Application for an environmental permit:
Part LPD1 – Application for a deployment

Use this form for deployments for the landspreading of waste where the operator holds a permit for any of the following standard rules:

- SR2010No4 Mobile plant for landspreading (land treatment resulting in agricultural or ecological benefit);
- SR2010No5 Use of mobile plant for land reclamation, restoration or improvement of land;
- SR2010No6 Mobile plant for landspreading of sewage sludge; or a
- Bespoke mobile plant permit for landspreading or land reclamation.

Please check that this is the latest version of the form available from our website.

Please read through this form and the guidance notes that come with it. All relevant guidance documents can be found on our website.

Where you see the term 'document reference' on the form, give the document references and send the documents with the application form when you've completed it.

Contents

1 About the permit

1a Discussions before your application

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

Case or document reference

1b Permit number

Permit number this application relates to **EPR/QB3893HG**

1c What type of permit do you want to deploy under? (Please tick)

SR2010No4 Mobile plant for landspreading (land treatment resulting in agricultural or ecological benefit) ☒

SR2010No5 Use of mobile plant for land reclamation, restoration or improvement of land ☐

SR2010No6 Mobile plant for landspreading of sewage sludge ☐

Bespoke mobile plant permit for landspreading or reclamation, restoration or improvement of land ☐

2 About you

Please give us details of the permit holder. For companies, the details must match Companies House.

Organisation name (if relevant) Lodge Farm Biogas

Title

First name

Last name

Address Lodge Farm

	Borras Road
	Rossett
	Wrexham
Postcode	LL13 9TE
Telephone - mobile	07866 476 505
Telephone - office	01829 270397
Email address	tom@lodgefarmbiogas.co.uk

If you are applying as an organisation of individuals, every partner needs to give us their details, including their title. If necessary, continue on a separate sheet and tell us the reference you have given the sheet.

Document reference	

3 Contact details

Who can we talk to about your application? This can be someone acting as a consultant or 'agent' for you.

Title	Dr	
First name	Chris	
Last name	Ash	
Telephone - mobile	07950 285 187	
Telephone - office		
Email address	chris.ash@4r-group.co.uk / info@4r-group.co.uk	

4 About the deployment

4a Multiple deployments for one area of land

You may spread more than 10 waste streams on the same area of land, provided you submit additional fully completed deployment forms listing the additional wastes. Your benefit statement must take into account the total benefit to the land of all wastes to be spread.

Is this deployment one of a batch (multiple deployments) for the same area of land?

No ☒ *Go to section 4b*

Yes ☐ How many deployments are in the batch?

4b Nominated competent person

4b1 Give us details of the nominated competent person. This is the person who will be responsible for compliance with the permit for this deployment. See the guidance notes on LPD1 for further details.

Title	Mr	
First name	Thomas	
Last name	Hodgkinson	

Telephone - mobile	07866 476 505
Telephone - office	01829 270397
Email address	tom@lodgefarmbiogas.co.uk

4b2 What evidence are you using to show the nominated competent person has suitable technical skills and knowledge to manage the activity?

An approved technical scheme ☒ *Go to section 4b3*

Documented in-house training ☐ You must provide evidence – see below.

You must provide evidence to show the documented in-house training meets the requirements set out in technical guidance. See the guidance notes on LPD1 for further details and give us the document reference.

Document reference: Continued competence certificate TH *Go to section 4c*

4b3 Which approved scheme are you using to show you have the suitable technical skills and knowledge to manage your facility?

CIWM / WAMITAB ☒

ESA / EU ☐

4b4 Tick to confirm you've included all original *and* continuing competence evidence. ☒

4c Which risk band does the activity fall within?

Please complete Table 1 below to indicate which risk band your activity falls within. This is a combination of waste types and proximity to sensitive receptors.

Once you have selected the risk band your activity falls within, the form guidance tells you what additional information you need to send with the application.

The risk banding affects the fee you need to send with your deployment application. See section 6.

Table 1 – risk band

Permit type	**Lower risk location** - Not in an SPZ 2, and/or - Over 500 meters from: • European site, and/or • Ramsar, and/or • SSSI	**High risk location** - In a Source Protection Zone 2, and/or - 500 meters or less from: • European site, and/or • Ramsar, and/or • SSSI **You *must* submit a site specific risk assessment.**
SR2010No4 List A wastes (Lower risk)	Low risk deployment ☐	Medium risk (2) deployment ☐
SR2010No4 List B wastes (Higher risk)	Medium risk (1) deployment ☒	High risk deployment ☐
SR2010No5 (Any waste listed)	Medium risk (1) deployment ☐	High risk deployment ☐
SR2010No6 (Any waste listed)	Medium risk (1) deployment ☐	High risk deployment ☐
Bespoke mobile plant permit	Low risk deployment ☐	Medium risk deployment ☐ / High risk deployment ☐

4d Additional information on sensitive receptors

Is the deployment within an SPZ 2 and/or 500m of a European site, Ramsar or SSSI, or being made under a bespoke permit?

No ☒

Yes ☐ You must submit a site specific risk assessment (see question 4e).

4e Site specific risk assessment

Your site specific risk assessment must show how you intend to prevent any harm to any SPZ 2, European site, Ramsar or SSSI. For more information on risk-assessment please see the accompanying guidance to LPD1 and Technical Guidance Note 'TGN 8.01'.

Please tick a box below to indicate which type of risk-assessment you have submitted.

I have attached a site-specific risk-assessment as the deployment is within and SPZ 2 and/or 500m of a European site, Ramsar or SSSI. I have also addressed risks to other receptors in the risk assessment ☐

I am not within an SPZ 2 and/or 500 m of a European site, Ramsar or SSSI but have addressed risks to other receptors in my benefit statement. ☒

I am deploying under a bespoke permit and have attached a site-specific risk assessment (regardless of location). ☐

4f About the waste

Please list all the individual waste streams you want to spread/use under this deployment, in Table 2 below. We've included an example to help you.

Please note: You can only spread/use 10 waste types per deployment.

Table 2 – waste types

	List of Waste code (6 digit)	**Waste description**	**Physical form**	**Waste producer**	**Total amount being spread/used** (tonnes)
e.g.	03 03 05	De-inked paper	Sludge	Smith's Newsprint	500
1	19 06 06	Whole digestate	Liquid sludge	Lodge Farm Biogas	2964
2	19 12 12	Gypsum	Solid powder	Heatrick N.I	988
3					
4					
5					
6					
7					
8					
9					
10					
				Total tonnage	3,952

4g About the land you want to treat

4g1 Please give details of the main address of the land to be treated.

Address

Lodge Farm

Borras Road

Rossett

Wrexham

Postcode	LL13 9TE
National grid reference (12 digit)	338256 354259

4g2 What type of land do you want to treat?

Agricultural land ☒ Please give your County/ Parish/ Holding number 560218005

Non-agricultural land ☐

4h The parcels of land you want to treat

Please list all the individual areas (parcels) of land you want to include this deployment, in Table 3 below.

Please note: the total area to be treated must not be more than 50 hectares.

Table 3 – parcels of land

	Field name/ number/ reference	**Grid reference - centre of field** (12 digit)	**Waste types to be spread/used** (List of Waste code) Separate using commas.	**Size** (hectares)
1	**Please refer to LPD1**			
2	**Supplement**			
3				
4				
5				
6				
7				
8				
9				
10				
			Total hectares	49.4

4i Is the permit holder the owner or occupier of the land you want to spread on/treat?

Yes ☐ *Go to section 4k*

No ☒ You must give us details of the land owner or occupier, below.

Organisation name (if relevant)		
Title	Mr	
First name	Richard J	
Last name	Tomlinson	
Address	Lower Park Farm	
	Parkside	
	Rossett	
	Wrexham	

Postcode	LL12 0BN
Telephone - mobile	07710 814 554
Telephone - office	
Email address	r.tomlinson@farming.co.uk

If there is more than one owner or occupant for the area covered by this deployment, you must give us details of each. Please continue on a separate sheet and tell us the reference you have given the sheet.

Document reference	

4j Do you have the consent of the owner or occupier to carry out the activity?

Yes ☒ *Go to section 4k*

No ☐ You must tell us why you think you can carry out the activity without the consent of the occupier. Please give an explanation in the box, below. Continue on a separate sheet if needed.

Explanation

4k Previous land treatment

Has any of the land listed in Table 3 been treated with other wastes, sewage sludge, slurries or manures etc. in the last 12 months?

No ☐ *Go to section 4l*

Yes ☒ You must give us details in Table 4 below *and* account for them in your benefit statement.

Table 4 – previous land treatment

	Field name/ number/ reference	**Describe the waste spread** (in last 12 months)	**Person/ company who spread the waste**	**Quantity spread per hectare** (in tonnes)	**Deployment/ other reference** (if known)
e.g.	East field	Digested sewage sludge cake	Eastern Waters	20	PAN 000000
1	All fields	PAS 110 digestate	Farmer	40	N/A
2					
3					
4					
5					
6					
7					
8					
9					

10					

4l Waste storage

Are you proposing to store waste in connection with this deployment?

No ☐ *Go to section 5*

Yes ☒ You must give us details in Table 5 below.

Table 5 – waste storage details

	Grid reference (12 digit)	**Waste type being stored** (6 digit List of Waste code)	**Storage method**	**Quantity stored at any one time** (in tonnes)
1	338877 352170	19 12 12	Heap – for gypsum only	988
2				
3				
4				
5				
6				
7				
8				
9				
10				

5 Payment

5a Tick an option below to show how you will pay for the application.

Electronic transfer (for example, BACS)	☒	*Go to section 5b*
Cheque	☐	*Go to section 5c*
Postal order	☐	*Go to section 5d*
Credit or debit card	☐	*Go to section 5e*

5b Paying by electronic transfer

If you choose to pay by electronic transfer use the following information to make your payment.

Company name: Natural Resources Wales

Company address: Income Dept., PO BOX 663, Cardiff, CF24 0TP

Bank: RBS

Address: National Westminster Bank Plc, 2 ½ Devonshire Square, London, EC2M 4BA

Sort code: 60-70-80

Account number: 10014438

Reference number

You can use any reference number but we prefer the number to be ‘EPDEP’ followed by the first five letters of your organisation name followed by a four-digit number.

For example, for a company named Joe Bloggs Ltd, the reference number might be EPDEPJOEBL0001. (Remember you can use any four-digit number at the end.)

The reference number you will provide will appear on our bank statements so we can check your payment. We may need to contact your bank to make sure the reference number is quoted correctly.

You should also email your payment details and payment reference number to banking.team@naturalresourceswales.gov.uk / banking.team@cyfoethnaturiolcymru.gov.uk or fax it to 0300 065 3001 and enter it in the space provided below.

BACS reference	
Amount paid	£779.00

Making payments from outside the UK

These details have changed. If you are making your payment from outside the United Kingdom (which must be received in sterling), our IBAN number is GB70 NWBK6070 8010 0144 38 and our SWIFT/BIC number is NWBKGB2L.

If you do not quote your payment reference number, there may be a delay in processing your payment and application.

5c Paying by cheque or postal order

You should make cheques or postal orders payable to Natural Resources Wales and they should be marked 'A/c Payee'. We will not accept post-dated cheques (cheques with a future date written on them).

Cheque/ postal order number	
Amount paid	

5d Paying by credit or debit card

If you are paying by credit or debit card, please fill in the separate form CC1.

You can download this from our Website or you can ask for one of our customer service providers to send one by post. We will destroy your card details once we have processed your payment. We can accept payments by Visa, MasterCard or Maestro UK card only.

6 Supporting documents

You must provide all relevant documents to support your application. The information we need depends on the type of deployment application you're making. If you don't provide us with all the information we need, we won't be able to assess your proposal and the application may be rejected.

Better quality deployments result in shorter processing times. If we don't need to come back to you for more information, we'll be able to give you a decision quicker.

6a What supporting evidence do you need to send?

Are you applying to spread/use waste under a SR2010 No4 standard rule set permit?

Yes	☒	Complete the checklist in Table 6 *and* Table 7	*Go to section 6b*
No	☐	Complete the checklist in Table 7 only.	*Go to section 6c*

6b Checklist for deployments under SR2010 No4 only

Complete the checklist in Table 6, below. Tick to confirm you've completed the action.

Table 6	
Do the grid references (for fields and storage areas) match the map locations?	☒
Are the grid references in the correct format i.e. AB 12345 67890?	☒
Have details of previous land treatment been provided?	☒
Have you included a location map?	☒
Does the map include all the relevant features as set out in the guidance?	☒

Have you included a waste analysis?	☒
Is the waste analysis for each waste less than 12 months old?	☒
Does the waste analysis include pH, Nitrogen (N), Phosphorus (P), Potassium (K), % dry matter and Potentially Toxic Elements (PTE's)?	☒
Have you included a soil analysis?	☒
Is the soil analysis less for each field than 4 years old?	☒
Does the soil analysis provide the soil pH, Potassium (K), Phosphorus (P), Magnesium (Mg) and PTEs if they are high in the waste?	☒
Have the soil indices for P, K and Mg for each field been provided?	☒
Have you included a Certificate of Agricultural Benefit?	☒
Has the proposed cropping regime been stated?	☒
Has the waste application rate been stated?	☒
Has the timing of application been stated and is it appropriate for the cropping regime?	☒
Has the intended method of waste application been stated?	☒
Have the total nutrients supplied by the waste been stated and have they been provided in oxide format?	☒
Has the nutrient requirement for the proposed crop been provided?	☒
Has the soil nitrogen supply (SNS) for each field been provided?	☒
If the land has been treated with other wastes, sewage sludge, slurries manures etc. in the last 12 months, has relevant information been provided?	☒
If more than one waste stream is to be applied to the land; has the benefit for each individual waste stream been demonstrated?	☒
Have you included a site specific risk assessment? (where relevant)	☐
Does the Site Specific Risk Assessment; consider all potential receptors, identify all risks from the activity, and include information on all measures you'll use to minimise or mitigate the impact and why they're suitable.	☐

6c Checklist for all types of deployment application.

Complete the checklist in Table 7, below. Tick to confirm you've completed the action.

Table 7

Item	Complete	Your document reference/ description
Location map (required for all deployments)	☒	Maps
Benefit statement (required for all deployments)	☒	ABS
Waste analysis (required for all deployments)	☒	Waste Analysis
Receiving soil analysis (required for all deployments)	☒	Soil Analysis
Site-specific risk assessment (in accordance with 4e)	☐	
Any other additional information	N/A	LPD1 Supplement
	N/A	Continued competence certificate TH
	N/A	
	N/A	

7 The data Protection Act 1998

We, the Natural Resources Body for Wales (hereafter “Natural Resources Wales”), will process the information you provide so that we can:

- deal with your application;
- make sure you keep to the conditions of the licence, permit or registration;
- process renewals; and
- keep the public registers up to date.

We may also process or release the information to:

- offer you documents or services relating to environmental matters;
- consult the public, public organisations and other organisations (for example, the Health and Safety Executive, local authorities, the emergency services, the Department for Environment, Food and Rural Affairs) on environmental issues;
- carry out research and development work on environmental issues;
- provide information from the public register to anyone who asks;
- prevent anyone from breaking environmental law, investigate cases where environmental law may have been broken, and take any action that is needed;
- assess whether customers are satisfied with our service, and to improve our service; and
- respond to requests for information under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004 (if the Data Protection Act allows).

We may pass the information on to our agents or representatives to do these things for us.

8 Confidentiality and national security

We will normally put all the information in your application on a public register of environmental information. However, we may not include certain information in the public register if this is in the interests of national security, or because the information is confidential.

You can ask for information to be made confidential by ticking the box below and enclosing a letter with your application giving your reasons. If we agree with your request, we will tell you and not include the information in the public register. If we do not agree with your request, we will let you know how to appeal against our decision, or you can withdraw your application.

Please treat the information in my application as confidential. ☐

You can tell the Secretary of State that you believe including information on a public register would not be in the interests of national security. You must enclose a letter with your application telling us that you have told the Welsh Ministers and you must still include the information in your application. We will not include the information in the public register unless the Welsh Ministers decides that it should be included.

Only tick the box below if you are certain that you wish to claim confidentiality or national security for your application. This may delay your application.

I attach a letter stating that I have written to the Welsh Ministers explaining why my information should not be included on the public register for national security reasons ☐

9 Declaration

You must read this section before making the declaration and sending your form to us.

A relevant person should make the declaration. You must be a relevant person or have the authority of a relevant person to sign this application on their behalf.

Relevant people means each applicant, and in the case of a company, a director, manager, company secretary or any similar officer or employee listed on current appointments in Companies House. In the case of a Limited Liability Partnership (LLP), it includes any partner. If the permit holder is an organisation of individuals, each individual (or individual trustee) must complete the declaration.

To simplify and speed up the application process we recommend that the declaration is filled in by an officer of a company or one of the partners in a Limited Liability Partnership (LLP).

If you wish a manager, employee or consultant etc. to sign the declaration on behalf of a relevant person, we

will need written confirmation from a relevant person; that is, an officer of the company, a partner in the LLP or the individual, confirming that the person has the authority to fill in the declaration.

If you are joint permit holders you should each fill in your own declaration. We have provided a separate sheet for this.

Where the operator is the subject of any insolvency procedure, the declaration must be filled in by the official receiver/appointed insolvency practitioner.

9a Are you signing the form on *behalf of* a relevant person?

If you are *not* a relevant person, but want to sign the application on their behalf, you must include confirmation that you can do this.

I have included written confirmation from a relevant person to confirm I can sign on their behalf. ☐

9b Does your deployment application relate to a standard facility permit?

If your deployment application is being made in relation to a standard facility permit (SRP), you also need to confirm that you are able to meet all relevant criteria of the standard rule set/sets under which you are applying.

I confirm that my activity/activities will fully meet the rules of the permit deployment I have applied for. ☒

9c Sign to confirm you understand the declaration.

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

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

I understand that if I knowingly or recklessly make a false or misleading statement:

- **I may be prosecuted; and**
- **if convicted, I may have to pay a fine and/or go to prison.**

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

Title	Dr	
First name	Chris	
Last name	Ash	
On behalf of (if relevant)	Tom Hodgekinson	
Today's date (DD/MM/YYYY)	13/01/2021	

LPD1 Supplement

4h The parcels of land you want to treat.

Table 3 – parcels of land				
	Field name/ number/ reference	**Grid reference – centre of field** (12 digit)	**Waste types to be spread/used** (List of waste code) separate using commas	**Size** (hectares)
1	**42**	**338951 352262**	19 06 06, 19 12 12	3.1
2	**45**	**338663 352238**	19 06 06, 19 12 12	4.8
3	**46**	**338714 352076**	19 06 06, 19 12 12	4.1
4	**47**	**338841 352109**	19 06 06, 19 12 12	1.3
5	**48**	**338770 351947**	19 06 06, 19 12 12	2.5
6	**49**	**338886 351737**	19 06 06, 19 12 12	7.6
7	**50**	**338611 351853**	19 06 06, 19 12 12	3.1
8	**51**	**338649 351683**	19 06 06, 19 12 12	3.5
9	**52**	**338431 351793**	19 06 06, 19 12 12	5.1
10	**53**	**338422 351489**	19 06 06, 19 12 12	6.5
11	**54**	**339048 352038**	19 06 06, 19 12 12	7.8

Location Plan
Lodge Farm

Site:
Lodge Farm (3)

Client:
Lodge Farm Biogas

Key:

- Spreading area
- Non-spreading area
- Track/Footpath
- Over-head cables
- 50m No-spread zone

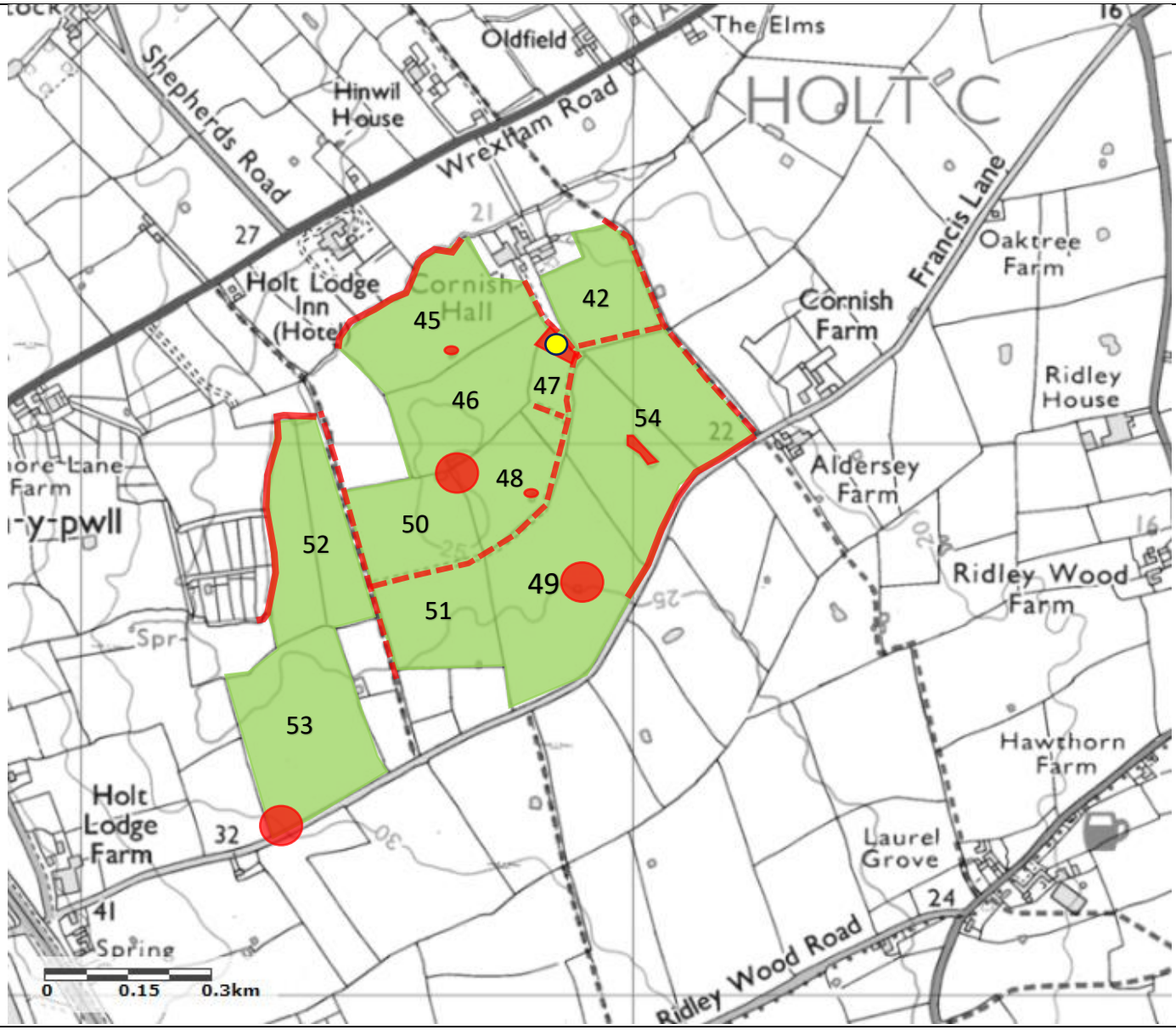
Protected species habitat

Location tags:

A. **338877 352170**

Scale: 1:10,500

Map Reference:
LF-03



Agricultural Benefit Statement

For the application of beneficial wastes to fields at;

Lodge Farm (#3), Borras Road, Rossett, Wrexham, LL13 9TE

20th January 2021

1 Person with appropriate technical expertise and permit details

This benefit statement has been compiled by Dr Chris Ash (Consultant at 4R Group) who has the following qualifications and experience;

- Ph.D. Fate and Behaviour of Potentially Toxic Elements in Soils
- MSc. Natural Resources and Environment
- BSc. (Hons) Environmental Science
- FACTS Qualified Advisor (No. FE/6324) and Full Member of BASIS Professional Register

Permit number under which this deployment application is being made: **EPR/QB3893HG**

2 Where the waste is to be spread

Table 1. Where the waste is to be spread

Farm address:	Lodge Farm, Borras Road, Rossett, Wrexham, LL13 9TE	
Stockpile grid reference:	Refer to Table 4	
Area of the receiving land:	49.4 ha	
Quantity to be stored at any one time:	Stackable: 988t	Non-Stackable: Spread on delivery
Total maximum quantity to be spread:	3,952 t	
Location map document reference:	LF-03	

3 What is the waste to be spread

Table 2. Description of waste(s) to be applied

Waste	***EWC Code***	***Description***	***Waste Producer***	***Additional Information***
1	19 06 06	Whole digestate (liquid sludge) from anaerobic treatment of food wastes	Lodge Farm Biogas	Waste previously produced and spread as PAS110 certified material
2	19 12 12	Gypsum from the recycling of construction plasterboard	Heatrick N.I	-

4 Operational details

4.1 Cropping details

Table 3. Cropping details

Current crop including projected yield if known:	Refer to Tables 6-7
Is straw removed?	Y ☐ N ☐ N/A ☒
Following crop and any sensitive crops within rotation which you are amending the soil for in good time:	Refer to Tables 6-7
When do you intend to apply this waste; e.g. post harvest – pre-ploughing, during seed bed cultivations, on the stubble over winter:	Spreading will only take place subject to ground conditions and following the Code of Good Agricultural Practice (Defra, 2011). Targeted periods of spreading on grass fields include spring, and after cutting of silage through summer and autumn. Liquid sludges will be spread on delivery. No more than 50t/ha of liquid sludge will be spread on a field in any 3-week period in accordance with CoGAP, and no more than 250t/ha will be spread within any 12-month period. Timing of application of gypsum is less dependent on nutrient requirements, but is likely to take place during the growing season April – Sept when ground conditions are generally more suited to use by spreading vehicles and machinery.

4.2 Waste storage

Table 4. Waste storage

How is the waste to be stored? *e.g. mobile tank, field heap, spread on delivery*	**Stackable wastes**: Field heaps **Non-stackable wastes**: Spread on delivery
Where is the waste to be stored prior to spreading?	Field heap A: 338877 352170
Why were these storage locations chosen?	The storage locations are accessible by delivering vehicle next to the track/road so there will be minimal damage to fields. The storage locations are not within 10m of any ditch, watercourse, or footpath, not within a SPZ1, and is at least 50m from any well spring or borehole. It is also a safe distance from overhead powerlines.

4.3 Waste application

Table 5. Waste application

How is the waste to be spread and why is it to be spread that way?	The gypsum will be spread using conventional rear discharge spreaders as this equipment is readily available to the farmer/contractor and the most appropriate for the material and application rates used. The liquid wastes will be spread using either a trailing shoe/dribble bar or injected – whatever is optimal according to ground conditions and availability.
How do you plan to incorporate the waste following application?	There is no requirement for further incorporation of wastes on grass fields
With liquid wastes is there any mole draining or sub-soiling planned? *Are there land drains in the field?*	No There are drainage pipes buried in some fields, these are buried to approximately 800 mm depth. The depth of the drainage pipes and the relatively low application rates of waste mean that risks of wastes percolating to the depth of the pipe and entering a watercourse is negligible. Water that reaches the drainage system will have to have passed through a significant depth of soil and a gravel pre-filter. As part of CoGAP and the conditions of the permit, no spreading will take place when soil is waterlogged, frozen, or in periods of prolonged or heavy rainfall.

Other relevant operational information:	If both waste streams are used on this deployment, the total combined amount applied will not exceed 250t/ha, the total nitrogen loading will be less than 250kg/ha, and the amount of available nitrogen and total or available phosphate and potash (whichever is appropriate) will not exceed the fertiliser recommendation or the amount removed in crop offtake, whichever is the greater. The fields under deployment are heavy clay type soils which will benefit from applications of gypsum up to the proposed amounts. The digestate is produced near to the land under deployment but will be stored at the site of production. The waste storage is permitted under the production site's permit and so it is not subject to assessment under the land spreading permit deployment. Digestate is in a liquid sludge form and will be spread upon delivery to the fields.

Table 6. Lodge Farm Biogas digestate

						N			P_2O_5				K_2O				Mg				
Field Reference	**Total Area**	**Sprd Area**	**Previous Crop**	**Next Crop**	**pH**	**SNS**	**Req kg/ha**	**In Wst kg/ha**	**P Ind**	**Req kg/ha**	**Crop Use kg/ha**	**In Wst kg/ha**	**K Ind**	**Req kg/ha**	**Crop Use kg/ha**	**In Wst kg/ha**	**Mg Ind**	**Req kg/ha**	**In Wst kg/ha**	**Rate t/ha**	**Totals tonnes**
42	3.2	3.1	grass	grass	7.7	M	250	157	1	110	80	45	1	290	282	78	5	0	6	60	**186**
45	5.0	4.8	grass	grass	7.1	M	250	157	1	110	80	45	1	290	282	78	4	0	6	60	**288**
46	4.2	4.1	grass	grass	7.9	M	250	157	1	110	80	45	1	290	282	78	4	0	6	60	**246**
47	1.4	1.3	grass	grass	7.1	M	250	157	0	140	80	45	1	290	282	78	6	0	6	60	**78**
48	2.7	2.5	grass	grass	7.1	M	250	157	0	140	80	45	1	290	282	78	5	0	6	60	**150**
49	7.8	7.6	oats	grass	7.1	M	250	157	0	140	80	45	1	290	282	78	5	0	6	60	**456**
50	3.3	3.1	oats	grass	7.3	M	250	157	1	110	80	45	1	290	282	78	5	0	6	60	**186**
51	3.6	3.5	oats	grass	7.1	M	250	157	0	140	80	45	1	290	282	78	5	0	6	60	**210**
52	5.3	5.1	oats	grass	6.7	M	250	157	0	140	80	45	1	290	282	78	6	0	6	60	**306**
53	6.8	6.5	oats	grass	6.4	M	250	157	0	140	80	45	1	290	282	78	7	0	6	60	**390**
54	8.1	7.8	grass	grass	7.0	M	250	157	0	140	80	45	1	290	282	78	5	0	6	60	**468**
Ha	**51.4**	**49.4**																			**2964**

Nutrient requirement based on values for grass with 3 cuts of silage (target DM yield 9-12t/ha) and oats, described in RB209 (2020)

Grass crop use based on yield totalling 47t/ha where 1.7kg/t P_2O_5 and 6.0kg/t K_2O removed in offtake (RB209, 2020)

Oats crop use based on yield totalling 6t/ha where 9.0kg/t P_2O_5 and 16.5kg/t K_2O removed in offtake (RB209, 2020)

N, P_2O_5, K_2O and Mg stated are **available** concentrations in units of kg/ha

*__Total__ P_2O_5 and K_2O stated where soil indices ≥2

Total N supplied at an application rate of 60t/ha is 247kg/ha

Table 7. Heatrick gypsum

						N			P_2O_5				K_2O				Mg				
Field Reference	**Total Area**	**Sprd Area**	**Previous Crop**	**Next Crop**	**pH**	**SNS**	**Req kg/ha**	**In Wst kg/ha**	**P Ind**	**Req kg/ha**	**Crop Use kg/ha**	**In Wst kg/ha**	**K Ind**	**Req kg/ha**	**Crop Use kg/ha**	**In Wst kg/ha**	**Mg Ind**	**Req kg/ha**	**In Wst kg/ha**	**Rate t/ha**	**Totals tonnes**
42	3.2	3.1	grass	grass	7.7	M	250	0.1	1	110	80	3.3	1	290	282	16	5	0	16	20	**62**
45	5.0	4.8	grass	grass	7.1	M	250	0.1	1	110	80	3.3	1	290	282	16	4	0	16	20	**96**
46	4.2	4.1	grass	grass	7.9	M	250	0.1	1	110	80	3.3	1	290	282	16	4	0	16	20	**82**
47	1.4	1.3	grass	grass	7.1	M	250	0.1	0	140	80	3.3	1	290	282	16	6	0	16	20	**26**
48	2.7	2.5	grass	grass	7.1	M	250	0.1	0	140	80	3.3	1	290	282	16	5	0	16	20	**50**
49	7.8	7.6	oats	grass	7.1	M	250	0.1	0	140	80	3.3	1	290	282	16	5	0	16	20	**152**
50	3.3	3.1	oats	grass	7.3	M	250	0.1	1	110	80	3.3	1	290	282	16	5	0	16	20	**62**
51	3.6	3.5	oats	grass	7.1	M	250	0.1	0	140	80	3.3	1	290	282	16	5	0	16	20	**70**
52	5.3	5.1	oats	grass	6.7	M	250	0.1	0	140	80	3.3	1	290	282	16	6	0	16	20	**102**
53	6.8	6.5	oats	grass	6.4	M	250	0.1	0	140	80	3.3	1	290	282	16	7	0	16	20	**130**
54	8.1	7.8	grass	grass	7.0	M	250	0.1	0	140	80	3.3	1	290	282	16	5	0	16	20	**156**
Ha	**51.4**	**49.4**																			**988**

Nutrient requirement based on values for grass with 3 cuts of silage (target DM yield 9-12t/ha) and oats, described in RB209 (2020)

Grass crop use based on yield totalling 47t/ha where 1.7kg/t P_2O_5 and 6.0kg/t K_2O removed in offtake (RB209, 2020)

Oats crop use based on yield totalling 6t/ha where 9.0kg/t P_2O_5 and 16.5kg/t K_2O removed in offtake (RB209, 2020)

N, P_2O_5, K_2O and Mg stated are **available** concentrations in units of kg/ha

***Total** P_2O_5 and K_2O stated where soil indices ≥2

Total N supplied at an application rate of 20t/ha is 18kg/ha

5 Compliance with NVZ regulations

Table 8. Compliance with NVZ regulations

<table>
<tr><td>Does the site fall within a designated NVZ?</td><td>Y ☐ N ☒ (Please skip to section 6)</td></tr>
<tr><td>Do closed periods apply for the wastes to be applied?</td><td>Y ☐ N ☒

Applicable to: N/A

If yes, please indicate the appropriate period:

<table>
<tr><th>Start Date</th><th>End Date</th><th>Land Use</th><th>Soil Type</th><th></th></tr>
<tr><td>1st Aug</td><td>31st Dec</td><td>Tillage Land</td><td>Shallow/Sandy</td><td>☐</td></tr>
<tr><td>1st Sept</td><td>31st Dec</td><td>Grassland</td><td>Shallow/Sandy</td><td>☐</td></tr>
<tr><td>16th Sept</td><td>31st Dec</td><td>Tillage Land*</td><td>Shallow/Sandy</td><td>☐</td></tr>
<tr><td>1st Oct</td><td>31st Jan</td><td>Tillage Land</td><td>All Other Soils</td><td>☐</td></tr>
<tr><td>15th Oct</td><td>31st Jan</td><td>Grassland</td><td>All Other Soils</td><td>☐</td></tr>
</table>

*For Tillage Land with crops sown on or before 15th September

If no, applications will be carried out as per CoGAP i.e. when ground conditions are suitable and when no heavy rain is forecast.</td></tr>
<tr><td>Will application rates comply with crop requirement and field/whole farm limit?</td><td>Yes, see Tables 6 - 7</td></tr>
<tr><td>Previous applications:</td><td>Refer to Table 4 of the LPD1 document for previous applications</td></tr>
</table>

6 Benefits and nutrients supplied to the soil or crop from this application

6.1 Receiving soils

The nutrient status of individual fields to be registered are provided in Tables 6-7 above. General soil type(s) for the fields to be registered are;

Soil Scape 18: Slowly permeable seasonally wet slightly acid but base rich loamy and clayey soils.

Table 9. Soil type

Light sand soils	Soils which are sand, loamy sand or sandy loam to 40cm depth and are sand or loamy sand between 40 and 80 cm, or over sandstone rock.	☐
Shallow soils	Soils over impermeable subsoils and those where the parent rock (chalk, limestone or other rock) is within 40cm of the soil surface. Sandy soils developed over sandstone rock should be regarded as light sand soils.	☐
Medium soils	Mostly medium-textured mineral soils that do not fall into any other soil category. This includes sandy loams over clay, deep loams, and silty or clayey topsoils that have sandy or loamy subsoils.	☐
Deep clayey soils	Soils with predominantly sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay or clay topsoil overlying clay subsoil to more than 40cm depth. Deep clayey soils normally need artificial field drainage.	☒
Deep silty soils	Soils of sandy silt loam, silt loam or silty clay loam textures to 100 cm depth or more. Silt soils formed on marine alluvium, warp soils (river alluvium) and brickearth soils are in this category. Silty clays of low fertility should be regarded as other mineral soils.	☐
Organic soils	Soils that are predominantly mineral but with between 10 and 20% organic matter to depth. These can be distinguished by darker colouring that stains the fingers black or grey.	☐
Peat soils	Soils that contain more than 20% organic matter derived from sedge or similar peat material.	☐

The soil analyses (**Soil Analysis**) shows the soils to have sufficient background concentrations of Mg (*i.e.* ADAS Index 4-7). It is therefore unlikely that the crop will require any additional input of Mg over the course of the cropping cycle.

6.2 Waste characterisation

Full characterisations of individual wastes with total and available nutrients at the recommended rates for each waste stream are supplied in **Waste Analysis**. This information is further summarised against the nutrient requirements for proposed crops in Tables 6-7 above.

The digestate is produced at the Lodge Farm Biogas facility which is in close vicinity to the fields that are under deployment. The facility has its own storage that is subject to regulation by the site permit, the digestate is effectively to be spread upon delivery to the fields. The digestate has been previously applied as a PAS110 certified digestate.

The limiting factors for the different wastes are as follows;

- Lodge Farm Biogas digestate – application rate is limited by the statutory 250 kg total N/ha limit.
- Gypsum is limited to the 20 t/ha statutory application rate for Wales.

6.3 *Summary of benefits*

The digestate is an excellent source of nutrients that are required by the crops. It is a source of readily available nitrogen that can replace more than 50% of the bagged fertiliser requirement. It is also a source of P_2O_5 and K_2O, which will also contribute significantly toward the crops annual requirement, lessening the need to import and spread chemical fertiliser to maintain productivity on these fields.

6.4 *Additional requirements*

Fields may require additional P and K to raise field Indices to the target level.

7 Potential negative impacts to the soil or crop from this application

7.1 *Potentially Toxic Elements (PTEs)*

All the wastes contain traces of PTEs, however concentrations applied to the receiving soils are below maximum upper limits for heavy metal applications described in the Sludge (Use in Agriculture) Regulations 1989 (SI, 1989). Refer to interpretations in **Waste Analysis**.

7.2 *Other waste characteristics*

The pH levels in the wastes range from 7.7 to 8.1

It is unlikely that soil pH will decrease following the application detailed here due to the extensive buffering capacity of the receiving soils. The pH levels of the receiving soils are ≥ 6.0 therefore it is unlikely that availability of any naturally occurring heavy metals present in these soils will become more available after application of these wastes.

7.3 *Operational factors*

1. Solid wastes will be spread using conventional rear discharge spreaders.
2. Liquid wastes will be surface spread, applied using trailing she/hose, minimal spray equipment.
3. Potential compaction of receiving soil will be mitigated by suitable adjustment of tyres/tyre pressure to match soil conditions, direction of spreading and load to be spread.
4. Wastes will be applied when ground and weather conditions are suitable, following CoGAP to avoid soil damage including wheel ruts, compaction, structural damage, erosion and run-off.

8 Sensitive human and environmental receptors

Locations of sensitive receptors are shown in **LF3 Maps**. Prevailing winds are south-westerly.

9 Practices to reduce the impacts of the operation on identified sensitive receptors

Mitigation measures to safeguard site-specific high and moderate likelihood of emission detection by sensitive receptors are shown above. Generic measures (in addition to permit requirements and following the EMS) to reduce potential negative impacts of the proposed spreading operation will be as follows;

1. Spreading will only be undertaken when weather conditions are suitable within restrictions outlined in CoGAP and any relevant closed periods.
2. Spreading will not be carried out in any areas of a field that will be sub-soiled.

3. Machinery operations will take account of soil conditions, slopes *etc.*
4. Liquid spreading machinery will be turned off and lifted away from soil prior to turning at the end of each run.
5. Machinery will be checked daily when in use, regularly serviced and spreading equipment calibrated. Umbilical hoses will be regularly checked for damage to prevent leaks.
6. Machinery turns will not be executed in the buffer strips.
7. Waste deliveries to field/stores will be supervised.
8. All spillages will be reported immediately to NRW.

10 Contingency planning

Replacement spreading machinery will be available to prevent waste being retained in faulty machinery. Hire vehicles will be used if required. All machinery will be fully serviced.
There will be a sufficient number of trained staff available to ensure that the operation continues throughout operational hours (*i.e.* there will be sufficient cover for illness, holiday *etc.*).
In adverse weather, storage is available until ground/weather conditions become favourable for land application.
In circumstances where the wastes cannot be stored or spread beyond normal capacities, wastes will be diverted to a local alternative deployment.

Lodge Farm Biogas Ltd
Lodge Farm
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ALLIANCE TECHNICAL LABORATORIES
Analytical & Consultant Chemists & Microbiologists
Laboratory approved by Renewable Energy Assurance Limited

ANALYSIS REPORT - DIGESTED MATERIAL

Customer Information*		**Laboratory Information**	
BCS Number	*BCS0317C100*	Date Received	26/11/2020
Plant Name	*Lodge Farm Biogas Ltd*	Report No	1140
Digestate Type	*Whole Digestate*	Sample Number	P-FE001/331/20
Certification Code	*LOD-LOD-WDxx2*	Reported By	Liam Hayward
Date Sampled	*24/11/2020*	Report Date	10/12/2020
Producer's Sample Code			

Results of Analysis

Parameter	Result	Units	Field application Rate to apply Total Nitrogen at 250 kg N/ha = 60.8 tonne/ha, and applies:	Pass or Fail	Method Reference	Status
pH	7.7	pH units		N/A	BS EN 13037	N
Oven Dry Matter	3.37	% m/m	2050kg DM	N/A	BS EN 14346	N
Organic dry matter (Volatile solid, VS)	2.38	% m/m	1448kg ODM	N/A	BS EN 15169	N
Total Nitrogen (N)	0.411	% m/m	250kg N	N/A	BS EN 13654-2	N
Ammoniacal Nitrogen (NH_4-N)	2918	mg/kg	177kg NH_4-N	N/A	SOP Z/004	N
Total Phosphorus (P)	657	mg/kg	92kg P_2O_5	N/A	BS EN 15587-1	N
Total Potassium (K)	1197	mg/kg	88kg K_2O	N/A	BS EN 15587-1	N
Total Magnesium (Mg)	258	mg/kg	26kg MgO	N/A	BS EN 15587-1	N
Total Sulphur (S)	331	mg/kg	50kg SO_3	N/A	BS EN 15587-1	N
Parameter	**Result**	**Units**	**PAS110 Limits**	**Pass or Fail**	**Method Reference**	**Status**
Cadmium (Cd)	<0.1	mg/kg	max limit 0.60	Pass	BS EN 15587-1	N
Chromium (Cr)	2.86	mg/kg	max limit 40	Pass	BS EN 15587-1	N
Copper (Cu)	5.26	mg/kg	max limit 80	Pass	BS EN 15587-1	N
Lead (Pb)	1.03	mg/kg	max limit 80	Pass	BS EN 15587-1	N
Mercury (Hg)	<0.1	mg/kg	max limit 0.40	Pass	BS ISO 16772	N
Nickel (Ni)	2.01	mg/kg	max limit 20	Pass	BS EN 15587-1	N
Zinc (Zn)	20	mg/kg	max limit 160	Pass	BS EN 15587-1	N
Physical contaminants (total) > 2mm	<0.01	kg/t	max limit 0.18	Pass	JAS-497/001	N
Stones > 5mm	<0.01	kg/t	max limit 16.0	Pass	JAS-497/001	N

*Sample information as supplied by Customer.

Any opinions or interpretations are outside the scope of the Laboratory's UKAS accreditation.

Liam Hayward
Senior Analyst

The results stated relate only to the samples as detailed and are expressed on as received basis, unless otherwise stated.

Analysis Status	Code
Analysis is UKAS accredited.	U
Analysis is not UKAS accredited.	N

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Gateway House, Ipswich Road, Needham Market, Suffolk, IP6 8EL
Tel: Chemistry Department 01449 721192 Microbiology Department 01449 721637
Email: info@alliancetechnical.co.uk **Web**: www.alliancetechnical.co.uk

Registered in England No 3009678 Registered Office: Latchmore Bank, Little Hallingbury, Bishops Stortford, Hertfordshire, CM22 7PJ

Lodge Farm Biogas Ltd
Lodge Farm
Commonwood
Holt
Wrexham
LL13 9TE

ALLIANCE TECHNICAL LABORATORIES
Analytical & Consultant Chemists & Microbiologists
Laboratory approved by Renewable Energy Assurance Limited

ANALYSIS REPORT - DIGESTED MATERIAL

Customer Information*

BCS Number	*BCS0317C100*
Plant Name	*Lodge Farm Biogas Ltd*
Digestate Type	*Whole Digestate*
Certification Code	*LOD-LOD-WDxx2*
Date Sampled	*24/11/2020*
Producer's Sample Code	

Laboratory Information

Date Received	26/11/2020
Report No	1140
Sample Number	P-FE001/331/20
Reported By	Liam Hayward
Report Date	10/12/2020

Parameter	Result	Unit	Limit	Pass or Fail	Method Reference	Status
E.coli a	Est >1500	cfu/ml	1000	Fail	AM/M: 04-7	U
E.coli b	Est >1500	cfu/ml	1000	Fail	AM/M: 04-7	U
E.coli c	Est >1500	cfu/ml	1000	Fail	AM/M: 04-7	U
E.coli d	Est >1500	cfu/ml	1000	Fail	AM/M: 04-7	U
E.coli e	Est >1500	cfu/ml	1000	Fail	AM/M: 04-7	U
Detection of Salmonella Species a	Absent	in 25ml	Absent	Pass	AM/M: 12-1(d)	U
Detection of Salmonella Species b	Absent	in 25ml	Absent	Pass	AM/M: 12-1(d)	U
Detection of Salmonella Species c	Absent	in 25ml	Absent	Pass	AM/M: 12-1(d)	U
Detection of Salmonella Species d	Absent	in 25ml	Absent	Pass	AM/M: 12-1(d)	U
Detection of Salmonella Species e	Absent	in 25ml	Absent	Pass	AM/M: 12-1(d)	U

*Sample information as supplied by Customer.

Any opinions or interpretations are outside the scope of the Laboratory's UKAS accreditation.

Liam Hayward
Senior Analyst

The results stated relate only to the samples as detailed and are expressed on as received basis, unless otherwise stated.

Analysis Status	Code
Analysis is UKAS accredited.	U
Analysis is not UKAS accredited.	N

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KNOTTINGLEY WF11 0BU

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Please quote above code for all enquiries

CHRIS ASH

GYPSUM

GYPSUM ANALYSIS RESULTS

Sample Reference :

GYPSUM-HEATRICK

Sample Matrix : GYPSUM

Laboratory References	
Report Number	18784
Sample Number	114658

Date Received	17-AUG-2020
Date Reported	24-AUG-2020

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

The sample will be kept as the dry ground sample for at least 1 month.

ANALYTICAL RESULTS *on 'dry matter' basis.*

Determinand	Value	Units
Oven Dry Matter	69.4	%
Conductivity 1:6 [Fresh]	1889	uS/cm
Total Nitrogen	0.13	% w/w
Ammonium Nitrogen	<10	mg/kg
Total Phosphorus (P)	208	mg/kg
Total Potassium (K)	1089	mg/kg
Total Magnesium (Mg)	7274	mg/kg
Total Copper (Cu)	7.31	mg/kg
Total Zinc (Zn)	51.6	mg/kg
Total Sulphur (S)	135636	mg/kg

Released by ..... *Myles Nicholson* ..... Date ..... *24/08/20* .....

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CHRIS ASH

GYPSUM

GYPSUM ANALYSIS RESULTS

Sample Reference :

GYPSUM-HEATRICK

Sample Matrix : GYPSUM

Laboratory References	
Report Number	18784
Sample Number	114658

Date Received	17-AUG-2020
Date Reported	24-AUG-2020

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

The sample will be kept as the dry ground sample for at least 1 month.

ANALYTICAL RESULTS *on 'dry matter' basis.*

Determinand	Value	Units
Total Calcium (Ca)	179081	mg/kg
Total Molybdenum (Mo)	1.07	mg/kg
Total Lead (Pb)	10.1	mg/kg
Total Cadmium (Cd)	<0.1	mg/kg
Total Mercury (Hg)	0.12	mg/kg
Total Nickel (Ni)	5.71	mg/kg
Total Chromium (Cr)	7.71	mg/kg
Total Sodium (Na)	311	mg/kg
pH 1:6 [Fresh]	8.06	
Organic Matter LOI	20.0	% w/w

Released by ..... *Myles Nicholson* ..... Date ..... *24/08/20* .....

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CHRIS ASH

GYPSUM

GYPSUM ANALYSIS RESULTS

Sample Reference :

GYPSUM-HEATRICK

Sample Matrix : GYPSUM

Laboratory References	
Report Number	18784
Sample Number	114658

Date Received	17-AUG-2020
Date Reported	24-AUG-2020

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

The sample will be kept as the dry ground sample for at least 1 month.

ANALYTICAL RESULTS *on 'dry matter' basis.*

Determinand	Value	Units
Lime Equivalent as CaCO3	6.0	% w/w
Fluoride [100:1 H2S04 Soluble]	119	mg/kg
Total Arsenic (As)	1.77	mg/kg
Total Selenium (Se)	0.82	mg/kg
Neutralising Value as CaO [TNV]	3.4	% w/w

Released by ..... *Myles Nicholson* .....

Date ..... *24/08/20* .....

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ANALYSIS REPORT ~ COMPOSTED MATERIAL

Customer information

Composting site
Grade (particle size range)
Grade Type
CA's Code
Date sampled
Batch age when sampled
Producer's sample code

Laboratory information

Received at lab	11/11/2020
Lab sample name	GYPSUM NI
Lab sample number	118061
Report by	Myles Nicholson
Report date	18/11/2020 03:02pm
Report number	30369

PHYSICAL CONTAMINANTS (air-dry sample)

Sieve apertures	Glass	Metal	Plastic	Other[2]	Description	Total[3]	of which sharps[4]	Stones[5]	Method Reference
mm	g	g	g	g		g	g	g	
31.5	Zero	Zero	Zero	Zero		Zero	Zero	Zero	AfOR MT, PC&S[1]
16.0	Zero	Zero	Zero	Zero		Zero	Zero	Zero	
12.5	Zero	Zero	Zero	Zero		Zero	Zero	Zero	
8.0	Zero	Zero	Zero	Zero		Zero	Zero	Zero	
4.0	0.1	1.49	0.05	0.9	a	2.54	1.59	Zero	
2.0	0.02	Zero	0.01	0.8	a	0.83	0.02	Zero	
1.0	N/D	N/D	N/D	N/D	N/A	N/D	N/D	N/D	
Pan	N/D	N/D	N/D	N/D	N/A	N/D	N/D	N/D	
% of total sample > 2 mm	**0.04**	**0.44**	**0.02**	**0.50**		**1.00**	**0.48**	**N/A**	
% of total sample > 4 mm	**N/A**	**N/A**	**N/A**	**N/A**		**N/A**	**N/A**	**0.00**	
PAS 100 upper limit for 'mulch'			**0.12**			**0.25**	**R**	**10.0**	
Pass or Fail			**Pass**			**Fail**	**R**	**Pass**	
for other than 'mulch'			**0.12**			**0.25**	**R**	**8.0**	
Pass or Fail			**Pass**			**Fail**	**R**	**Pass**	

A = Paper/Card B = Textile C = Matting D = String G = Wool H = Cigarette Butt

1 State whether with modification, i.e. sieves added or omitted
2 Any different physical contaminant type; name in 'Description'
3 'Total' is for glass, metal, plastic and 'other'. N.B.: excludes stones
4 Sharps > 2mm, or any inorganic physical contaminant type (excludes woody fragments)
5 Stones and other consolidated mineral contaminants
R Refer to composter's quality policy for upper limit allocation to the compost grade and intended market / end use, and evaluate sharps result against that limit.
N/D = Not Determined, N/A = Not Applicable, U/S = Unsuitable Sample

Lodge Farm Biomass

Analysis of liquid (whole) digestate

Date 26 November 2020 **Lab ref. 1140**

Application rate (t/ha)	**60.0**
Application rate (t/acre)	**24.0**
pH	**7.7**
Dry solids (%)	**3.37**
Organic matter content (%)	**2.4**

NUTRIENT CONTENT

			Total		Available	
TOTALS	**result**	**units**	**(kg/tonne)**	**(kg/ha)**	**(kg/tonne)**	**(kg/ha)**
Nitrogen (N)	0.411	%	4.11	247	2.62	157
Ammonium-N	2618	mg/kg	2.62	157		
Phosphorus (P)	657	mg/kg	0.66			
Phosphate (P_2O_5)			1.50	90	0.75	45
Potassium (K)	1197	mg/kg	1.20			
Potash (K_2O)			1.44	86	1.29	78
Magnesium (Mg)	258	mg/kg	0.26			
Magnesium (MgO)			0.41	25	0.10	6
Sulphur (S)	331	mg/kg	0.33			
Sulphur (SO_3)			0.83	50	0.17	10
Sodium (Na)		mg/kg	0.00	0	0.00	0

POTENTIALLY TOXIC ELEMENTS

			Rate		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	20	mg/kg	20.0	1.20	15.00
Copper	5.26	mg/kg	5.3	0.32	7.50
Nickel	2.01	mg/kg	2.0	0.12	3.00
Lead	1.03	mg/kg	1.0	0.06	15.00
Cadmium	0.10	mg/kg	0.1	0.01	0.15
Chromium	2.86	mg/kg	2.9	0.17	15.00
Mercury	0.10	mg/kg	0.1	0.01	0.10

Heatrick

Analysis of Heatrick gypsum

Date: 17/08/2020 Lab report no.18784

Application rate (t/ha)	**20**
Application rate (t/acre)	**8.0**
pH	**8.1**
Dry solids (%)	**69.4**
Organic matter (%)	**20.0**
Conductivity (µS/cm)	**1889**

NUTRIENT CONTENT

			Total		Available	
TOTALS	**result**	**units**	**(kg/tonne)**	**(kg/ha)**	**(kg/tonne)**	**(kg/ha)**
Nitrogen (N)	0.13	%	0.90	18.0	0.01	0.1
Ammonium-N	10	mg/kg	0.01	0.1		
Phosphorus (P)	208	mg/kg	0.14	2.9		
Phosphate (P_2O_5)			0.33	6.6	0.1	3.3
Potassium (K)	1089	mg/kg	0.76	15.1		
Potash (K_2O)			0.91	18.1	0.2	16.3
Magnesium (Mg)	7274	mg/kg	5.05	101.0		
Magnesium (MgO)			8.08	161.5	1.6	16.2
Sulphur (S)	135636	mg/kg	94.13	1882.6		
Sulphur (SO_3)			235.33	4706.6	23.5	470.7
Calcium (Ca)	179081	mg/kg	124.3	2485.6		
Sodium (Na)	311	mg/kg	0.22	4.3		

POTENTIALLY TOXIC ELEMENTS

			Amount		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	51.6	mg/kg	35.8	0.72	15.00
Copper	7	mg/kg	5.07	0.10	7.50
Nickel	5.7	mg/kg	3.96	0.08	3.00
Lead	10.1	mg/kg	7.01	0.14	15.00
Cadmium	0.1	mg/kg	0.10	0.00	0.15
Chromium	7.7	mg/kg	5.34	0.11	15.00
Mercury	0.1	mg/kg	0.08	0.00	0.10
Arsenic	1.8	mg/kg	1.23	0.02	0.70
Selenium	0.8	mg/kg	0.57	0.01	0.15
Molybdenum	1.1	mg/kg	0.74	0.01	0.20
Fluoride	119	mg/kg	82.59	1.65	20.00

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V512

Please quote the above code for all enquiries

Client : LF

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 00150/21

Date Received 07-Jan-21
Date Reported 08-Jan-21

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details			Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details	Soil pH	P	K	Mg	P	K	Mg
647/21	1	**LF 33N** *No cropping details given*	**7.2**	**0**	**1**	**5**	**9.0**	**85**	**259**
648/21	2	**LF 35N** *No cropping details given*	**7.2**	**0**	**1**	**5**	**8.0**	**89**	**294**
649/21	3	**LF 36N** *No cropping details given*	**7.2**	**0**	**1**	**4**	**9.4**	**66**	**210**
650/21	4	**LF 37N** *No cropping details given*	**6.7**	**1**	**1**	**4**	**11.0**	**81**	**210**
651/21	5	**LF 38N** *No cropping details given*	**6.9**	**1**	**1**	**5**	**9.6**	**83**	**271**
652/21	6	**LF 39N** *No cropping details given*	**6.6**	**1**	**1**	**4**	**14.2**	**63**	**226**

If general fertiliser and lime recommendations have been requested, these are given on the following sheets.
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Released by Gina Graham On behalf of NRM Ltd Date 08/01/21

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SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details			Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details	Soil pH	P	K	Mg	P	K	Mg
653/21	7	**LF 40N** *No cropping details given*	**7.0**	**1**	**1**	**5**	**13.2**	**85**	**291**
654/21	8	**LF 41N** *No cropping details given*	**6.9**	**1**	**1**	**4**	**12.8**	**79**	**236**
655/21	9	**LF 42N** *No cropping details given*	**7.7**	**1**	**1**	**5**	**10.2**	**101**	**253**
656/21	10	**LF 43N** *No cropping details given*	**7.2**	**1**	**1**	**4**	**14.8**	**91**	**221**

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DATE 8th January 2021
SAMPLES FROM LF

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Report reference 00150/21

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Fertiliser Recommendations

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The recommendation should be increased or decreased where yields are substantially more or less than that specified. The amount to apply can be calculated using the expected yield and values for the offtake of phosphate and potash per tonne of yield given in the RB209 9th edition.
All recommendations are given for the mid-point of each Index.
Where a soil analysis value (as given by the laboratory) is close to the range of an adjacent Index, the recommendation may be reduced or increased slightly taking account of the recommendation given for the adjacent Index. Small adjustments of less than 10 kg/ha are generally not justified.
Efficient use of P and K is most likly to be achieved on soils that are well structured and enable good rooting.
For visual evaluation of soil structure (VESS), a score on 1 or 2 would be considered adequate.
Don't forget to deduct nutrients applied as organic manures.
For Nitrogen recommendations please refer to the RB209 9th edition or seek advice from an FACTS qualified adviser.
Target Indices:
Arable, Forage, Grassland and Potato Crops: P Index 2, K Index 2-
(In rotations where most crops are Autumn-sown, soils are in good condition and P is applied annually, high index 1 can be an adequate target.)
Vegetables and Bulbs: P Index 3, K Index 2+
(If vegetables are only grown occasionally as part of an arable rotation, it would be most economic to target index 2 for arable and forage crops.)
Fruit Vines and Hops: P Index 2, K Index 2, Mg Index 2
(Note: Cider apples respond to K Index 3, Mg Index 3)
A lime recommendation is usually for a 20cm depth of cultivated soil or a 15cm depth of grassland soil. Where soil is acid below 20 cm and soils are ploughed for arable crops, a proportionately larger quantity of lime should be applied. However, if more than 10 t/ha is needed, half should be deeply cultivated into the soil and ploughed down, with the remainder applied to the surface and worked in.
For established grassland or other situations where there is no, or only minimal soil cultivation, no more than 7.5 t/ha of lime should be applied in one application.
In these situations, applications of lime change the pH below the surface very slowly. Consequently, the underlying soil should not be allowed to become too acidic because this will affect the root growth and thus limit nutrient and water uptake, which will adversely affect yield.

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 33N	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000647 /		*Kg/Ha*				*Te/Ha*	**0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 35N	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000648 /		*Kg/Ha*				*Te/Ha*	**0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 36N	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000649 /		*Kg/Ha*				*Te/Ha*	**0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 37N	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000650 /		*Kg/Ha*				*Te/Ha*	**0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 38N	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000651 /		*Kg/Ha*				*Te/Ha*	**0**	**0**

Fertiliser recommendations are based on **AHDB RB209 (Ninth Edition).** If a nutrient is deficient and no recommendation is given, either no recommendation is given in RB209 or we have insufficient data to give a recommendation. Apply Lime to the nearest half Ton / Tonne.
NRM is a UKAS accredited laboratory to ISO/IEC 17025

Report continued.....

DATE 8th January 2021
SAMPLES FROM LF

SAMPLED BY

Report reference 00150/21

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Fertiliser Recommendations

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 39N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000652 /		*Kg/Ha*				*Te/Ha* **0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 40N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000653 /		*Kg/Ha*				*Te/Ha* **0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 41N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000654 /		*Kg/Ha*				*Te/Ha* **0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 42N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000655 /		*Kg/Ha*				*Te/Ha* **0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 43N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000656 /		*Kg/Ha*				*Te/Ha* **0**	**0**

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V512

Please quote the above code for all enquiries

Client : LF

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 00151/21

Date Received 07-Jan-21
Date Reported 08-Jan-21

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details			Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details	Soil pH	P	K	Mg	P	K	Mg
657/21	1	**LF 44AN** *No cropping details given*	**7.1**	**1**	**1**	**4**	**12.4**	**83**	**243**

If general fertiliser and lime recommendations have been requested, these are given on the following sheets.
The analytical methods used are as described in DEFRA Reference Book 427
The index values are determined from the AHDB Fertiliser Recommendations RB209 9th Edition.

Released by Gina Graham On behalf of NRM Ltd Date 08/01/21

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Report reference 00151/21

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Fertiliser Recommendations

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Efficient use of P and K is most likely to be achieved on soils that are well structured and enable good rooting.
For visual evaluation of soil structure (VESS), a score on 1 or 2 would be considered adequate.
Don't forget to deduct nutrients applied as organic manures.
For Nitrogen recommendations please refer to the RB209 9th edition or seek advice from an FACTS qualified adviser.
Target Indices:
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Vegetables and Bulbs: P Index 3, K Index 2+
(If vegetables are only grown occasionally as part of an arable rotation, it would be most economic to target index 2 for arable and forage crops.)
Fruit Vines and Hops: P Index 2, K Index 2, Mg Index 2
(Note: Cider apples respond to K Index 3, Mg Index 3)
A lime recommendation is usually for a 20cm depth of cultivated soil or a 15cm depth of grassland soil. Where soil is acid below 20 cm and soils are ploughed for arable crops, a proportionately larger quantity of lime should be applied. However, if more than 10 t/ha is needed, half should be deeply cultivated into the soil and ploughed down, with the remainder applied to the surface and worked in.
For established grassland or other situations where there is no, or only minimal soil cultivation, no more than 7.5 t/ha of lime should be applied in one application.
In these situations, applications of lime change the pH below the surface very slowly. Consequently, the underlying soil should not be allowed to become too acidic because this will affect the root growth and thus limit nutrient and water uptake, which will adversely affect yield.

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 44AN	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000657 /		*Kg/Ha*				*Te/Ha* **0**	**0**

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V512

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Client : LF

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 00152/21

Date Received 07-Jan-21
Date Reported 08-Jan-21

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details			Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details	Soil pH	P	K	Mg	P	K	Mg
658/21	1	**LF 44BN** *No cropping details given*	**7.1**	**2**	**1**	**4**	**17.0**	**85**	**226**
659/21	2	**LF 45N** *No cropping details given*	**7.1**	**1**	**1**	**4**	**11.4**	**75**	**214**
660/21	3	**LF 46N** *No cropping details given*	**7.9**	**1**	**1**	**4**	**10.6**	**89**	**241**
661/21	4	**LF 47N** *No cropping details given*	**7.1**	**0**	**1**	**6**	**7.0**	**98**	**370**
662/21	5	**LF 48N** *No cropping details given*	**7.1**	**0**	**1**	**5**	**7.8**	**117**	**251**
663/21	6	**LF 49N** *No cropping details given*	**7.1**	**0**	**1**	**5**	**7.8**	**95**	**260**

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	No.	Name or O.S. Reference with Cropping Details	Soil pH	P	K	Mg	P	K	Mg
664/21	7	**LF 50N** *No cropping details given*	**7.3**	**1**	**1**	**5**	**10.0**	**98**	**270**
665/21	8	**LF 51N** *No cropping details given*	**7.1**	**0**	**1**	**5**	**7.6**	**102**	**251**
666/21	9	**LF 52N** *No cropping details given*	**6.7**	**0**	**1**	**6**	**6.0**	**113**	**529**
667/21	10	**LF 53N** *No cropping details given*	**6.4**	**0**	**1**	**7**	**4.4**	**114**	**617**

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DATE 8th January 2021
SAMPLES FROM LF

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(If vegetables are only grown occasionally as part of an arable rotation, it would be most economic to target index 2 for arable and forage crops.)
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(Note: Cider apples respond to K Index 3, Mg Index 3)
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In these situations, applications of lime change the pH below the surface very slowly. Consequently, the underlying soil should not be allowed to become too acidic because this will affect the root growth and thus limit nutrient and water uptake, which will adversely affect yield.

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 44BN	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000658 /		*Kg/Ha*				*Te/Ha*	**0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 45N	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000659 /		*Kg/Ha*				*Te/Ha*	**0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 46N	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000660 /		*Kg/Ha*				*Te/Ha*	**0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 47N	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000661 /		*Kg/Ha*				*Te/Ha*	**0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime*	*(Arable)*	*(Grass)*
LF 48N	**Not Given / Not Given**	*Units/Acre*				*T/Ac*	**0**	**0**
000662 /		*Kg/Ha*				*Te/Ha*	**0**	**0**

Fertiliser recommendations are based on **AHDB RB209 (Ninth Edition).** If a nutrient is deficient and no recommendation is given, either no recommendation is given in RB209 or we have insufficient data to give a recommendation. Apply Lime to the nearest half Ton / Tonne.
NRM is a UKAS accredited laboratory to ISO/IEC 17025

Report continued.....

DATE 8th January 2021
SAMPLES FROM LF

SAMPLED BY

Report reference 00152/21

CHRIS ASH
BYPRODUCT RECOVERY LTD
CONTROL HOUSE
A1 BUSINESS PARK
KNOTTINGLEY ROAD
KNOTTINGLEY
Tel: 0113 232 2400
Fax:

Fertiliser Recommendations

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 49N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000663 /		*Kg/Ha*				*Te/Ha* **0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 50N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000664 /		*Kg/Ha*				*Te/Ha* **0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 51N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000665 /		*Kg/Ha*				*Te/Ha* **0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 52N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000666 /		*Kg/Ha*				*Te/Ha* **0**	**0**
Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 53N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0.8**	**0**
000667 /		*Kg/Ha*				*Te/Ha* **2.1**	**0**

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Contact : CHRIS ASH
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KNOTTINGLEY
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V512

Please quote the above code for all enquiries

Client : LF

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 00153/21

Date Received 07-Jan-21
Date Reported 08-Jan-21

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details			Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details	Soil pH	P	K	Mg	P	K	Mg
668/21	1	**LF 54N** *No cropping details given*	**7.0**	**0**	**1**	**5**	**3.6**	**72**	**268**

If general fertiliser and lime recommendations have been requested, these are given on the following sheets.
The analytical methods used are as described in DEFRA Reference Book 427
The index values are determined from the AHDB Fertiliser Recommendations RB209 9th Edition.

Released by Gina Graham On behalf of NRM Ltd Date 08/01/21

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DATE 8th January 2021
SAMPLES FROM LF

SAMPLED BY

Report reference 00153/21

CHRIS ASH
BYPRODUCT RECOVERY LTD
CONTROL HOUSE
A1 BUSINESS PARK
KNOTTINGLEY ROAD
KNOTTINGLEY
Tel: 0113 232 2400
Fax:

Fertiliser Recommendations

The phosphate and potash recommendations shown below, are those required to replace the offtake and maintain target soil indices. The larger recommended applications for soils below target index will allow the soil to build up to this target index over a number of years. Not applying fertiliser to soils which are above target index will allow the soil to run down over a number of years to the target index.
The recommendation should be increased or decreased where yields are substantially more or less than that specified. The amount to apply can be calculated using the expected yield and values for the offtake of phosphate and potash per tonne of yield given in the RB209 9th edition.
All recommendations are given for the mid-point of each Index.
Where a soil analysis value (as given by the laboratory) is close to the range of an adjacent Index, the recommendation may be reduced or increased slightly taking account of the recommendation given for the adjacent Index. Small adjustments of less than 10 kg/ha are generally not justified.
Efficient use of P and K is most likly to be achieved on soils that are well structured and enable good rooting.
For visual evaluation of soil structure (VESS), a score on 1 or 2 would be considered adequate.
Don't forget to deduct nutrients applied as organic manures.
For Nitrogen recommendations please refer to the RB209 9th edition or seek advice from an FACTS qualified adviser.
Target Indices:
Arable, Forage, Grassland and Potato Crops: P Index 2, K Index 2-
(In rotations where most crops are Autumn-sown, soils are in good condition and P is applied annually, high index 1 can be an adequate target.)
Vegetables and Bulbs: P Index 3, K Index 2+
(If vegetables are only grown occasionally as part of an arable rotation, it would be most economic to target index 2 for arable and forage crops.)
Fruit Vines and Hops: P Index 2, K Index 2, Mg Index 2
(Note: Cider apples respond to K Index 3, Mg Index 3)
A lime recommendation is usually for a 20cm depth of cultivated soil or a 15cm depth of grassland soil. Where soil is acid below 20 cm and soils are ploughed for arable crops, a proportionately larger quantity of lime should be applied. However, if more than 10 t/ha is needed, half should be deeply cultivated into the soil and ploughed down, with the remainder applied to the surface and worked in.
For established grassland or other situations where there is no, or only minimal soil cultivation, no more than 7.5 t/ha of lime should be applied in one application.
In these situations, applications of lime change the pH below the surface very slowly. Consequently, the underlying soil should not be allowed to become too acidic because this will affect the root growth and thus limit nutrient and water uptake, which will adversely affect yield.

Field Name / Ref / Soil Type	*Last Crop / Next Crop*		*P2O5*	*K2O*	*MgO*	*Lime (Arable)*	*(Grass)*
LF 54N	**Not Given / Not Given**	*Units/Acre*				*T/Ac* **0**	**0**
000668 /		*Kg/Ha*				*Te/Ha* **0**	**0**

Fertiliser recommendations are based on **AHDB RB209 (Ninth Edition).** If a nutrient is deficient and no recommendation is given, either no recommendation is given in RB209 or we have insufficient data to give a recommendation. Apply Lime to the nearest half Ton / Tonne.
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ANALYTICAL REPORT

Report Number	**35807-21**	**V512**	**CHRIS ASH**
Date Received	**06-JAN-2021**		**BYPRODUCT RECOVERY LTD**
Date Reported	**12-JAN-2021**		**CONTROL HOUSE**
Project	**SOIL**		**A1 BUSINESS PARK**
Reference	**CHRIS ASH**		**KNOTTINGLEY ROAD**
Order Number			**KNOTTINGLEY WF11 0BU**

Laboratory Reference		**SOIL500716**	**SOIL500717**	**SOIL500718**	**SOIL500719**	**SOIL500720**	**SOIL500721**	**SOIL500722**	**SOIL500723**	**SOIL500724**	**SOIL500725**
Sample Reference		**LF 33M**	**LF 35M**	**LF 36M**	**LF 37M**	**LF 38M**	**LF 39M**	**LF 40M**	**LF 41M**	**LF 42M**	**LF 43M**
Determinand	**Unit**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**
Total Copper	mg/kg	32.7	22.2	18.6	16.8	16.6	17.7	20.4	20.0	19.1	20.0
Total Zinc	mg/kg	146	108	98.3	75.5	73.2	69.5	76.7	87.0	89.1	94.6
Total Lead	mg/kg	50.4	50.8	52.2	61.8	56.8	48.0	45.3	63.3	54.2	64.0
Total Arsenic	mg/kg	11.4	13.1	10.7	9.6	9.6	10.1	13.8	11.6	10.9	10.4
Total Cadmium	mg/kg	0.30	0.36	0.31	0.23	0.22	0.20	0.22	0.27	0.25	0.30
Total Nickel	mg/kg	29.2	30.5	23.3	23.8	22.7	22.6	22.5	24.2	26.0	23.6
Total Chromium	mg/kg	38.5	44.1	43.7	33.8	32.6	33.4	32.2	31.8	34.5	31.5
Total Mercury	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Selenium	mg/kg	0.30	0.29	0.25	0.24	0.23	0.23	0.23	0.27	0.24	0.28
Total Molybdenum	mg/kg	1.1	1.4	<1	<1	<1	<1	<1	<1	<1	<1
Fluoride	mg/kg	32.6	42.0	31.0	35.3	36.3	40.1	37.6	35.7	38.5	31.6

Notes

Analysis Notes

The sample submitted was of adequate size to complete all analysis requested.
The results as reported relate only to the item(s) submitted for testing.
The results are presented on a dry matter basis unless otherwise stipulated.

Reported by

Myles Nicholson

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ANALYTICAL REPORT

Report Number	**35808-21**	**V512**	**CHRIS ASH**
Date Received	**06-JAN-2021**		**BYPRODUCT RECOVERY LTD**
Date Reported	**12-JAN-2021**		**CONTROL HOUSE**
Project	**SOIL**		**A1 BUSINESS PARK**
Reference	**CHRIS ASH**		**KNOTTINGLEY ROAD**
Order Number			**KNOTTINGLEY WF11 0BU**

Laboratory Reference		**SOIL500726**	**SOIL500727**	**SOIL500728**	**SOIL500729**	**SOIL500730**	**SOIL500731**	**SOIL500732**	**SOIL500733**	**SOIL500734**	**SOIL500735**
Sample Reference		**LF 44AM**	**LF 44BM**	**LF 45M**	**LF 46M**	**LF 47M**	**LF 48M**	**LF 49M**	**LF 50M**	**LF 51M**	**LF 52M**
Determinand	**Unit**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**	**SOIL**
Total Copper	mg/kg	17.1	18.1	18.4	15.9	20.5	15.9	15.6	16.4	14.8	23.4
Total Zinc	mg/kg	88.5	88.3	92.7	81.0	101	73.5	76.8	75.6	73.2	130
Total Lead	mg/kg	54.1	77.7	82.1	68.4	68.7	49.0	45.5	59.0	245	122
Total Arsenic	mg/kg	10.2	10.5	11.8	10.5	16.5	17.0	12.7	12.2	10.9	19.8
Total Cadmium	mg/kg	0.23	0.25	0.22	0.23	0.31	0.22	0.22	0.24	0.20	0.41
Total Nickel	mg/kg	22.7	21.8	24.2	24.4	28.1	25.2	23.8	26.4	24.5	39.9
Total Chromium	mg/kg	33.2	34.8	35.1	34.5	40.7	33.8	34.7	40.0	36.1	56.7
Total Mercury	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total Selenium	mg/kg	0.25	0.24	0.26	0.25	0.31	0.23	0.22	0.25	0.23	0.37
Total Molybdenum	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.1
Fluoride	mg/kg	42.3	40.4	31.9	39.0	39.2	31.2	37.0	41.5	36.3	38.8

Notes

Analysis Notes

The sample submitted was of adequate size to complete all analysis requested.
The results as reported relate only to the item(s) submitted for testing.
The results are presented on a dry matter basis unless otherwise stipulated.

Reported by

Myles Nicholson

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ANALYTICAL REPORT

Report Number	**35809-21**	**V512**	**CHRIS ASH**
Date Received	**06-JAN-2021**		**BYPRODUCT RECOVERY LTD**
Date Reported	**12-JAN-2021**		**CONTROL HOUSE**
Project	**SOIL**		**A1 BUSINESS PARK**
Reference	**CHRIS ASH**		**KNOTTINGLEY ROAD**
Order Number			**KNOTTINGLEY WF11 0BU**

Laboratory Reference		**SOIL500736**	**SOIL500737**
Sample Reference		**LF 53M**	**LF 54M**
Determinand	**Unit**	**SOIL**	**SOIL**
Total Copper	mg/kg	22.4	19.6
Total Zinc	mg/kg	129	111
Total Lead	mg/kg	114	85.3
Total Arsenic	mg/kg	19.8	15.3
Total Cadmium	mg/kg	0.38	0.32
Total Nickel	mg/kg	36.9	30.1
Total Chromium	mg/kg	52.9	41.6
Total Mercury	mg/kg	<0.2	<0.2
Total Selenium	mg/kg	0.36	0.30
Total Molybdenum	mg/kg	1.1	<1
Fluoride	mg/kg	38.9	40.0

Notes

Analysis Notes

The sample submitted was of adequate size to complete all analysis requested.
The results as reported relate only to the item(s) submitted for testing.
The results are presented on a dry matter basis unless otherwise stipulated.

Reported by

Myles Nicholson

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Continuing Competence Certificate

This certificate confirms that

Thomas Hodgkinson

Has met the relevant requirements of the Continuing Competence scheme for the following award(s) which will remain current for two years from 19/06/2019

AD	Anaerobic Digestion
LS	Land Spreading

Expiry Date: 19/06/2021

Verification date: 18/06/2019

Authorised:

WAMITAB Chief Executive Officer

Learner ID: 25856

Certificate No.: 5145374

Date of Issue: 19/06/2019

CIWM Chief Executive Officer

The Chartered Institution of Wastes Management

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