HUGMOOR LLANYPWLL WREXHAM LL13 9YE	SECANIM SLUDGE

F990

Please quote above code for all enquiries

SLUDGE (Metric Units)

Sample Reference : ACTIVATED SLUDGE

Sample Matrix : SLUDGE

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

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

Laboratory References	
Report Number	84790
Sample Number	62521

Date Received	13-DEC-2017
Date Reported	12-JAN-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result
Total Lead (Pb)	mg/kg	2.17
Total Cadmium (Cd)	mg/kg	0.015
Total Mercury (Hg)	mg/kg	<0.05
Total Nickel (Ni)	mg/kg	10.7
Total Chromium (Cr)	mg/kg	27.0

Released by *Darren Whitbread* Date *12/01/18*

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

How does your sample analysis compare with the 'standard' figures for organic manures?

Farmyard Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Cattle FYM	25	6.0	3.2	9.4	2.4	1.8
Pig FYM	25	7.0	6.0	8.0	3.4	1.8
Sheep FYM	25	7.0	3.2	8.0	4.0	2.8
Duck FYM	25	6.5	5.5	7.5	2.6	2.4
Horse FYM	25	5.0	5.0	6.0	1.6	1.5
Goat FYM	40	9.5	4.5	12.0	2.8	1.8

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Poultry Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
	20	9.4	8.0	8.5	3.0	2.7
	40	19.0	12.0	15.0	5.6	4.3
	60	28.0	17.0	21.0	8.2	5.9
	80	37.0	21.0	27.0	11.0	7.5

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Cattle & Pig Slurries	Dry Matter (% DM)	Total Nitrogen (Kg N/m3)	Total Phosphate (Kg P2O5/m3)	Total Potash (Kg K2O/m3)	Total Sulphur (Kg SO3/m3)	Total Magnesium (Kg MgO/m3)
Cattle slurry	6.0	2.6	1.2	2.5	0.7	0.6
Dirty water (from cattle)	0.5	0.5	0.1	1.0	0.1	0.1
Separated cattle slurries						
- strainer box liquid	1.5	1.5	0.3	1.5	ND	ND
- weeping wall liquid	3.0	2.0	0.5	2.3	ND	ND
- mechanically separated liquid	4.0	3.0	1.2	2.8	ND	ND
- solid portion after separation	20.0	4.0	2.0	3.3	ND	ND
Pig slurry	4.0	3.6	1.5	2.2	0.7	0.7
Separated pig slurry - liquid	3.0	3.6	1.1	2.0	ND	ND
Separated pig slurry - solid	20.0	5.0	3.7	2.0	ND	ND

Notes: ND = no data.
The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively (50% & 100% for dirty water).

Biosolids	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Digested cake	25	11.0	11.0	0.6	8.2	1.6
Thermally dried	95	40.0	55.0	2.0	23.0	6.0
Lime stablised	25	8.5	7.0	0.8	7.4	2.4
Composted	40	11.0	10.0	3.0	6.1	2.0

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively.

Other Organic Manures	Dry Matter	Total Nitrogen	Total Phosphate	Total Potash	Total Sulphur	Total Magnesium
Composts	(% DM)	(Kg N/t)	(Kg P2O5/t)	(Kg K2O/t)	(Kg SO3/t)	(Kg MgO/t)
Green compost	60	7.5	3.0	6.8	3.4	3.4
Green/food compost	60	11.0	4.9	8.0	5.1	3.4
Mushroom compost	35	6.0	5.0	9.0	ND	ND
Digestates						
Food-based whole	4.1	4.8	1.1	2.4	0.7	0.2
Food-based separated liquor	3.8	4.5	1.0	2.8	1.0	0.2
Food-based separated fibre	27.0	8.9	10.2	3.0	4.0	2.2
Farm-sourced whole	5.5	3.6	1.7	4.0	0.8	0.6
Farm-sourced separated liquor	3.0	1.9	0.6	2.5	<0.1	0.4
Farm-sourced separated fibre	24.0	5.6	4.7	6.0	1.2	1.8
Paper Crumble						
Chemically / physically treated	40	2.0	0.4	0.2	0.6	1.4
Biologically treated	30	7.5	3.8	0.4	2.4	1.0
Water Treatment Cake						
Water treatment cake	25	2.4	3.4	0.4	5.5	0.8
Food industry 'wastes'	(% DM)	(Kg N/m3)	(Kg P2O5/m3)	(Kg K2O/m3)	(Kg SO3/m3)	(Kg MgO/m3)
Dairy waste	4	1.0	0.8	0.2	ND	ND
Soft drinks waste	4	0.3	0.2	Trace	ND	ND
Brewing waste	7	2.0	0.8	0.2	ND	ND
General food waste	5	1.6	0.7	0.2	ND	ND

Notes: ND = no data.

The 'standard' figures for the above organic manures have been taken from Defra's Fertiliser Manual 2017 (RB209) 9th edition and the corresponding PLANET version 3 software. Further information on fertiliser recommendations for organic manures can be obtained from the Fertiliser Manual or from a FACTS qualified adviser.

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Please quote above code for all enquiries

MAELOR FOODS

SLUDGE

SLUDGE (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLUDGE

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

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

Laboratory References	
Report Number	86433
Sample Number	63079

Date Received	09-JAN-2018
Date Reported	12-JAN-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result	Amount per fresh tonne or m3	Amount applied at an equivalent total Nitrogen application of 250 kg N/ha	Units
pH 1:6 [Fresh]		5.82			
Oven Dry Solids	%	1.73	17.30	2703	kg DM
Total Nitrogen	% w/w	0.160	1.60	250	kg N
Ammonium Nitrogen	mg/kg	556	0.56	86.88	kg NH4-N
Nitrate Nitrogen	mg/kg	<10	< 0.01		kg NO3-N
Total Phosphorus (P)	mg/kg	161	0.37	57.61	kg P2O5
Total Potassium (K)	mg/kg	118	0.14	22.13	kg K2O
Total Magnesium (Mg)	mg/kg	33.2	0.06	8.61	kg MgO
Total Sulphur (S)	mg/kg	123	0.31	48.05	kg SO3
Total Copper (Cu)	mg/kg	1.06	< 0.01		kg Cu
Total Zinc (Zn)	mg/kg	6.94	0.01	1.08	kg Zn
Total Sodium (Na)	mg/kg	57.1	0.08	12.03	kg Na2O
Total Calcium (Ca)	mg/kg	290	0.29	45.31	kg Ca
Equivalent field application rate		—	1.00	156.25	tonnes or m3 / ha

The above equivalent field application rate for total nitrogen of 250 kg/ha has been provided purely for guidance purposes only. Organic manures should be used in accordance with the Defra Code of Good Agricultural Practice and where required within the specific regulatory guidance for the spreading of that material to land. To get the most benefit from your organic manures it is recommended that you follow the principles as set out in Defra's Fertiliser Manual (RB209) or as directed by a FACTS qualified adviser.

Released by *Darren Whitbread* Date *12/01/18*

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WREXHAM LL13 9YE

F990

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MAELOR FOODS

SLUDGE

SLUDGE (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLUDGE

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

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

Laboratory References	
Report Number	86433
Sample Number	63079

Date Received	09-JAN-2018
Date Reported	12-JAN-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result
Conductivity 1:6	uS/cm	848
Total Lead (Pb)	mg/kg	<0.5
Total Cadmium (Cd)	mg/kg	<0.01
Total Mercury (Hg)	mg/kg	<0.05
Total Nickel (Ni)	mg/kg	0.492
Total Chromium (Cr)	mg/kg	1.24
Water Soluble Magnesium	mg/kg	24.8
Water Soluble Phosphorus	mg/kg	133
Water Soluble Potassium	mg/kg	107

Released by *Darren Whitbread* Date *12/01/18*

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How does your sample analysis compare with the 'standard' figures for organic manures?

Farmyard Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Cattle FYM	25	6.0	3.2	9.4	2.4	1.8
Pig FYM	25	7.0	6.0	8.0	3.4	1.8
Sheep FYM	25	7.0	3.2	8.0	4.0	2.8
Duck FYM	25	6.5	5.5	7.5	2.6	2.4
Horse FYM	25	5.0	5.0	6.0	1.6	1.5
Goat FYM	40	9.5	4.5	12.0	2.8	1.8

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Poultry Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
	20	9.4	8.0	8.5	3.0	2.7
	40	19.0	12.0	15.0	5.6	4.3
	60	28.0	17.0	21.0	8.2	5.9
	80	37.0	21.0	27.0	11.0	7.5

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Cattle & Pig Slurries	Dry Matter (% DM)	Total Nitrogen (Kg N/m3)	Total Phosphate (Kg P2O5/m3)	Total Potash (Kg K2O/m3)	Total Sulphur (Kg SO3/m3)	Total Magnesium (Kg MgO/m3)
Cattle slurry	6.0	2.6	1.2	2.5	0.7	0.6
Dirty water (from cattle)	0.5	0.5	0.1	1.0	0.1	0.1
Separated cattle slurries						
- strainer box liquid	1.5	1.5	0.3	1.5	ND	ND
- weeping wall liquid	3.0	2.0	0.5	2.3	ND	ND
- mechanically separated liquid	4.0	3.0	1.2	2.8	ND	ND
- solid portion after separation	20.0	4.0	2.0	3.3	ND	ND
Pig slurry	4.0	3.6	1.5	2.2	0.7	0.7
Separated pig slurry - liquid	3.0	3.6	1.1	2.0	ND	ND
Separated pig slurry - solid	20.0	5.0	3.7	2.0	ND	ND

Notes: ND = no data.
The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively (50% & 100% for dirty water).

Biosolids	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Digested cake	25	11.0	11.0	0.6	8.2	1.6
Thermally dried	95	40.0	55.0	2.0	23.0	6.0
Lime stablised	25	8.5	7.0	0.8	7.4	2.4
Composted	40	11.0	10.0	3.0	6.1	2.0

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively.

Other Organic Manures	Dry Matter	Total Nitrogen	Total Phosphate	Total Potash	Total Sulphur	Total Magnesium
Composts	(% DM)	(Kg N/t)	(Kg P2O5/t)	(Kg K2O/t)	(Kg SO3/t)	(Kg MgO/t)
Green compost	60	7.5	3.0	6.8	3.4	3.4
Green/food compost	60	11.0	4.9	8.0	5.1	3.4
Mushroom compost	35	6.0	5.0	9.0	ND	ND
Digestates						
Food-based whole	4.1	4.8	1.1	2.4	0.7	0.2
Food-based separated liquor	3.8	4.5	1.0	2.8	1.0	0.2
Food-based separated fibre	27.0	8.9	10.2	3.0	4.0	2.2
Farm-sourced whole	5.5	3.6	1.7	4.0	0.8	0.6
Farm-sourced separated liquor	3.0	1.9	0.6	2.5	<0.1	0.4
Farm-sourced separated fibre	24.0	5.6	4.7	6.0	1.2	1.8
Paper Crumble						
Chemically / physically treated	40	2.0	0.4	0.2	0.6	1.4
Biologically treated	30	7.5	3.8	0.4	2.4	1.0
Water Treatment Cake						
Water treatment cake	25	2.4	3.4	0.4	5.5	0.8
Food industry 'wastes'	(% DM)	(Kg N/m3)	(Kg P2O5/m3)	(Kg K2O/m3)	(Kg SO3/m3)	(Kg MgO/m3)
Dairy waste	4	1.0	0.8	0.2	ND	ND
Soft drinks waste	4	0.3	0.2	Trace	ND	ND
Brewing waste	7	2.0	0.8	0.2	ND	ND
General food waste	5	1.6	0.7	0.2	ND	ND

Notes: ND = no data.

The 'standard' figures for the above organic manures have been taken from Defra's Fertiliser Manual 2017 (RB209) 9th edition and the corresponding PLANET version 3 software. Further information on fertiliser recommendations for organic manures can be obtained from the Fertiliser Manual or from a FACTS qualified adviser.

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CRODA GOOLE

SLUDGE

SLUDGE (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLUDGE

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

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

Laboratory References	
Report Number	94988
Sample Number	65553

Date Received	13-MAR-2018
Date Reported	19-MAR-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result	Amount per fresh tonne or m3	Amount applied at an equivalent total Nitrogen application of 250 kg N/ha	Units
pH 1:6 [Fresh]		6.53			
Oven Dry Solids	%	5.02	50.20	3138	kg DM
Total Nitrogen	% w/w	0.400	4.00	250	kg N
Ammonium Nitrogen	mg/kg	357	0.36	22.31	kg NH4-N
Nitrate Nitrogen	mg/kg	<10	< 0.01		kg NO3-N
Total Phosphorus (P)	mg/kg	812	1.86	116.22	kg P2O5
Total Potassium (K)	mg/kg	327	0.39	24.52	kg K2O
Total Magnesium (Mg)	mg/kg	129	0.21	13.38	kg MgO
Total Sulphur (S)	mg/kg	2107	5.27	329.22	kg SO3
Total Copper (Cu)	mg/kg	0.911	< 0.01		kg Cu
Total Zinc (Zn)	mg/kg	18.0	0.02	1.13	kg Zn
Total Sodium (Na)	mg/kg	4036	5.44	340.03	kg Na2O
Total Calcium (Ca)	mg/kg	352	0.35	22.00	kg Ca
Equivalent field application rate		—	1.00	62.50	tonnes or m3 / ha

The above equivalent field application rate for total nitrogen of 250 kg/ha has been provided purely for guidance purposes only. Organic manures should be used in accordance with the Defra Code of Good Agricultural Practice and where required within the specific regulatory guidance for the spreading of that material to land. To get the most benefit from your organic manures it is recommended that you follow the principles as set out in Defra's Fertiliser Manual (RB209) or as directed by a FACTS qualified adviser.

Released by *Darren Whitbread* Date *19/03/18*

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SLUDGE (Metric Units)

Sample Reference : SLUDGE

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

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

Laboratory References	
Report Number	94988
Sample Number	65553

Date Received	13-MAR-2018
Date Reported	19-MAR-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result
Conductivity 1:6	uS/cm	3150
Total Lead (Pb)	mg/kg	<0.5
Total Cadmium (Cd)	mg/kg	<0.01
Total Mercury (Hg)	mg/kg	<0.05
Total Nickel (Ni)	mg/kg	1.62
Total Chromium (Cr)	mg/kg	6.09
Water Soluble Magnesium	mg/kg	42.8
Water Soluble Phosphorus	mg/kg	282
Water Soluble Potassium	mg/kg	314

Released by *Darren Whitbread* Date *19/03/18*

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How does your sample analysis compare with the 'standard' figures for organic manures?

Farmyard Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Cattle FYM	25	6.0	3.2	9.4	2.4	1.8
Pig FYM	25	7.0	6.0	8.0	3.4	1.8
Sheep FYM	25	7.0	3.2	8.0	4.0	2.8
Duck FYM	25	6.5	5.5	7.5	2.6	2.4
Horse FYM	25	5.0	5.0	6.0	1.6	1.5
Goat FYM	40	9.5	4.5	12.0	2.8	1.8

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Poultry Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
	20	9.4	8.0	8.5	3.0	2.7
	40	19.0	12.0	15.0	5.6	4.3
	60	28.0	17.0	21.0	8.2	5.9
	80	37.0	21.0	27.0	11.0	7.5

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Cattle & Pig Slurries	Dry Matter (% DM)	Total Nitrogen (Kg N/m3)	Total Phosphate (Kg P2O5/m3)	Total Potash (Kg K2O/m3)	Total Sulphur (Kg SO3/m3)	Total Magnesium (Kg MgO/m3)
Cattle slurry	6.0	2.6	1.2	2.5	0.7	0.6
Dirty water (from cattle)	0.5	0.5	0.1	1.0	0.1	0.1
Separated cattle slurries						
- strainer box liquid	1.5	1.5	0.3	1.5	ND	ND
- weeping wall liquid	3.0	2.0	0.5	2.3	ND	ND
- mechanically separated liquid	4.0	3.0	1.2	2.8	ND	ND
- solid portion after separation	20.0	4.0	2.0	3.3	ND	ND
Pig slurry	4.0	3.6	1.5	2.2	0.7	0.7
Separated pig slurry - liquid	3.0	3.6	1.1	2.0	ND	ND
Separated pig slurry - solid	20.0	5.0	3.7	2.0	ND	ND

Notes: ND = no data.
The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively (50% & 100% for dirty water).

Biosolids	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Digested cake	25	11.0	11.0	0.6	8.2	1.6
Thermally dried	95	40.0	55.0	2.0	23.0	6.0
Lime stablised	25	8.5	7.0	0.8	7.4	2.4
Composted	40	11.0	10.0	3.0	6.1	2.0

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively.

Other Organic Manures	Dry Matter	Total Nitrogen	Total Phosphate	Total Potash	Total Sulphur	Total Magnesium
Composts	(% DM)	(Kg N/t)	(Kg P2O5/t)	(Kg K2O/t)	(Kg SO3/t)	(Kg MgO/t)
Green compost	60	7.5	3.0	6.8	3.4	3.4
Green/food compost	60	11.0	4.9	8.0	5.1	3.4
Mushroom compost	35	6.0	5.0	9.0	ND	ND
Digestates						
Food-based whole	4.1	4.8	1.1	2.4	0.7	0.2
Food-based separated liquor	3.8	4.5	1.0	2.8	1.0	0.2
Food-based separated fibre	27.0	8.9	10.2	3.0	4.0	2.2
Farm-sourced whole	5.5	3.6	1.7	4.0	0.8	0.6
Farm-sourced separated liquor	3.0	1.9	0.6	2.5	<0.1	0.4
Farm-sourced separated fibre	24.0	5.6	4.7	6.0	1.2	1.8
Paper Crumble						
Chemically / physically treated	40	2.0	0.4	0.2	0.6	1.4
Biologically treated	30	7.5	3.8	0.4	2.4	1.0
Water Treatment Cake						
Water treatment cake	25	2.4	3.4	0.4	5.5	0.8
Food industry 'wastes'	(% DM)	(Kg N/m3)	(Kg P2O5/m3)	(Kg K2O/m3)	(Kg SO3/m3)	(Kg MgO/m3)
Dairy waste	4	1.0	0.8	0.2	ND	ND
Soft drinks waste	4	0.3	0.2	Trace	ND	ND
Brewing waste	7	2.0	0.8	0.2	ND	ND
General food waste	5	1.6	0.7	0.2	ND	ND

Notes: ND = no data.

The 'standard' figures for the above organic manures have been taken from Defra's Fertiliser Manual 2017 (RB209) 9th edition and the corresponding PLANET version 3 software. Further information on fertiliser recommendations for organic manures can be obtained from the Fertiliser Manual or from a FACTS qualified adviser.

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CRODA WIDNES

SLUDGE

SLUDGE

Sample Reference :

SLUDGE

Sample Matrix : SLUDGE

Laboratory References	
Report Number	86832
Sample Number	63229

Date Received	11-JAN-2018
Date Reported	16-JAN-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	1.02	%
Conductivity 1:6	935	uS/cm
Total Nitrogen	<0.04	% w/w
Nitrate Nitrogen	<10	mg/kg
Ammonium Nitrogen	51.0	mg/kg
Total Phosphorus (P)	8.79	mg/kg
Total Potassium (K)	26.4	mg/kg
Total Magnesium (Mg)	211	mg/kg
Total Copper (Cu)	0.38	mg/kg
Total Zinc (Zn)	5.98	mg/kg

Released by *Darren Whitbread* Date *16/01/18*

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CRODA WIDNES

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Sample Reference :

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Sample Matrix : SLUDGE

Laboratory References	
Report Number	86832
Sample Number	63229

Date Received	11-JAN-2018
Date Reported	16-JAN-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
Total Sulphur (S)	107	mg/kg
Total Calcium (Ca)	436	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)	0.66	mg/kg
Total Chromium (Cr)	<0.2	mg/kg
Total Sodium (Na)	666	mg/kg
pH 1:6 [Fresh]	7.80	
Water Soluble Magnesium	186	mg/kg

Released by *Darren Whitbread* Date *16/01/18*

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Sample Reference :

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Sample Matrix : SLUDGE

Laboratory References	
Report Number	86832
Sample Number	63229

Date Received	11-JAN-2018
Date Reported	16-JAN-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
Water Soluble Phosphorus	0.93	mg/kg
Water Soluble Potassium	8.36	mg/kg

Released by *Darren Whitbread* Date *16/01/18*

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Purchase Order : 000344

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ENCIRC

SLUDGE

SLURRY/SLUDGE ANALYSIS RESULTS (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLURRY/SLUDGE

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

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

Laboratory References	
Report Number	21767
Sample Number	71789

Date Received	02-AUG-2018
Date Reported	07-AUG-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result	Amount per fresh tonne or m3	Amount applied at an equivalent total Nitrogen application of 250 kg N/ha	Units
pH 1:6 [Fresh]		7.06			
Oven Dry Solids	%	0.640	6.40	2667	kg DM
Total Nitrogen	% w/w	0.060	0.60	250	kg N
Ammonium Nitrogen	mg/kg	114	0.11	47.50	kg NH4-N
Nitrate Nitrogen	mg/kg	<10	< 0.01		kg NO3-N
Total Phosphorus (P)	mg/kg	104	0.24	99.23	kg P2O5
Total Potassium (K)	mg/kg	65.8	0.08	32.90	kg K2O
Total Magnesium (Mg)	mg/kg	22.0	0.04	15.22	kg MgO
Total Sulphur (S)	mg/kg	196	0.49	204.17	kg SO3
Total Copper (Cu)	mg/kg	0.579	< 0.01		kg Cu
Total Zinc (Zn)	mg/kg	9.43	0.01	3.93	kg Zn
Total Sodium (Na)	mg/kg	438	0.59	246.01	kg Na2O
Total Calcium (Ca)	mg/kg	69.7	0.07	29.04	kg Ca
Equivalent field application rate		—	1.00	416.67	tonnes or m3 / ha

The above equivalent field application rate for total nitrogen of 250 kg/ha has been provided purely for guidance purposes only. Organic manures should be used in accordance with the Defra Code of Good Agricultural Practice and where required within the specific regulatory guidance for the spreading of that material to land. To get the most benefit from your organic manures it is recommended that you follow the principles as set out in Defra's Fertiliser Manual (RB209) or as directed by a FACTS qualified adviser.

Released by J Doyle Date 07/08/18

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Purchase Order : 000344

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ENCIRC

SLUDGE

SLURRY/SLUDGE ANALYSIS RESULTS (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLURRY/SLUDGE

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

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

Laboratory References	
Report Number	21767
Sample Number	71789

Date Received	02-AUG-2018
Date Reported	07-AUG-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result
Conductivity 1:6	uS/cm	439
Total Lead (Pb)	mg/kg	<0.5
Total Cadmium (Cd)	mg/kg	<0.01
Total Mercury (Hg)	mg/kg	<0.05
Total Nickel (Ni)	mg/kg	0.296
Total Chromium (Cr)	mg/kg	0.999
Water Soluble Magnesium	mg/kg	3.78
Water Soluble Phosphorus	mg/kg	49.1
Water Soluble Potassium	mg/kg	51.4

Released by ..... J Doyle ..... Date 07/08/18

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How does your sample analysis compare with the 'standard' figures for organic manures?

Farmyard Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Cattle FYM	25	6.0	3.2	9.4	2.4	1.8
Pig FYM	25	7.0	6.0	8.0	3.4	1.8
Sheep FYM	25	7.0	3.2	8.0	4.0	2.8
Duck FYM	25	6.5	5.5	7.5	2.6	2.4
Horse FYM	25	5.0	5.0	6.0	1.6	1.5
Goat FYM	40	9.5	4.5	12.0	2.8	1.8

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Poultry Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
	20	9.4	8.0	8.5	3.0	2.7
	40	19.0	12.0	15.0	5.6	4.3
	60	28.0	17.0	21.0	8.2	5.9
	80	37.0	21.0	27.0	11.0	7.5

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Cattle & Pig Slurries	Dry Matter (% DM)	Total Nitrogen (Kg N/m3)	Total Phosphate (Kg P2O5/m3)	Total Potash (Kg K2O/m3)	Total Sulphur (Kg SO3/m3)	Total Magnesium (Kg MgO/m3)
Cattle slurry	6.0	2.6	1.2	2.5	0.7	0.6
Dirty water (from cattle)	0.5	0.5	0.1	1.0	0.1	0.1
Separated cattle slurries						
- strainer box liquid	1.5	1.5	0.3	1.5	ND	ND
- weeping wall liquid	3.0	2.0	0.5	2.3	ND	ND
- mechanically separated liquid	4.0	3.0	1.2	2.8	ND	ND
- solid portion after separation	20.0	4.0	2.0	3.3	ND	ND
Pig slurry	4.0	3.6	1.5	2.2	0.7	0.7
Separated pig slurry - liquid	3.0	3.6	1.1	2.0	ND	ND
Separated pig slurry - solid	20.0	5.0	3.7	2.0	ND	ND

Notes: ND = no data.
The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively (50% & 100% for dirty water).

Biosolids	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Digested cake	25	11.0	11.0	0.6	8.2	1.6
Thermally dried	95	40.0	55.0	2.0	23.0	6.0
Lime stablised	25	8.5	7.0	0.8	7.4	2.4
Composted	40	11.0	10.0	3.0	6.1	2.0

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively.

Other Organic Manures	Dry Matter	Total Nitrogen	Total Phosphate	Total Potash	Total Sulphur	Total Magnesium
Composts	(% DM)	(Kg N/t)	(Kg P2O5/t)	(Kg K2O/t)	(Kg SO3/t)	(Kg MgO/t)
Green compost	60	7.5	3.0	6.8	3.4	3.4
Green/food compost	60	11.0	4.9	8.0	5.1	3.4
Mushroom compost	35	6.0	5.0	9.0	ND	ND
Digestates						
Food-based whole	4.1	4.8	1.1	2.4	0.7	0.2
Food-based separated liquor	3.8	4.5	1.0	2.8	1.0	0.2
Food-based separated fibre	27.0	8.9	10.2	3.0	4.0	2.2
Farm-sourced whole	5.5	3.6	1.7	4.0	0.8	0.6
Farm-sourced separated liquor	3.0	1.9	0.6	2.5	<0.1	0.4
Farm-sourced separated fibre	24.0	5.6	4.7	6.0	1.2	1.8
Paper Crumble						
Chemically / physically treated	40	2.0	0.4	0.2	0.6	1.4
Biologically treated	30	7.5	3.8	0.4	2.4	1.0
Water Treatment Cake						
Water treatment cake	25	2.4	3.4	0.4	5.5	0.8
Food industry 'wastes'	(% DM)	(Kg N/m3)	(Kg P2O5/m3)	(Kg K2O/m3)	(Kg SO3/m3)	(Kg MgO/m3)
Dairy waste	4	1.0	0.8	0.2	ND	ND
Soft drinks waste	4	0.3	0.2	Trace	ND	ND
Brewing waste	7	2.0	0.8	0.2	ND	ND
General food waste	5	1.6	0.7	0.2	ND	ND

Notes: ND = no data.

The 'standard' figures for the above organic manures have been taken from Defra's Fertiliser Manual 2017 (RB209) 9th edition and the corresponding PLANET version 3 software. Further information on fertiliser recommendations for organic manures can be obtained from the Fertiliser Manual or from a FACTS qualified adviser.

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ENGLISH PROVENDER

SLUDGE

SLUDGE (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLUDGE

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

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

Laboratory References	
Report Number	97117
Sample Number	66115

Date Received	28-MAR-2018
Date Reported	05-APR-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result	Amount per fresh tonne or m3	Amount applied at an equivalent total Nitrogen application of 250 kg N/ha	Units
pH 1:6 [Fresh]		4.54			
Oven Dry Solids	%	16.4	164.00	45556	kg DM
Total Nitrogen	% w/w	0.090	0.90	250	kg N
Ammonium Nitrogen	mg/kg	<50	< 0.01		kg NH4-N
Nitrate Nitrogen	mg/kg	<10	< 0.01		kg NO3-N
Total Phosphorus (P)	mg/kg	201	0.46	127.86	kg P2O5
Total Potassium (K)	mg/kg	93.3	0.11	31.10	kg K2O
Total Magnesium (Mg)	mg/kg	18.3	0.03	8.44	kg MgO
Total Sulphur (S)	mg/kg	126	0.31	87.50	kg SO3
Total Copper (Cu)	mg/kg	0.840	< 0.01		kg Cu
Total Zinc (Zn)	mg/kg	7.61	0.01	2.11	kg Zn
Total Sodium (Na)	mg/kg	691	0.93	258.74	kg Na2O
Total Calcium (Ca)	mg/kg	173	0.17	48.06	kg Ca
Equivalent field application rate		—	1.00	277.78	tonnes or m3 / ha

The above equivalent field application rate for total nitrogen of 250 kg/ha has been provided purely for guidance purposes only. Organic manures should be used in accordance with the Defra Code of Good Agricultural Practice and where required within the specific regulatory guidance for the spreading of that material to land. To get the most benefit from your organic manures it is recommended that you follow the principles as set out in Defra's Fertiliser Manual (RB209) or as directed by a FACTS qualified adviser.

Released by *Darren Whitbread* Date *05/04/18*

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ENGLISH PROVENDER

SLUDGE

SLUDGE (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLUDGE

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

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

Laboratory References	
Report Number	97117
Sample Number	66115

Date Received	28-MAR-2018
Date Reported	05-APR-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result
Conductivity 1:6	uS/cm	605
Total Lead (Pb)	mg/kg	2.07
Total Cadmium (Cd)	mg/kg	0.028
Total Mercury (Hg)	mg/kg	<0.05
Total Nickel (Ni)	mg/kg	1.61
Total Chromium (Cr)	mg/kg	3.59
Water Soluble Magnesium	mg/kg	15.8
Water Soluble Phosphorus	mg/kg	17.0
Water Soluble Potassium	mg/kg	83.9

Released by *Darren Whitbread* Date *05/04/18*

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How does your sample analysis compare with the 'standard' figures for organic manures?

Farmyard Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Cattle FYM	25	6.0	3.2	9.4	2.4	1.8
Pig FYM	25	7.0	6.0	8.0	3.4	1.8
Sheep FYM	25	7.0	3.2	8.0	4.0	2.8
Duck FYM	25	6.5	5.5	7.5	2.6	2.4
Horse FYM	25	5.0	5.0	6.0	1.6	1.5
Goat FYM	40	9.5	4.5	12.0	2.8	1.8

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Poultry Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
	20	9.4	8.0	8.5	3.0	2.7
	40	19.0	12.0	15.0	5.6	4.3
	60	28.0	17.0	21.0	8.2	5.9
	80	37.0	21.0	27.0	11.0	7.5

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Cattle & Pig Slurries	Dry Matter (% DM)	Total Nitrogen (Kg N/m3)	Total Phosphate (Kg P2O5/m3)	Total Potash (Kg K2O/m3)	Total Sulphur (Kg SO3/m3)	Total Magnesium (Kg MgO/m3)
Cattle slurry	6.0	2.6	1.2	2.5	0.7	0.6
Dirty water (from cattle)	0.5	0.5	0.1	1.0	0.1	0.1
Separated cattle slurries						
- strainer box liquid	1.5	1.5	0.3	1.5	ND	ND
- weeping wall liquid	3.0	2.0	0.5	2.3	ND	ND
- mechanically separated liquid	4.0	3.0	1.2	2.8	ND	ND
- solid portion after separation	20.0	4.0	2.0	3.3	ND	ND
Pig slurry	4.0	3.6	1.5	2.2	0.7	0.7
Separated pig slurry - liquid	3.0	3.6	1.1	2.0	ND	ND
Separated pig slurry - solid	20.0	5.0	3.7	2.0	ND	ND

Notes: ND = no data.
The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively (50% & 100% for dirty water).

Biosolids	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Digested cake	25	11.0	11.0	0.6	8.2	1.6
Thermally dried	95	40.0	55.0	2.0	23.0	6.0
Lime stablised	25	8.5	7.0	0.8	7.4	2.4
Composted	40	11.0	10.0	3.0	6.1	2.0

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively.

Other Organic Manures	Dry Matter	Total Nitrogen	Total Phosphate	Total Potash	Total Sulphur	Total Magnesium
Composts	(% DM)	(Kg N/t)	(Kg P2O5/t)	(Kg K2O/t)	(Kg SO3/t)	(Kg MgO/t)
Green compost	60	7.5	3.0	6.8	3.4	3.4
Green/food compost	60	11.0	4.9	8.0	5.1	3.4
Mushroom compost	35	6.0	5.0	9.0	ND	ND
Digestates						
Food-based whole	4.1	4.8	1.1	2.4	0.7	0.2
Food-based separated liquor	3.8	4.5	1.0	2.8	1.0	0.2
Food-based separated fibre	27.0	8.9	10.2	3.0	4.0	2.2
Farm-sourced whole	5.5	3.6	1.7	4.0	0.8	0.6
Farm-sourced separated liquor	3.0	1.9	0.6	2.5	<0.1	0.4
Farm-sourced separated fibre	24.0	5.6	4.7	6.0	1.2	1.8
Paper Crumble						
Chemically / physically treated	40	2.0	0.4	0.2	0.6	1.4
Biologically treated	30	7.5	3.8	0.4	2.4	1.0
Water Treatment Cake						
Water treatment cake	25	2.4	3.4	0.4	5.5	0.8
Food industry 'wastes'	(% DM)	(Kg N/m3)	(Kg P2O5/m3)	(Kg K2O/m3)	(Kg SO3/m3)	(Kg MgO/m3)
Dairy waste	4	1.0	0.8	0.2	ND	ND
Soft drinks waste	4	0.3	0.2	Trace	ND	ND
Brewing waste	7	2.0	0.8	0.2	ND	ND
General food waste	5	1.6	0.7	0.2	ND	ND

Notes: ND = no data.

The 'standard' figures for the above organic manures have been taken from Defra's Fertiliser Manual 2017 (RB209) 9th edition and the corresponding PLANET version 3 software. Further information on fertiliser recommendations for organic manures can be obtained from the Fertiliser Manual or from a FACTS qualified adviser.

Purchase Order : 000234

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MEADOW FOODS

SLUDGE

SLUDGE (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLUDGE

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

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

Laboratory References	
Report Number	18179
Sample Number	70327

Date Received	02-JUL-2018
Date Reported	11-JUL-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result	Amount per fresh tonne or m3	Amount applied at an equivalent total Nitrogen application of 250 kg N/ha	Units
pH 1:6 [Fresh]		7.11			
Oven Dry Solids	%	0.870	8.70	3107	kg DM
Total Nitrogen	% w/w	0.070	0.70	250	kg N
Ammonium Nitrogen	mg/kg	207	0.21	73.93	kg NH4-N
Nitrate Nitrogen	mg/kg	<10	< 0.01		kg NO3-N
Total Phosphorus (P)	mg/kg	111	0.25	90.78	kg P2O5
Total Potassium (K)	mg/kg	81.4	0.10	34.89	kg K2O
Total Magnesium (Mg)	mg/kg	17.9	0.03	10.61	kg MgO
Total Sulphur (S)	mg/kg	24.9	0.06	22.23	kg SO3
Total Copper (Cu)	mg/kg	0.460	< 0.01		kg Cu
Total Zinc (Zn)	mg/kg	1.79	< 0.01		kg Zn
Total Sodium (Na)	mg/kg	212	0.29	102.06	kg Na2O
Total Calcium (Ca)	mg/kg	114	0.11	40.71	kg Ca
Equivalent field application rate		—	1.00	357.14	tonnes or m3 / ha

The above equivalent field application rate for total nitrogen of 250 kg/ha has been provided purely for guidance purposes only. Organic manures should be used in accordance with the Defra Code of Good Agricultural Practice and where required within the specific regulatory guidance for the spreading of that material to land. To get the most benefit from your organic manures it is recommended that you follow the principles as set out in Defra's Fertiliser Manual (RB209) or as directed by a FACTS qualified adviser.

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

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MEADOW FOODS

SLUDGE

SLUDGE (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLUDGE

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

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

Laboratory References	
Report Number	18179
Sample Number	70327

Date Received	02-JUL-2018
Date Reported	11-JUL-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result
Conductivity 1:6	uS/cm	448
Total Lead (Pb)	mg/kg	<0.5
Total Cadmium (Cd)	mg/kg	<0.01
Total Mercury (Hg)	mg/kg	<0.05
Total Nickel (Ni)	mg/kg	<0.2
Total Chromium (Cr)	mg/kg	<0.2
Water Soluble Magnesium	mg/kg	0.628
Water Soluble Phosphorus	mg/kg	59.2
Water Soluble Potassium	mg/kg	79.6

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How does your sample analysis compare with the 'standard' figures for organic manures?

Farmyard Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Cattle FYM	25	6.0	3.2	9.4	2.4	1.8
Pig FYM	25	7.0	6.0	8.0	3.4	1.8
Sheep FYM	25	7.0	3.2	8.0	4.0	2.8
Duck FYM	25	6.5	5.5	7.5	2.6	2.4
Horse FYM	25	5.0	5.0	6.0	1.6	1.5
Goat FYM	40	9.5	4.5	12.0	2.8	1.8

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Poultry Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
	20	9.4	8.0	8.5	3.0	2.7
	40	19.0	12.0	15.0	5.6	4.3
	60	28.0	17.0	21.0	8.2	5.9
	80	37.0	21.0	27.0	11.0	7.5

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Cattle & Pig Slurries	Dry Matter (% DM)	Total Nitrogen (Kg N/m3)	Total Phosphate (Kg P2O5/m3)	Total Potash (Kg K2O/m3)	Total Sulphur (Kg SO3/m3)	Total Magnesium (Kg MgO/m3)
Cattle slurry	6.0	2.6	1.2	2.5	0.7	0.6
Dirty water (from cattle)	0.5	0.5	0.1	1.0	0.1	0.1
Separated cattle slurries						
- strainer box liquid	1.5	1.5	0.3	1.5	ND	ND
- weeping wall liquid	3.0	2.0	0.5	2.3	ND	ND
- mechanically separated liquid	4.0	3.0	1.2	2.8	ND	ND
- solid portion after separation	20.0	4.0	2.0	3.3	ND	ND
Pig slurry	4.0	3.6	1.5	2.2	0.7	0.7
Separated pig slurry - liquid	3.0	3.6	1.1	2.0	ND	ND
Separated pig slurry - solid	20.0	5.0	3.7	2.0	ND	ND

Notes: ND = no data.
The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively (50% & 100% for dirty water).

Biosolids	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Digested cake	25	11.0	11.0	0.6	8.2	1.6
Thermally dried	95	40.0	55.0	2.0	23.0	6.0
Lime stablised	25	8.5	7.0	0.8	7.4	2.4
Composted	40	11.0	10.0	3.0	6.1	2.0

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively.

Other Organic Manures	Dry Matter	Total Nitrogen	Total Phosphate	Total Potash	Total Sulphur	Total Magnesium
Composts	(% DM)	(Kg N/t)	(Kg P2O5/t)	(Kg K2O/t)	(Kg SO3/t)	(Kg MgO/t)
Green compost	60	7.5	3.0	6.8	3.4	3.4
Green/food compost	60	11.0	4.9	8.0	5.1	3.4
Mushroom compost	35	6.0	5.0	9.0	ND	ND
Digestates						
Food-based whole	4.1	4.8	1.1	2.4	0.7	0.2
Food-based separated liquor	3.8	4.5	1.0	2.8	1.0	0.2
Food-based separated fibre	27.0	8.9	10.2	3.0	4.0	2.2
Farm-sourced whole	5.5	3.6	1.7	4.0	0.8	0.6
Farm-sourced separated liquor	3.0	1.9	0.6	2.5	<0.1	0.4
Farm-sourced separated fibre	24.0	5.6	4.7	6.0	1.2	1.8
Paper Crumble						
Chemically / physically treated	40	2.0	0.4	0.2	0.6	1.4
Biologically treated	30	7.5	3.8	0.4	2.4	1.0
Water Treatment Cake						
Water treatment cake	25	2.4	3.4	0.4	5.5	0.8
Food industry 'wastes'	(% DM)	(Kg N/m3)	(Kg P2O5/m3)	(Kg K2O/m3)	(Kg SO3/m3)	(Kg MgO/m3)
Dairy waste	4	1.0	0.8	0.2	ND	ND
Soft drinks waste	4	0.3	0.2	Trace	ND	ND
Brewing waste	7	2.0	0.8	0.2	ND	ND
General food waste	5	1.6	0.7	0.2	ND	ND

Notes: ND = no data.

The 'standard' figures for the above organic manures have been taken from Defra's Fertiliser Manual 2017 (RB209) 9th edition and the corresponding PLANET version 3 software. Further information on fertiliser recommendations for organic manures can be obtained from the Fertiliser Manual or from a FACTS qualified adviser.

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BURTWOOD BREWERY

SLUDGE

SLURRY/SLUDGE ANALYSIS RESULTS (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLURRY/SLUDGE

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

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

Laboratory References	
Report Number	33298
Sample Number	75509

Date Received	06-NOV-2018
Date Reported	12-NOV-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result	Amount per fresh tonne or m3	Amount applied at an equivalent total Nitrogen application of 250 kg N/ha	Units
pH 1:6 [Fresh]		6.42			
Oven Dry Solids	%	3.81	38.10	2721	kg DM
Total Nitrogen	% w/w	0.350	3.50	250	kg N
Ammonium Nitrogen	mg/kg	1400	1.40	100.00	kg NH4-N
Nitrate Nitrogen	mg/kg	<10	< 0.01		kg NO3-N
Total Phosphorus (P)	mg/kg	987	2.26	161.45	kg P2O5
Total Potassium (K)	mg/kg	1116	1.34	95.66	kg K2O
Total Magnesium (Mg)	mg/kg	181	0.30	21.46	kg MgO
Total Sulphur (S)	mg/kg	169	0.42	30.18	kg SO3
Total Copper (Cu)	mg/kg	<0.2	< 0.01		kg Cu
Total Zinc (Zn)	mg/kg	0.709	< 0.01		kg Zn
Total Sodium (Na)	mg/kg	52.3	0.07	5.04	kg Na2O
Total Calcium (Ca)	mg/kg	4678	4.68	334.15	kg Ca
Equivalent field application rate		—	1.00	71.43	tonnes or m3 / ha

The above equivalent field application rate for total nitrogen of 250 kg/ha has been provided purely for guidance purposes only. Organic manures should be used in accordance with the Defra Code of Good Agricultural Practice and where required within the specific regulatory guidance for the spreading of that material to land. To get the most benefit from your organic manures it is recommended that you follow the principles as set out in Defra's Fertiliser Manual (RB209) or as directed by a FACTS qualified adviser.

Released by J Doyle Date 12/11/18

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BURTWOOD BREWERY

SLUDGE

SLURRY/SLUDGE ANALYSIS RESULTS (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLURRY/SLUDGE

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

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

Laboratory References	
Report Number	33298
Sample Number	75509

Date Received	06-NOV-2018
Date Reported	12-NOV-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result
Conductivity 1:6	uS/cm	3308
Total Lead (Pb)	mg/kg	<0.5
Total Cadmium (Cd)	mg/kg	<0.01
Total Mercury (Hg)	mg/kg	<0.05
Total Nickel (Ni)	mg/kg	<0.2
Total Chromium (Cr)	mg/kg	<0.2
Water Soluble Magnesium	mg/kg	176
Water Soluble Phosphorus	mg/kg	457
Water Soluble Potassium	mg/kg	1103

Released by J Doyle Date 12/11/18

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How does your sample analysis compare with the 'standard' figures for organic manures?

Farmyard Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Cattle FYM	25	6.0	3.2	9.4	2.4	1.8
Pig FYM	25	7.0	6.0	8.0	3.4	1.8
Sheep FYM	25	7.0	3.2	8.0	4.0	2.8
Duck FYM	25	6.5	5.5	7.5	2.6	2.4
Horse FYM	25	5.0	5.0	6.0	1.6	1.5
Goat FYM	40	9.5	4.5	12.0	2.8	1.8

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Poultry Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
	20	9.4	8.0	8.5	3.0	2.7
	40	19.0	12.0	15.0	5.6	4.3
	60	28.0	17.0	21.0	8.2	5.9
	80	37.0	21.0	27.0	11.0	7.5

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Cattle & Pig Slurries	Dry Matter (% DM)	Total Nitrogen (Kg N/m3)	Total Phosphate (Kg P2O5/m3)	Total Potash (Kg K2O/m3)	Total Sulphur (Kg SO3/m3)	Total Magnesium (Kg MgO/m3)
Cattle slurry	6.0	2.6	1.2	2.5	0.7	0.6
Dirty water (from cattle)	0.5	0.5	0.1	1.0	0.1	0.1
Separated cattle slurries						
- strainer box liquid	1.5	1.5	0.3	1.5	ND	ND
- weeping wall liquid	3.0	2.0	0.5	2.3	ND	ND
- mechanically separated liquid	4.0	3.0	1.2	2.8	ND	ND
- solid portion after separation	20.0	4.0	2.0	3.3	ND	ND
Pig slurry	4.0	3.6	1.5	2.2	0.7	0.7
Separated pig slurry - liquid	3.0	3.6	1.1	2.0	ND	ND
Separated pig slurry - solid	20.0	5.0	3.7	2.0	ND	ND

Notes: ND = no data.
The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively (50% & 100% for dirty water).

Biosolids	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Digested cake	25	11.0	11.0	0.6	8.2	1.6
Thermally dried	95	40.0	55.0	2.0	23.0	6.0
Lime stablised	25	8.5	7.0	0.8	7.4	2.4
Composted	40	11.0	10.0	3.0	6.1	2.0

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively.

Other Organic Manures	Dry Matter	Total Nitrogen	Total Phosphate	Total Potash	Total Sulphur	Total Magnesium
Composts	(% DM)	(Kg N/t)	(Kg P2O5/t)	(Kg K2O/t)	(Kg SO3/t)	(Kg MgO/t)
Green compost	60	7.5	3.0	6.8	3.4	3.4
Green/food compost	60	11.0	4.9	8.0	5.1	3.4
Mushroom compost	35	6.0	5.0	9.0	ND	ND
Digestates						
Food-based whole	4.1	4.8	1.1	2.4	0.7	0.2
Food-based separated liquor	3.8	4.5	1.0	2.8	1.0	0.2
Food-based separated fibre	27.0	8.9	10.2	3.0	4.0	2.2
Farm-sourced whole	5.5	3.6	1.7	4.0	0.8	0.6
Farm-sourced separated liquor	3.0	1.9	0.6	2.5	<0.1	0.4
Farm-sourced separated fibre	24.0	5.6	4.7	6.0	1.2	1.8
Paper Crumble						
Chemically / physically treated	40	2.0	0.4	0.2	0.6	1.4
Biologically treated	30	7.5	3.8	0.4	2.4	1.0
Water Treatment Cake						
Water treatment cake	25	2.4	3.4	0.4	5.5	0.8
Food industry 'wastes'	(% DM)	(Kg N/m3)	(Kg P2O5/m3)	(Kg K2O/m3)	(Kg SO3/m3)	(Kg MgO/m3)
Dairy waste	4	1.0	0.8	0.2	ND	ND
Soft drinks waste	4	0.3	0.2	Trace	ND	ND
Brewing waste	7	2.0	0.8	0.2	ND	ND
General food waste	5	1.6	0.7	0.2	ND	ND

Notes: ND = no data.

The 'standard' figures for the above organic manures have been taken from Defra's Fertiliser Manual 2017 (RB209) 9th edition and the corresponding PLANET version 3 software. Further information on fertiliser recommendations for organic manures can be obtained from the Fertiliser Manual or from a FACTS qualified adviser.

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AUTHENTIC FOOD CO

SLUDGE

SLURRY/SLUDGE ANALYSIS RESULTS (Metric Units)

Sample Reference : SLUDGE

Sample Matrix : SLURRY/SLUDGE

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

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

Laboratory References	
Report Number	33299
Sample Number	75510

Date Received	06-NOV-2018
Date Reported	12-NOV-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result	Amount per fresh tonne or m3	Amount applied at an equivalent total Nitrogen application of 250 kg N/ha	Units
pH 1:6 [Fresh]		7.16			
Oven Dry Solids	%	4.42	44.20	3453	kg DM
Total Nitrogen	% w/w	0.320	3.20	250	kg N
Ammonium Nitrogen	mg/kg	1362	1.36	106.41	kg NH4-N
Nitrate Nitrogen	mg/kg	<10	< 0.01		kg NO3-N
Total Phosphorus (P)	mg/kg	756	1.73	135.26	kg P2O5
Total Potassium (K)	mg/kg	145	0.17	13.59	kg K2O
Total Magnesium (Mg)	mg/kg	379	0.63	49.15	kg MgO
Total Sulphur (S)	mg/kg	446	1.12	87.11	kg SO3
Total Copper (Cu)	mg/kg	3.11	< 0.01		kg Cu
Total Zinc (Zn)	mg/kg	16.0	0.02	1.25	kg Zn
Total Sodium (Na)	mg/kg	677	0.91	71.30	kg Na2O
Total Calcium (Ca)	mg/kg	1127	1.13	88.05	kg Ca
Equivalent field application rate		—	1.00	78.13	tonnes or m3 / ha

The above equivalent field application rate for total nitrogen of 250 kg/ha has been provided purely for guidance purposes only. Organic manures should be used in accordance with the Defra Code of Good Agricultural Practice and where required within the specific regulatory guidance for the spreading of that material to land. To get the most benefit from your organic manures it is recommended that you follow the principles as set out in Defra's Fertiliser Manual (RB209) or as directed by a FACTS qualified adviser.

Released by J Doyle Date 12/11/18

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SLURRY/SLUDGE ANALYSIS RESULTS (Metric Units)

Sample Reference : SLUDGE

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

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

Laboratory References	
Report Number	33299
Sample Number	75510

Date Received	06-NOV-2018
Date Reported	12-NOV-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result
Conductivity 1:6	uS/cm	2267
Total Lead (Pb)	mg/kg	<0.5
Total Cadmium (Cd)	mg/kg	<0.01
Total Mercury (Hg)	mg/kg	<0.05
Total Nickel (Ni)	mg/kg	0.727
Total Chromium (Cr)	mg/kg	1.49
Water Soluble Magnesium	mg/kg	299
Water Soluble Phosphorus	mg/kg	<0.01
Water Soluble Potassium	mg/kg	131

Released by ..... J Doyle ..... Date ..... 12/11/18 .....

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How does your sample analysis compare with the 'standard' figures for organic manures?

Farmyard Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Cattle FYM	25	6.0	3.2	9.4	2.4	1.8
Pig FYM	25	7.0	6.0	8.0	3.4	1.8
Sheep FYM	25	7.0	3.2	8.0	4.0	2.8
Duck FYM	25	6.5	5.5	7.5	2.6	2.4
Horse FYM	25	5.0	5.0	6.0	1.6	1.5
Goat FYM	40	9.5	4.5	12.0	2.8	1.8

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Poultry Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
	20	9.4	8.0	8.5	3.0	2.7
	40	19.0	12.0	15.0	5.6	4.3
	60	28.0	17.0	21.0	8.2	5.9
	80	37.0	21.0	27.0	11.0	7.5

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Cattle & Pig Slurries	Dry Matter (% DM)	Total Nitrogen (Kg N/m3)	Total Phosphate (Kg P2O5/m3)	Total Potash (Kg K2O/m3)	Total Sulphur (Kg SO3/m3)	Total Magnesium (Kg MgO/m3)
Cattle slurry	6.0	2.6	1.2	2.5	0.7	0.6
Dirty water (from cattle)	0.5	0.5	0.1	1.0	0.1	0.1
Separated cattle slurries						
- strainer box liquid	1.5	1.5	0.3	1.5	ND	ND
- weeping wall liquid	3.0	2.0	0.5	2.3	ND	ND
- mechanically separated liquid	4.0	3.0	1.2	2.8	ND	ND
- solid portion after separation	20.0	4.0	2.0	3.3	ND	ND
Pig slurry	4.0	3.6	1.5	2.2	0.7	0.7
Separated pig slurry - liquid	3.0	3.6	1.1	2.0	ND	ND
Separated pig slurry - solid	20.0	5.0	3.7	2.0	ND	ND

Notes: ND = no data.
The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively (50% & 100% for dirty water).

Biosolids	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Digested cake	25	11.0	11.0	0.6	8.2	1.6
Thermally dried	95	40.0	55.0	2.0	23.0	6.0
Lime stablised	25	8.5	7.0	0.8	7.4	2.4
Composted	40	11.0	10.0	3.0	6.1	2.0

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively.

Other Organic Manures	Dry Matter	Total Nitrogen	Total Phosphate	Total Potash	Total Sulphur	Total Magnesium
Composts	(% DM)	(Kg N/t)	(Kg P2O5/t)	(Kg K2O/t)	(Kg SO3/t)	(Kg MgO/t)
Green compost	60	7.5	3.0	6.8	3.4	3.4
Green/food compost	60	11.0	4.9	8.0	5.1	3.4
Mushroom compost	35	6.0	5.0	9.0	ND	ND
Digestates						
Food-based whole	4.1	4.8	1.1	2.4	0.7	0.2
Food-based separated liquor	3.8	4.5	1.0	2.8	1.0	0.2
Food-based separated fibre	27.0	8.9	10.2	3.0	4.0	2.2
Farm-sourced whole	5.5	3.6	1.7	4.0	0.8	0.6
Farm-sourced separated liquor	3.0	1.9	0.6	2.5	<0.1	0.4
Farm-sourced separated fibre	24.0	5.6	4.7	6.0	1.2	1.8
Paper Crumble						
Chemically / physically treated	40	2.0	0.4	0.2	0.6	1.4
Biologically treated	30	7.5	3.8	0.4	2.4	1.0
Water Treatment Cake						
Water treatment cake	25	2.4	3.4	0.4	5.5	0.8
Food industry 'wastes'	(% DM)	(Kg N/m3)	(Kg P2O5/m3)	(Kg K2O/m3)	(Kg SO3/m3)	(Kg MgO/m3)
Dairy waste	4	1.0	0.8	0.2	ND	ND
Soft drinks waste	4	0.3	0.2	Trace	ND	ND
Brewing waste	7	2.0	0.8	0.2	ND	ND
General food waste	5	1.6	0.7	0.2	ND	ND

Notes: ND = no data.

The 'standard' figures for the above organic manures have been taken from Defra's Fertiliser Manual 2017 (RB209) 9th edition and the corresponding PLANET version 3 software. Further information on fertiliser recommendations for organic manures can be obtained from the Fertiliser Manual or from a FACTS qualified adviser.

Purchase Order : 000234

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KELLOGGS

LIQUID WASTE

LIQUID WASTE (Metric Units)

Sample Reference : KELLOGS

Sample Matrix : LIQUID WASTE

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

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

Laboratory References	
Report Number	18178
Sample Number	70326

Date Received	02-JUL-2018
Date Reported	10-JUL-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result	Amount per fresh tonne or m3	Amount applied at an equivalent total Nitrogen application of 250 kg N/ha	Units
pH 1:6 [Fresh]		7.20			
Oven Dry Solids	%	1.11	11.10	3083	kg DM
Total Nitrogen	% w/w	0.090	0.90	250	kg N
Ammonium Nitrogen	mg/kg	175	0.17	48.61	kg NH4-N
Nitrate Nitrogen	mg/kg	<10	< 0.01		kg NO3-N
Total Phosphorus (P)	mg/kg	121	0.28	76.97	kg P2O5
Total Potassium (K)	mg/kg	127	0.15	42.33	kg K2O
Total Magnesium (Mg)	mg/kg	22.3	0.04	10.28	kg MgO
Total Sulphur (S)	mg/kg	25.1	0.06	17.43	kg SO3
Total Copper (Cu)	mg/kg	0.392	< 0.01		kg Cu
Total Zinc (Zn)	mg/kg	1.37	< 0.01		kg Zn
Total Sodium (Na)	mg/kg	106	0.14	39.69	kg Na2O
Total Calcium (Ca)	mg/kg	111	0.11	30.83	kg Ca
Equivalent field application rate		—	1.00	277.78	tonnes or m3 / ha

The above equivalent field application rate for total nitrogen of 250 kg/ha has been provided purely for guidance purposes only. Organic manures should be used in accordance with the Defra Code of Good Agricultural Practice and where required within the specific regulatory guidance for the spreading of that material to land. To get the most benefit from your organic manures it is recommended that you follow the principles as set out in Defra's Fertiliser Manual (RB209) or as directed by a FACTS qualified adviser.

Released by *Darren Whitbread* Date *10/07/18*

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KELLOGGS

LIQUID WASTE

LIQUID WASTE (Metric Units)

Sample Reference : KELLOGS

Sample Matrix : LIQUID WASTE

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

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

Laboratory References	
Report Number	18178
Sample Number	70326

Date Received	02-JUL-2018
Date Reported	10-JUL-2018

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand on a fresh weight basis	Units	Result
Conductivity 1:6	uS/cm	320
Total Lead (Pb)	mg/kg	<0.5
Total Cadmium (Cd)	mg/kg	<0.01
Total Mercury (Hg)	mg/kg	<0.05
Total Nickel (Ni)	mg/kg	<0.2
Total Chromium (Cr)	mg/kg	<0.2
Water Soluble Magnesium	mg/kg	<0.01
Water Soluble Phosphorus	mg/kg	27.0
Water Soluble Potassium	mg/kg	42.0

Released by *Darren Whitbread* Date *10/07/18*

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How does your sample analysis compare with the 'standard' figures for organic manures?

Farmyard Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Cattle FYM	25	6.0	3.2	9.4	2.4	1.8
Pig FYM	25	7.0	6.0	8.0	3.4	1.8
Sheep FYM	25	7.0	3.2	8.0	4.0	2.8
Duck FYM	25	6.5	5.5	7.5	2.6	2.4
Horse FYM	25	5.0	5.0	6.0	1.6	1.5
Goat FYM	40	9.5	4.5	12.0	2.8	1.8

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Poultry Manure	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
	20	9.4	8.0	8.5	3.0	2.7
	40	19.0	12.0	15.0	5.6	4.3
	60	28.0	17.0	21.0	8.2	5.9
	80	37.0	21.0	27.0	11.0	7.5

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 60% & 90% respectively.

Cattle & Pig Slurries	Dry Matter (% DM)	Total Nitrogen (Kg N/m3)	Total Phosphate (Kg P2O5/m3)	Total Potash (Kg K2O/m3)	Total Sulphur (Kg SO3/m3)	Total Magnesium (Kg MgO/m3)
Cattle slurry	6.0	2.6	1.2	2.5	0.7	0.6
Dirty water (from cattle)	0.5	0.5	0.1	1.0	0.1	0.1
Separated cattle slurries						
- strainer box liquid	1.5	1.5	0.3	1.5	ND	ND
- weeping wall liquid	3.0	2.0	0.5	2.3	ND	ND
- mechanically separated liquid	4.0	3.0	1.2	2.8	ND	ND
- solid portion after separation	20.0	4.0	2.0	3.3	ND	ND
Pig slurry	4.0	3.6	1.5	2.2	0.7	0.7
Separated pig slurry - liquid	3.0	3.6	1.1	2.0	ND	ND
Separated pig slurry - solid	20.0	5.0	3.7	2.0	ND	ND

Notes: ND = no data.
The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively (50% & 100% for dirty water).

Biosolids	Dry Matter (% DM)	Total Nitrogen (Kg N/t)	Total Phosphate (Kg P2O5/t)	Total Potash (Kg K2O/t)	Total Sulphur (Kg SO3/t)	Total Magnesium (Kg MgO/t)
Digested cake	25	11.0	11.0	0.6	8.2	1.6
Thermally dried	95	40.0	55.0	2.0	23.0	6.0
Lime stablised	25	8.5	7.0	0.8	7.4	2.4
Composted	40	11.0	10.0	3.0	6.1	2.0

Notes: The 'standard' phosphate & potash availability figures to the next crop grown from Defra's Fertiliser Manual are 50% & 90% respectively.

Other Organic Manures	Dry Matter	Total Nitrogen	Total Phosphate	Total Potash	Total Sulphur	Total Magnesium
Composts	(% DM)	(Kg N/t)	(Kg P2O5/t)	(Kg K2O/t)	(Kg SO3/t)	(Kg MgO/t)
Green compost	60	7.5	3.0	6.8	3.4	3.4
Green/food compost	60	11.0	4.9	8.0	5.1	3.4
Mushroom compost	35	6.0	5.0	9.0	ND	ND
Digestates						
Food-based whole	4.1	4.8	1.1	2.4	0.7	0.2
Food-based separated liquor	3.8	4.5	1.0	2.8	1.0	0.2
Food-based separated fibre	27.0	8.9	10.2	3.0	4.0	2.2
Farm-sourced whole	5.5	3.6	1.7	4.0	0.8	0.6
Farm-sourced separated liquor	3.0	1.9	0.6	2.5	<0.1	0.4
Farm-sourced separated fibre	24.0	5.6	4.7	6.0	1.2	1.8
Paper Crumble						
Chemically / physically treated	40	2.0	0.4	0.2	0.6	1.4
Biologically treated	30	7.5	3.8	0.4	2.4	1.0
Water Treatment Cake						
Water treatment cake	25	2.4	3.4	0.4	5.5	0.8
Food industry 'wastes'	(% DM)	(Kg N/m3)	(Kg P2O5/m3)	(Kg K2O/m3)	(Kg SO3/m3)	(Kg MgO/m3)
Dairy waste	4	1.0	0.8	0.2	ND	ND
Soft drinks waste	4	0.3	0.2	Trace	ND	ND
Brewing waste	7	2.0	0.8	0.2	ND	ND
General food waste	5	1.6	0.7	0.2	ND	ND

Notes: ND = no data.

The 'standard' figures for the above organic manures have been taken from Defra's Fertiliser Manual 2017 (RB209) 9th edition and the corresponding PLANET version 3 software. Further information on fertiliser recommendations for organic manures can be obtained from the Fertiliser Manual or from a FACTS qualified adviser.