SR2010No4 Mobile Plant for Land-spreading Deployment Application

Hafod Farm & land at Bolafron & Heolgwyddil

Applicant:

Stepside Agri Contractors (Gwbert Road, Cardigan, SA43 1PH)

Permit Number: EPR/AB3891CX

Date: 19/06/2020

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/AB3891CX

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)	Stepside Agri	
Title	Mr	
First name	Daniel	
Last name	James	
Address	Stepside Farm	

	Gwbert Road
	Cardigan
	Ceredigion
Postcode	SA43 1PH
Telephone - mobile	07966 521386
Telephone - office	01239 621354
Email address	enquiries@stepside.biz

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	Mr	
First name	David	
Last name	Powell	
Telephone - mobile	07968 496178	
Telephone - office		
Email address	dave.purlon@gmail.com	

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	David	
Last name	Powell	

Telephone - mobile	07968 496178
Telephone - office	
Email address	dave.purlon@gmail.com

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 _____ *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	02 05 02	Sludge from dairy waste treatment	Liquid	Dairy Partners – Newcastle Emlyn	4,500
2	02 05 02	Sludge from dairy waste treatment	Liquid	Volac – Felinfach	3,460
3	02 05 02	Sludge from dairy waste treatment	Liquid	First Milk – Haverfordwest	4,500
4	19 09 02	Sludges from water clarification	Liquid	Dwr Cymru Welsh Water – Bryngwyn WTW	7,550
5	19 09 02	Sludges from water clarification	Liquid	Dwr Cymru Welsh Water – Capel Dewi WTW	7,450
6	19 09 02	Sludges from water clarification	Liquid	Dwr Cymru Welsh Water – Strata Florida WTW	903
7	02 07 02	Spent wash from spirits distillation	Liquid	The Welsh Whisky Co. – Penderyn Distillery	1,284
8					N.B. Maximums for single waste stream
9					
10					
				Total tonnage	Max. 7,550

4g About the land you want to treat

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

Address	Hafod Farm
	Ferwig
	Cardigan
	Ceredigion
Postcode	SA43 1PU
National grid reference (12 digit)	SN 18094 50342

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

Agricultural land ☒ Please give your County/ Parish/ Holding number CPH 55/226/0027

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 see continuation sheet: Table 3 Details of land to be treated**			
2				
3				
4				
5				
6				
7				
8				
9				
10				
			Total hectares	45.00

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	Morris
Last name	Davies
Address	**Hafod Farm**
	Ferwig
	Cardigan
	Ceredigion
Postcode	SA43 1PU
Telephone - mobile	07974102696
Telephone - office	
Email address	

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	Please see continuation sheet: Table 4 - Previous land treatment				
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	**SN 17956 50061**	02 05 02 or 02 07 02 or 19 09 02	Above ground storage tank	800
2	**SN 18155 50376**	02 05 02 or 02 07 02 or 19 09 02	Contingency Lagoon Store	450
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	EPDEPSTEPS0045
Amount paid	£798

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)	☒	
Benefit statement (required for all deployments)	☒	
Waste analysis (required for all deployments)	☒	
Receiving soil analysis (required for all deployments)	☒	
Site-specific risk assessment (in accordance with 4e)	☐	
Any other additional information	N/A	Table 3 Details of land to be treated
	N/A	Table 4 Previous land treatment
	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	Mr	
First name	David	

Last name	Powell
On behalf of (if relevant)	Mr Daniel James
Today's date (DD/MM/YYYY)	19/06/2020

Continuing Competence Certificate

This certificate confirms that

David Powell

Has met the relevant requirements of the Continuing Competence scheme for the following award(s) which will remain current for two years from 13/01/2020

AD	Anaerobic Digestion
LS	Land Spreading

Expiry Date: 13/01/2022

Verification date: 03/01/2020

Authorised:

WAMITAB Chief Executive Officer

Learner ID: 21046

Certificate No.: 5157880

Date of Issue: 13/01/2020

CIWM Chief Executive Officer

The Chartered Institution of Wastes Management

00133014

TABLE 3 Details of land to be treated

Field ref.	Spreadable area (hectares)	Grid reference (centre of fields)	Waste type(s) to be spread (LoW)
Heolgwyddil 3	5.00	SN 18079 49429	02 05 02, 02 07 02, 19 09 02
Heolgwyddil 5	2.30	SN 18038 49765	02 05 02, 02 07 02, 19 09 02
Heolgwyddil 6	1.70	SN 17879 49800	02 05 02, 02 07 02, 19 09 02
Heolgwyddil 7	1.70	SN 17753 49815	02 05 02, 02 07 02, 19 09 02
Heolgwyddil 8	4.40	SN 17696 49643	02 05 02, 02 07 02, 19 09 02
Bolafron 4	6.00	SN 17789 49959	02 05 02, 02 07 02, 19 09 02
Bolafron 5	3.00	SN 17844 50084	02 05 02, 02 07 02, 19 09 02
Bolafron 6	2.30	SN 17604 50225	02 05 02, 02 07 02, 19 09 02
Bolafron 7	2.20	SN 17468 49980	02 05 02, 02 07 02, 19 09 02
Bolafron 8	4.20	SN 17883 50437	02 05 02, 02 07 02, 19 09 02
Bolafron 9	3.30	SN 18008 50535	02 05 02, 02 07 02, 19 09 02
Hafod 1741	2.30	SN 18174 50425	02 05 02, 02 07 02, 19 09 02
Hafod 2455	3.00	SN 18232 50548	02 05 02, 02 07 02, 19 09 02
Hafod 4067	3.60	SN 18404 50669	02 05 02, 02 07 02, 19 09 02
TOTAL	**45.00**		

TABLE 4 Previous land treatment

Field ref.	Waste description	Person/ company who spread the waste	Quantity spread per hectare (in tonnes)	Deployment / other reference (if known)
Heolgwyddil 3	Sludge from dairy waste treatment - Volac, Felinfach	Stepside Agricultural Contractors	62	PAN-005639
Heolgwyddil 5	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	41	PAN-005639
Heolgwyddil 7	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	91	PAN-005639
Heolgwyddil 8	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	41	PAN-005639
Bolafron 4	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	41	PAN-005639
Bolafron 5	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	33	PAN-005639
Bolafron 6	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	39	PAN-005639
Bolafron 7	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	41	PAN-005639
Bolafron 8	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	40	PAN-005639
Bolafron 9	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	41	PAN-005639
Hafod 1741	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	87	PAN-005639
Hafod 2455	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	40	PAN-005639
Hafod 4067	Sludge from dairy waste treatment - Dairy Partners, Newcastle Emlyn	Stepside Agricultural Contractors	40	PAN-005639

STEPSIDE
AGRI CONTRACTORS
TEL: 01239 613741 MOB: 07966 521386

Bolafron Farm
Location of Fields

Farm			
Bolafron Farm Ferwig Cardigan SA43 1PS			
Map reference: SN 18010 50073			
File Ref:		Drawing no:	

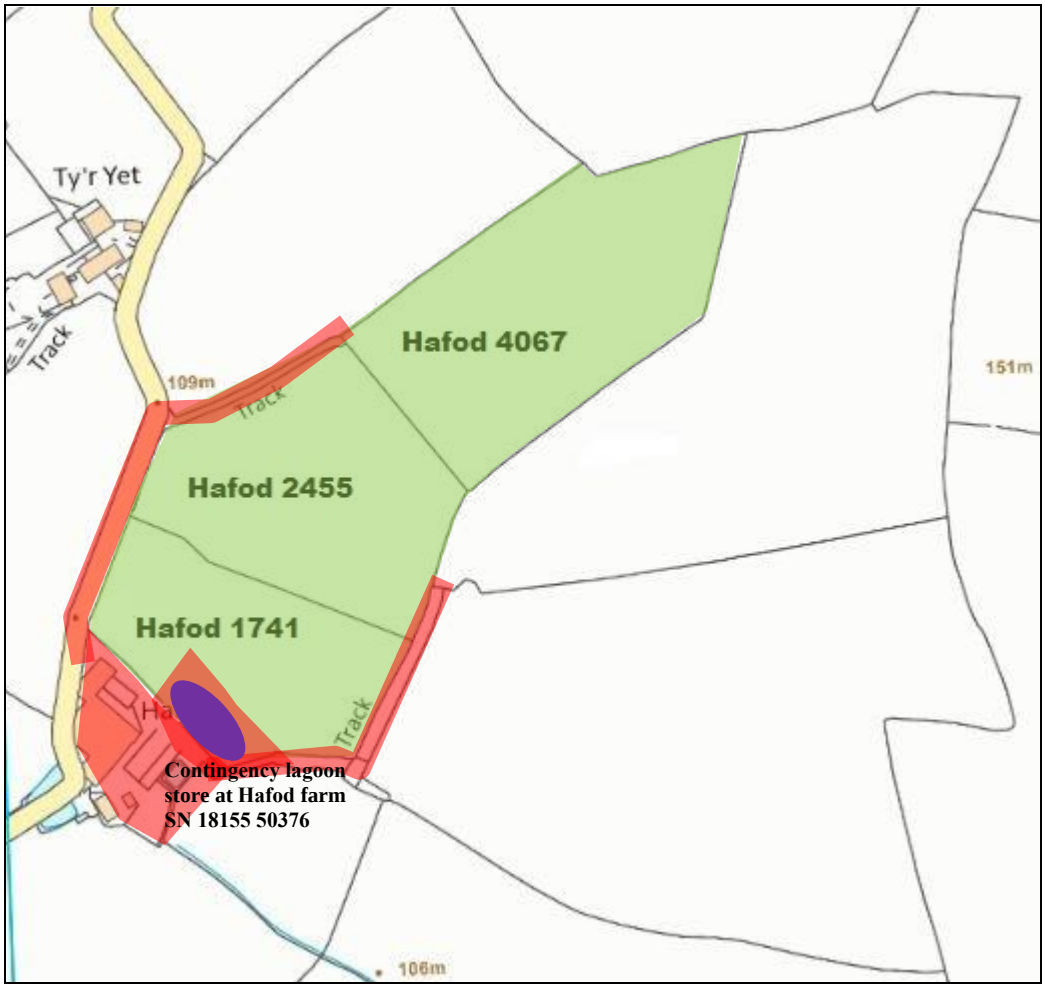
Key

Non-spreading Spreading Store

STEPSIDE
AGRI CONTRACTORS
TEL: 01239 613741 MOB: 07966 521386

Hafod Farm
Location of Fields

Farm				
Hafod Farm Ferwig Cardigan SA43 1PU				
Map reference: SN 18227 50526				
File Ref:		Drawing no:		
Key Non-spreading Spreading Store				



STEPSIDE
AGRI CONTRACTORS
TEL: 01239 613741 MOB: 07966 521386

Heolgwyddil Farm
Location of Fields

Farm			
Heolgwyddil Farm Ferwig Cardigan SA43 1PT			
Map reference: SN 18026 49554			
File Ref:		Drawing no:	
Key Non-spreading Spreading Store			

N

Statement of Agricultural Benefit

– Hafod Farm & land at Bolafron & Heolgwyddil

STEPSIDE AGRI CONTRACTORS
TEL: 01239 621354 MOB: 07966 521386

Applicant: Stepside Agri Contractors
Permit: SR2010 No4: mobile plant for land-spreading
Permit Number: EPR/AB3891CX

Person with Technical Expertise:
Mr David Powell
FACTS: FE/2981
WAMITAB CCC No: 5157880
Phone number: 07968 496178
Email: dave.purlon@gmail.com

Farm Address:
Hafod Farm, Ferwig, Cardigan, SA43 1PU - Holding No. 55/226/0027

Wastes to be applied:

Waste Code	Waste Description	Physical Form	Waste Producer
02 05 02	Waste from the dairy products industry – sludges from on-site effluent treatment	Liquid	Dairy Partners, Newcastle Emlyn
02 05 02	Waste from the dairy products industry – sludges from on-site effluent treatment	Liquid	Volac, Felinfach
02 05 02	Waste from the dairy products industry – sludges from on-site effluent treatment	Liquid	First Milk, Haverfordwest
19 09 02	Sludges from water clarification	Liquid	Dwr Cymru Welsh Water, Bryngwyn WTW
19 09 02	Sludges from water clarification	Liquid	Dwr Cymru Welsh Water, Capel Dewi WTW
19 09 02	Sludges from water clarification	Liquid	Dwr Cymru Welsh Water, Strata Florida WTW
02 07 02	Waste from spirits distillation – spent wash	Liquid	The Welsh Whisky Co., Penderyn Distillery, Penderyn

Application:

- The fields will be spread subject to ground conditions being suitable and when there is a significant crop nutrient requirement (i.e. early spring, after a silage cut, in advance of periods of grazing). Spreading of these grass fields will be split into multiple applications throughout the season and the total of all applications will not exceed the max application rate per field as listed in table 1. The fields will be spread with shallow injection equipment.
- Spreading of the waste will be carried out in accordance with the Code of Good Agricultural Practice ("Protecting our Water, Soil and Air. Defra, 2009) and in accordance with the requirements of the deployment and environmental permitting regulations.
- NRW will be informed at least 48 hours prior to any spreading commencing and no spreading will occur within 48 hours of forecasted rainfall.
- The waste will be directly spread onto the fields assuming ground conditions are suitable at the time of waste receipt, or stored in a secure above ground liquid storage tank for future application at Bolafron Farm when conditions are suitable and there is requirement for application. Should the ground or weather conditions mean it's unsuitable for spreading the Hafod Farm fields then contingency field storage in a lagoon store may also be required. These potential locations are detailed on the attached field maps and within the LPD1 form.
- The maximum application rate for each field will be split into multiple applications and will not exceed 50t/ha in any one application to a field.
- **Waste will not be stored or spread in combination (i.e. only one waste stream per field).**

Benefits from waste application:

- The analysis and nutrient content of the wastes are shown in the waste analysis attachments.
- The wastes are a source of nitrogen, phosphate, potassium, sulphur, sodium, calcium and organic matter. The wastes can be beneficially used to replace a proportion of bagged mineral fertiliser.
- The risk of sulphur deficiency has been estimated as 'High' based on the soil texture and expected winter rainfall (RB209). The crop requirements are approximately 40 kg SO_3/ha before each cut of grass silage. The amount of available sulphur supplied by the wastes is between 1-16 kg SO_3/ha.
- The addition of sodium will improve the palatability of grass and is important in the diet for livestock health. The crop requirements are up to 140 kg/ha Na_2O.
- The addition of organic matter to the soil will help improve soil structural stability, biological activity, water and nutrient holding capacity i.e. resistance to drought, and reduction of localised flooding, reduced leaching of nutrients, and improved workability in soil.
- The recommended maximum application rates are shown in Table 1 and have been made on a field by field basis using The Nutrient Management Guide (RB209).

Materials applied in previous 12 months:

The fields within this deployment application have received the rates (t/ha) of Volac & Dairy Partners sludge from dairy waste treatment as in 'Table 4 - Previous Land Treatment' under deployment PAN-005639 within the previous 12 months.

It's considered that the nutrients applied from these applications will have been utilised by the previous crops before the material within this deployment is applied for the next crops.

Nutrients supplied by this application:

Rates of application (t/ha)	Nitrogen kg/ha		Phosphate (P_2O_5) kg/ha		Potash (K_2O) kg/ha		Magnesium (MgO) kg/ha		Sulphur (SO_3) kg/ha	
	Total	Available	Total	Available	Total	Available	Total	Available	Total	Available
Dairy Partners liquid sludge @ 100 t/ha	10	2	2	1	9	7	2	0	9	2
Volac liquid sludge @ 63 t/ha	38	8	40	24	91	73	8	1	10	2
Volac liquid sludge @ 100t/ha	60	12	63	38	144	115	12	1	16	3
First Milk liquid sludge @ 100 t/ha	10	2	6	3	6	5	2	0	7	1
Estimated Availability	20%		60%		80%		10%		20%	

Rates of application (t/ha)	Nitrogen kg/ha		Phosphate (P_2O_5) kg/ha		Potash (K_2O) kg/ha		Magnesium (MgO) kg/ha		Sulphur (SO_3) kg/ha	
	Total	Available	Total	Available	Total	Available	Total	Available	Total	Available
TWWC Penderyn Distillery spent wash @ 15 t/ha	12	1	12	6	12	11	4	0	3	1
TWWC Penderyn Distillery spent wash @ 48 t/ha	38	4	40	20	40	36	12	1	10	2
Estimated Availability	10%		50%		90%		10%		20%	

Rates of application (t/ha)	Nitrogen kg/ha		Phosphate (P_2O_5) kg/ha		Potash (K_2O) kg/ha		Magnesium (MgO) kg/ha		Sulphur (SO_3) kg/ha	
	Total	Available	Total	Available	Total	Available	Total	Available	Total	Available
DCWW Bryngwyn WTW liquid sludge @ 250 t/ha	33	3	10	2	1	0	6	1	44	4
DCWW Capel Dewi WTW liquid sludge @ 230 t/ha	49	5	20	4	4	1	10	2	62	6
DCWW Capel Dewi WTW liquid sludge @ 250 t/ha	53	5	22	4	4	1	11	2	67	7
DCWW Strata Florida WTW liquid sludge @ 86 t/ha	47	5	40	8	1	0	3	1	78	8
DCWW Strata Florida WTW liquid sludge @ 172 t/ha	95	9	80	16	2	0	5	1	156	16
Estimated Availability	10%		20%		20%		20%		10%	

Table 1: Field, Soil & Cropping Details, Fertiliser Recommendations and Application Rates

Field Ref.	Soil Type	Spreadable Area (ha)	Previous Crop	Next Crop	Nitrogen		Phosphate			Potash			Magnesium	
					SNS	N Required (kg/ha)	P Index	P_2O_5 Required (kg/ha)	Crop Use (Offtake) (kg/ha)	K Index	K_2O Required (kg/ha)	Crop Use (Offtake) (kg/ha)	Mg Index	MgO Required (kg/ha)
Heolgwyddil 3	Medium soils	5.00	Grass 3 cuts silage	Grass grazing	Moderate	180	2	20	#14	2-	0	#12	3	0
Heolgwyddil 5	Medium soils	2.30	Grass 3 cuts silage	Grass 1 cut silage & grazing	Moderate	190	2	40	39	1	170	138	2	0
Heolgwyddil 6	Medium soils	1.70	Grass 3 cuts silage	Grass 1 cut silage & grazing	Moderate	190	2	40	39	2-	140	138	2	0
Heolgwyddil 7	Medium soils	1.70	Grass 3 cuts silage	Grass 1 cut silage & grazing	Moderate	190	2	40	39	2+	120	138	3	0
Heolgwyddil 8	Medium soils	4.40	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	2	80	80	1	320	282	2	0
Bolafron 4	Medium soils	6.00	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	4	0	80	3	90	282	3	0
Bolafron 5	Medium soils	3.00	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	4	0	80	2-	280	282	3	0
Bolafron 6	Medium soils	2.30	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	4	0	80	1	320	282	3	0
Bolafron 7	Medium soils	2.20	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	4	0	80	1	320	282	3	0
Bolafron 8	Medium soils	4.20	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	3	20	80	1	320	282	3	0
Bolafron 9	Medium soils	3.30	Grass 3 cuts silage	Grass 3 cuts silage	Moderate	250	3	20	80	1	320	282	3	0
Hafod 1741	Medium soils	2.30	Grass 3 cuts silage	Grass 1 cut silage & grazing	Moderate	190	1	70	39	3	30	138	3	0
Hafod 2455	Medium soils	3.00	Grass 3 cuts silage	Grass 1 cut silage & grazing	Moderate	190	2	40	39	3	30	138	4	0
Hafod 4067	Medium soils	3.60	Grass 3 cuts silage	Grass 1 cut silage & grazing	Moderate	190	2	40	39	3	30	138	4	0
TOTAL		**45.00**												

Nutrient requirements based on:

Grass 3 cuts silage (23t FW/ha at 1st cut, 15t FW/ha at 2nd cut, 9t FW/ha at 3rd cut), silage 25% DM, totalling 1.7kg/t P2O5 and 6.0kg/t K2O removed in offtake

Grass 1 cut silage (23t FW/ha at 1st cut), silage 25% DM, totalling 1.7kg/t P2O5 and 6.0kg/t K2O removed in offtake + grazing

Grass grazing 50t/ha FW/ha over season, fresh grass (15-20% DM), totalling 1.4kg/t P2O5 and 4.8kg/t K2O removed in offtake

For grazing this calculation assumes approximately 80% of the P2O5 and 95% of the K2O is recycled in field by the animal through its dung and urine

Expected DM yields of grass 9-12t/ha, good growth class

Field Ref.	Dairy Partners, Newcastle Emlyn - liquid sludge					
	N Applied - Waste (kg/ha)	P_2O_5 Applied - Waste (kg/ha)	K_2O Applied - Waste (kg/ha)	MgO Applied - Waste (kg/ha)	Application Rate (t/ha)	Total Tonnes
Heolgwyddil 3	**2	*2	*9	*2	100	500
Heolgwyddil 5	**2	*2	**7	*2	100	230
Heolgwyddil 6	**2	*2	*9	*2	100	170
Heolgwyddil 7	**2	*2	*9	*2	100	170
Heolgwyddil 8	**2	*2	**7	*2	100	440
Bolafron 4	**2	*2	*9	*2	100	600
Bolafron 5	**2	*2	*9	*2	100	300
Bolafron 6	**2	*2	**7	*2	100	230
Bolafron 7	**2	*2	**7	*2	100	220
Bolafron 8	**2	*2	**7	*2	100	420
Bolafron 9	**2	*2	**7	*2	100	330
Hafod 1741	**2	**1	*9	*2	100	230
Hafod 2455	**2	*2	*9	*2	100	300
Hafod 4067	**2	*2	*9	*2	100	360
TOTAL						**4500**

Field Ref.	Volac, Felinfach - liquid sludge					
	N Applied - Waste (kg/ha)	P_2O_5 Applied - Waste (kg/ha)	K_2O Applied - Waste (kg/ha)	MgO Applied - Waste (kg/ha)	Application Rate (t/ha)	Total Tonnes
Heolgwyddil 3						
Heolgwyddil 5	**8	*40	**73	*8	63	145
Heolgwyddil 6	**8	*40	*91	*8	63	107
Heolgwyddil 7	**8	*40	*91	*8	63	107
Heolgwyddil 8	**12	*63	**115	*12	100	440
Bolafron 4	**12	*63	*144	*12	100	600
Bolafron 5	**12	*63	*144	*12	100	300
Bolafron 6	**12	*63	**115	*12	100	230
Bolafron 7	**12	*63	**115	*12	100	220
Bolafron 8	**12	*63	**115	*12	100	420
Bolafron 9	**12	*63	**115	*12	100	330
Hafod 1741	**8	**24	*91	*8	63	145
Hafod 2455	**8	*40	*91	*8	63	189
Hafod 4067	**8	*40	*91	*8	63	227
TOTAL						**3460**

Field Ref.	First Milk, Haverfordwest - liquid sludge					
	N Applied - Waste (kg/ha)	P_2O_5 Applied - Waste (kg/ha)	K_2O Applied - Waste (kg/ha)	MgO Applied - Waste (kg/ha)	Application Rate (t/ha)	Total Tonnes
Heolgwyddil 3	**2	*6	*6	*2	100	500
Heolgwyddil 5	**2	*6	**5	*2	100	230
Heolgwyddil 6	**2	*6	*6	*2	100	170
Heolgwyddil 7	**2	*6	*6	*2	100	170
Heolgwyddil 8	**2	*6	**5	*2	100	440
Bolafron 4	**2	*6	*6	*2	100	600
Bolafron 5	**2	*6	*6	*2	100	300
Bolafron 6	**2	*6	**5	*2	100	230
Bolafron 7	**2	*6	**5	*2	100	220
Bolafron 8	**2	*6	**5	*2	100	420
Bolafron 9	**2	*6	**5	*2	100	330
Hafod 1741	**2	**3	*6	*2	100	230
Hafod 2455	**2	*6	*6	*2	100	300
Hafod 4067	**2	*6	*6	*2	100	360
TOTAL						**4500**

Waste will NOT be spread or stored in combination (i.e. one waste stream per field)

* Total nutrient content of waste used on P, K or Mg index 2 or above

** Available nutrient content of waste used on P, K or Mg index 0 or 1

The assumed availability of total nutrients in the Dairy Partners, Volac & First Milk liquid sludge are N 20%, P_2O_5 60%, K_2O 80%, MgO 10%, SO_3 20%

Table 1: Field, Soil & Cropping Details, Fertiliser Recommendations and Application Rates (Continued)

Field Ref.	Dwr Cymru Welsh Water, Bryn Gwyn WTW - liquid sludge					
	N Applied - Waste (kg/ha)	P_2O_5 Applied - Waste (kg/ha)	K_2O Applied - Waste (kg/ha)	MgO Applied - Waste (kg/ha)	Application Rate (t/ha)	Total Tonnes
Heolgwyddil 3	**3	*10	*1	*6	250	1250
Heolgwyddil 5	**3	*10	**0	*6	250	575
Heolgwyddil 6	**3	*10	*1	*6	250	425
Heolgwyddil 7	**3	*10	*1	*6	250	425
Heolgwyddil 8	**3	*10	**0	*6	250	1100
Bolafron 4						
Bolafron 5	**3	*10	*1	*6	250	750
Bolafron 6	**3	*10	**0	*6	250	575
Bolafron 7						
Bolafron 8	**3	*10	**0	*6	250	1050
Bolafron 9	**3	*10	**0	*6	250	825
Hafod 1741	**3	**2	*1	*6	250	575
Hafod 2455						
Hafod 4067						
TOTAL						**7550**

Field Ref.	Dwr Cymru Welsh Water, Capel Dewi WTW - liquid sludge					
	N Applied - Waste (kg/ha)	P_2O_5 Applied - Waste (kg/ha)	K_2O Applied - Waste (kg/ha)	MgO Applied - Waste (kg/ha)	Application Rate (t/ha)	Total Tonnes
Heolgwyddil 3	**5	*20	*4	*10	230	1150
Heolgwyddil 5	**5	*22	**1	*11	250	575
Heolgwyddil 6	**5	*22	*4	*11	250	425
Heolgwyddil 7	**5	*22	*4	*11	250	425
Heolgwyddil 8	**5	*22	**1	*11	250	1100
Bolafron 4						
Bolafron 5	**5	*22	*4	*11	250	750
Bolafron 6	**5	*22	**1	*11	250	575
Bolafron 7						
Bolafron 8	**5	*22	**1	*11	250	1050
Bolafron 9	**5	*22	**1	*11	250	825
Hafod 1741	**5	**4	*4	*11	250	575
Hafod 2455						
Hafod 4067						
TOTAL						**7450**

Field Ref.	Dwr Cymru Welsh Water, Strata Florida WTW - liquid sludge					
	N Applied - Waste (kg/ha)	P_2O_5 Applied - Waste (kg/ha)	K_2O Applied - Waste (kg/ha)	MgO Applied - Waste (kg/ha)	Application Rate (t/ha)	Total Tonnes
Heolgwyddil 3						
Heolgwyddil 5						
Heolgwyddil 6						
Heolgwyddil 7	**5	*40	*1	*3	86	146
Heolgwyddil 8	**9	*80	**0	*5	172	757
Bolafron 4						
Bolafron 5						
Bolafron 6						
Bolafron 7						
Bolafron 8						
Bolafron 9						
Hafod 1741						
Hafod 2455						
Hafod 4067						
TOTAL						**903**

Field Ref.	The Welsh Whisky Co., Penderyn Distillery - spent wash					
	N Applied - Waste (kg/ha)	P_2O_5 Applied - Waste (kg/ha)	K_2O Applied - Waste (kg/ha)	MgO Applied - Waste (kg/ha)	Application Rate (t/ha)	Total Tonnes
Heolgwyddil 3	**1	*12	*12	*4	15	75
Heolgwyddil 5	**4	*40	**36	*12	48	110
Heolgwyddil 6	**4	*40	*40	*12	48	82
Heolgwyddil 7	**4	*40	*40	*12	48	82
Heolgwyddil 8	**4	*40	**36	*12	48	211
Bolafron 4						
Bolafron 5	**4	*40	*40	*12	48	144
Bolafron 6	**4	*40	**36	*12	48	110
Bolafron 7						
Bolafron 8	**4	*40	**36	*12	48	202
Bolafron 9	**4	*40	**36	*12	48	158
Hafod 1741	**4	**20	*40	*12	48	110
Hafod 2455						
Hafod 4067						
TOTAL						**1284**

Waste will NOT be spread or stored in combination (i.e. one waste stream per field)

* Total nutrient content of waste used on P, K or Mg index 2 or above
** Available nutrient content of waste used on P, K or Mg index 0 or 1
The assumed availability of total nutrients in the DCWW liquid WTW sludges are N 10%, P_2O_5 20%, K_2O 20%, MgO 20%, SO_3 10%
The assumed availability of total nutrients in the TWWC Penderyn Distillery spent wash are N 10%, P_2O_5 50%, K_2O 90%, MgO 10%, SO_3 20%

Potential negative impacts from this application and mitigation measures planned:

Waste Composition & Receiving Soils

- Potentially Toxic Elements: The supplied concentrations at the proposed application rates are lower than the maximum permissible levels detailed in the Sludge (Use in Agriculture) Regulations for biosolids applied to agricultural land, which is believed to be a suitable comparison for wastes applied to agricultural land.
- Physical contaminants: The wastes are produced by managed processes. The wastes do not contain physical contaminants.
- Waste pH: The Penderyn Distillery spent wash, Dairy Partners liquid sludge, Volac liquid sludge & First Milk liquid sludge are acidic in nature. The acidic nature is associated with the presence of organic acids. Such wastes are routinely applied to agricultural land without adverse effects on crop health, or significant decreases in soil pH. Use of the Penderyn Distillery, Dairy Partners & Volac waste streams will be carefully monitored, through low rates of individual application across the growing season and close monitoring of crop health, for any adverse signs resulting from acidity around roots. The Penderyn Distillery spent wash is only to be spread on fields with a soil pH of 5.5 or above.
- Dwr Cymru Welsh Water Bryngwyn & Capel Dewi water treatment works use iron based coagulants to condition the water. The Bryngwyn & Capel Dewi WTW liquid sludges are to be spread only on fields with a soil pH of 5.5 or above.
- Dwr Cymru Welsh Water Strata Florida water treatment works uses aluminium based coagulants to condition the water. The Strata Florida WTW liquid sludge is to be spread only on fields with a soil pH of 6.0 or above.
- Receiving soils are below the limits set for grassland soils under the Sludge (Use in Agriculture) Regulations.

Operations

The fields in this deployment have been designated as 'medium risk' following site checks on the proximity to surrounding protected areas (e.g. SSSIs) and groundwater source protection zones. On the basis of 'medium risk' the proposed operation will be subject to the generic risk assessment for deploying mobile plant under a SR2010 No.4. The potential risks associated with the application of waste on this deployment have been identified as;

- Potential run-off after application: The wastes will be applied following the Codes of Good Agricultural Practice. The maximum application rate for each field will be split into multiple applications throughout the growing season and will not exceed 50t/ha in any one application to a field.
- Odour may potentially be emitted from the spreading of waste – to mitigate odour generation all handling of waste will be done in accordance to current regulations and relevant mitigation strategies will be adopted e.g. waste will be sub-surface injected for the grass fields or soil incorporated for the arable fields. If any odour complaints are received, further odour mitigation methods will be implemented.
- Spillages: all spillages will be reported immediately to NRW.
- No waste will be spread within 10m of any ditch, pond or surface water, within 50m of any spring, well, borehole, or reservoir that supplies water for human consumption or farm dairies.
- Waste will be spread on delivery (or securely stored as stated above). Operators will aim to empty spreading equipment before the end of each working day to avoid overnight storage of waste in machinery.
- Regular servicing of all machinery is conducted and spreading equipment is annually calibrated. To prevent waste being held in faulty machinery replacement spreading equipment will be available.
- Spreading machinery will travel over the field in a direction which will most easily allow the machinery to turn within the boundaries of the field. Any spreading equipment will be turned off and/or lifted out of the soil prior to turning at the end of each run.
- Machinery turns will be routed to avoid rutting and wheel slip. The turns will not be executed on any buffer strips.
- There will be sufficient trained staff available to ensure that the operation continues throughout operational hours (i.e. there will be sufficient cover for illness, holiday etc.).
- Consideration for the public and local residential receptors will be taken before and during application.

Signed: David Powell	**Date:** 19/06/2020

DAIRY PARTNERS

Analysis of Liquid Waste

Report No: 65692
Date: 13/08/19

Application rate (t/ha)	**100.0**
Application rate (t/acre)	**40**
pH	**5.32**
Dry solids (%)	**0.36**
Organic Matter(%)	**0.12**

NUTRIENT CONTENT

			Total		Readily Available	
TOTALS	**result**	**units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.01	%	0.1	10	0.0	2
Ammonium-N	50	mg/kg	0.1	5		
Phosphorus (P)	10.5	mg/kg	0.0	1		
Phosphate (P_2O_5)			0.024	2	0.0	1
Potassium (K)	77.8	mg/kg	0.1	8		
Potash (K_2O)			0.1	9	0.1	7
Magnesium (Mg)	10	mg/kg	0.0	1		
Magnesium (MgO)			0.0	2	0.0	0
Sulphur (S)	35.4	mg/kg	0.0	4		
Sulphur (SO_3)			0.1	9	0.0	2

POTENTIALLY TOXIC ELEMENTS

			Rate		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	0.50	mg/kg	0.50	0.05	15.00
Copper	0.20	mg/kg	0.20	0.02	7.50
Nickel	0.20	mg/kg	0.20	0.02	3.00
Lead	0.50	mg/kg	0.50	0.05	15.00
Cadmium	0.01	mg/kg	0.01	0.00	0.15
Chromium	0.20	mg/kg	0.20	0.02	15.00
Mercury	0.05	mg/kg	0.05	0.01	0.10

All results expressed on sample as received. The nitrogen, magnesium, zinc, copper, nickel, lead, cadmium, chromium and mercury concentrations are less than the minimum level of detection, consequently, the calculated values will be less than those shown

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DAIRY PARTNERS LTD

EFFLUENT

EFFLUENT

Sample Reference :

DAIRY PARTNERS EFF

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	65692
Sample Number	85558

Date Received	13-AUG-2019
Date Reported	21-AUG-2019

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	0.360	%
E Coli [Fresh]	31000	cfu/g
Conductivity 1:6	707	uS/cm
Total Kjeldahl Nitrogen	<0.01	% w/w
Nitrate Nitrogen	54.0	mg/kg
Ammonium Nitrogen	<50	mg/kg
Total Phosphorus (P)	10.5	mg/kg
Total Potassium (K)	77.8	mg/kg
Total Magnesium (Mg)	<10	mg/kg
Total Copper (Cu)	<0.2	mg/kg

Released by ..... *Myles Nicholson* ..... Date ..... *21/08/19* .....

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

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Sample Reference :

DAIRY PARTNERS EFF

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	65692
Sample Number	85558

Date Received	13-AUG-2019
Date Reported	21-AUG-2019

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Zinc (Zn)	<0.5	mg/kg
Total Sulphur (S)	35.4	mg/kg
Total Calcium (Ca)	41.1	mg/kg
Total Lead (Pb)	<0.5	mg/kg
Total Cadmium (Cd)	<0.01	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	<0.2	mg/kg
Total Chromium (Cr)	<0.2	mg/kg
Total Sodium (Na)	850	mg/kg
pH 1:6 [Fresh]	5.32	

Released by ..... *Myles Nicholson* ..... Date ..... *21/08/19* .....

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

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Sample Reference :

DAIRY PARTNERS EFF

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	65692
Sample Number	85558

Date Received	13-AUG-2019
Date Reported	21-AUG-2019

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Organic Matter LOI	0.12	% w/w
Coliforms [fresh]	440000	cfu/g
Oils,Fats and Grease	<200	mg/kg
Salmonella spp [fresh]	Negative	in 25g
EC [Neat]	3789	uS/cm

Released by *Myles Nicholson* Date *21/08/19*

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VOLAC, FELINFACH

Analysis of Liquid Waste

Report No: 99545
Date: 28/05/2020

Application rate (t/ha)	**63.0**
Application rate (t/acre)	**25.5**
pH	**6.47**
Dry solids (%)	**1.04**
Organic Matter(%)	**0.36**

NUTRIENT CONTENT

			Total		Readily Available	
TOTALS	**result**	**units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.06	%	0.6	38	0.1	8
Ammonium-N	519	mg/kg	0.5	33		
Phosphorus (P)	275	mg/kg	0.3	17		
Phosphate (P_2O_5)			0.6	40	0.4	24
Potassium (K)	1199	mg/kg	1.2	76		
Potash (K_2O)			1.4	91	1.2	73
Magnesium (Mg)	73.4	mg/kg	0.1	5		
Magnesium (MgO)			0.1	8	0.0	1
Sulphur (S)	62	mg/kg	0.1	4		
Sulphur (SO_3)			0.2	10	0.0	2

POTENTIALLY TOXIC ELEMENTS

			Rate		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	3.33	mg/kg	3.33	0.21	15.00
Copper	0.20	mg/kg	0.20	0.01	7.50
Nickel	0.20	mg/kg	0.20	0.01	3.00
Lead	0.50	mg/kg	0.50	0.03	15.00
Cadmium	0.01	mg/kg	0.01	0.00	0.15
Chromium	0.20	mg/kg	0.20	0.01	15.00
Mercury	0.05	mg/kg	0.05	0.00	0.10

All results expressed on sample as received. The copper, nickel, lead, cadmium, chromium and mercury concentrations are less than the minimum level of detection, consequently, the calculated values will be less than those shown

VOLAC, FELINFACH

Analysis of Liquid Waste

Report No: 99545
Date: 28/05/2020

Application rate (t/ha)	**100.0**
Application rate (t/acre)	**40.5**
pH	**6.47**
Dry solids (%)	**1.04**
Organic Matter(%)	**0.36**

NUTRIENT CONTENT

			Total		Readily Available	
TOTALS	**result**	**units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.06	%	0.6	60	0.1	12
Ammonium-N	519	mg/kg	0.5	52		
Phosphorus (P)	275	mg/kg	0.3	28		
Phosphate (P_2O_5)			0.6	63	0.4	38
Potassium (K)	1199	mg/kg	1.2	120		
Potash (K_2O)			1.4	144	1.2	115
Magnesium (Mg)	73.4	mg/kg	0.1	7		
Magnesium (MgO)			0.1	12	0.0	1
Sulphur (S)	62	mg/kg	0.1	6		
Sulphur (SO_3)			0.2	16	0.0	3

POTENTIALLY TOXIC ELEMENTS

			Rate		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	3.33	mg/kg	3.33	0.33	15.00
Copper	0.20	mg/kg	0.20	0.02	7.50
Nickel	0.20	mg/kg	0.20	0.02	3.00
Lead	0.50	mg/kg	0.50	0.05	15.00
Cadmium	0.01	mg/kg	0.01	0.00	0.15
Chromium	0.20	mg/kg	0.20	0.02	15.00
Mercury	0.05	mg/kg	0.05	0.01	0.10

All results expressed on sample as received. The copper, nickel, lead, cadmium, chromium and mercury concentrations are less than the minimum level of detection, consequently, the calculated values will be less than those shown

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V850

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STEPSIDE AGRI

EFFLUENT

EFFLUENT

Sample Reference :

VOLAC-EFFLUENT

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	99545
Sample Number	96050

Date Received	28-MAY-2020
Date Reported	04-JUN-2020

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	1.04	%
E Coli [Fresh]	370	cfu/g
Conductivity 1:6	2030	uS/cm
Total Kjeldahl Nitrogen	0.06	% w/w
Nitrate Nitrogen	<10	mg/kg
Ammonium Nitrogen	519	mg/kg
Total Phosphorus (P)	275	mg/kg
Total Potassium (K)	1199	mg/kg
Total Magnesium (Mg)	73.4	mg/kg
Total Copper (Cu)	<0.2	mg/kg

Released by ..... *Myles Nicholson* ..... Date ..... *04/06/20* .....

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STEPSIDE AGRI

EFFLUENT

EFFLUENT

Sample Reference :

VOLAC-EFFLUENT

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	99545
Sample Number	96050

Date Received	28-MAY-2020
Date Reported	04-JUN-2020

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Zinc (Zn)	3.33	mg/kg
Total Sulphur (S)	62.0	mg/kg
Total Calcium (Ca)	373	mg/kg
Total Lead (Pb)	<0.5	mg/kg
Total Cadmium (Cd)	<0.01	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	<0.2	mg/kg
Total Chromium (Cr)	<0.2	mg/kg
Total Sodium (Na)	969	mg/kg
pH 1:6 [Fresh]	6.47	

Released by ..... *Myles Nicholson* ..... Date ..... *04/06/20* .....

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EFFLUENT

EFFLUENT

Sample Reference :

VOLAC-EFFLUENT

Sample Matrix : EFFLUENT

Laboratory References	
Report Number	99545
Sample Number	96050

Date Received	28-MAY-2020
Date Reported	04-JUN-2020

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Organic Matter LOI	0.36	% w/w
Coliforms [fresh]	1500	cfu/g
Oils,Fats and Grease	1080	mg/kg
Salmonella spp [fresh]	Negative	in 25g
EC [Neat]	10470	uS/cm

Released by *Myles Nicholson* Date *04/06/20*

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FIRST MILK HAVERFORDWEST

Analysis of Sludge

Lab Ref: 83457
Date: 15/01/2020

Application rate (t/ha)	**100.0**
Application rate (t/acre)	**40**
pH	**8.76**
Dry solids (%)	**0.43**

NUTRIENT CONTENT

			Total		Readily Available	
TOTALS	**result**	**units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.01	%	0.1	10	0.0	2
Ammonium-N	25	mg/kg	0.0	3		
Phosphorus (P)	24.1	mg/kg	0.0	2		
Phosphate (P_2O_5)			0.1	6	0.0	3
Potassium (K)	48.4	mg/kg	0.0	5		
Potash (K_2O)			0.1	6	0.0	5
Magnesium (Mg)	10	mg/kg	0.0	1		
Magnesium (MgO)			0.0	2	0.0	0
Sulphur (S)	26.4	mg/kg	0.0	3		
Sulphur (SO_3)			0.1	7	0.0	1

POTENTIALLY TOXIC ELEMENTS

			Rate		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	0.5	mg/kg	0.50	0.05	15.00
Copper	0.20	mg/kg	0.2	0.02	7.50
Nickel	0.20	mg/kg	0.2	0.02	3.00
Lead	0.50	mg/kg	0.5	0.05	15.00
Cadmium	0.01	mg/kg	0.01	0.00	0.15
Chromium	0.20	mg/kg	0.2	0.02	15.00
Mercury	0.05	mg/kg	0.05	0.01	0.10

All results expressed on sample as received. The total nitrogen, magnesium, zinc, lead, copper, cadmium, nickel, chromium and mercury concentrations are less than the minimum level of detection, consequently, the calculated values will be less than those shown

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FIRST MILK
HAVERFORDWEST

MILK EFFLUENT

MILK EFFLUENT

Sample Reference :

MILK EFFLUENT 1

Sample Matrix : MILK EFFLUENT

Laboratory References	
Report Number	83457
Sample Number	91030

Date Received	15-JAN-2020
Date Reported	27-JAN-2020

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	0.430	%
E Coli [Fresh]	<10	cfu/g
Conductivity 1:6	671	uS/cm
Total Kjeldahl Nitrogen	<0.01	% w/w
Nitrate Nitrogen	<10	mg/kg
Ammonium Nitrogen	<25	mg/kg
Total Phosphorus (P)	24.1	mg/kg
Total Potassium (K)	48.4	mg/kg
Total Magnesium (Mg)	<10	mg/kg
Total Copper (Cu)	<0.2	mg/kg

Released by *Myles Nicholson* Date *27/01/20*

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FIRST MILK
HAVERFORDWEST

MILK EFFLUENT

MILK EFFLUENT

Sample Reference :

MILK EFFLUENT 1

Sample Matrix : MILK EFFLUENT

Laboratory References	
Report Number	83457
Sample Number	91030

Date Received	15-JAN-2020
Date Reported	27-JAN-2020

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Zinc (Zn)	<0.5	mg/kg
Total Sulphur (S)	26.4	mg/kg
Total Calcium (Ca)	40.3	mg/kg
Total Lead (Pb)	<0.5	mg/kg
Total Cadmium (Cd)	<0.01	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	<0.2	mg/kg
Total Chromium (Cr)	<0.2	mg/kg
Total Sodium (Na)	891	mg/kg
pH 1:6 [Fresh]	8.76	

Released by ..... *Myles Nicholson* ..... Date ..... *27/01/20* .....

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FIRST MILK
HAVERFORDWEST

MILK EFFLUENT

MILK EFFLUENT

Sample Reference :

MILK EFFLUENT 1

Sample Matrix : MILK EFFLUENT

Laboratory References	
Report Number	83457
Sample Number	91030

Date Received	15-JAN-2020
Date Reported	27-JAN-2020

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Salmonella spp [fresh]	Negative	in 25g

Released by *Myles Nicholson* Date *27/01/20*

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DWR CYMRU WELSH WATER - BRYNGWYN WTW

Analysis of water treatment sludge

Sampling Point No: 79131
Date: 09/01/2020

Application rate (t/ha)	**250.0**
Application rate (t/acre)	**101.2**
pH	**6.00**
Dry solids (%)	**2.43**
Organic Matter(%)	**33.7**

NUTRIENT CONTENT

				Total		Readily Available	
	Dry Wt result	**Wet Wt result**	**Units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.55	0.01	%	0.1	33	0.0	3
Ammonium N	250	6.08	mg/kg	0.0	2		
Phosphorus (P)	697	16.94	mg/kg	0.0	4		
Phosphate (P_2O_5)		0.00		0.0	10	0.0	2
Potassium (K)	136	3.30	mg/kg	0.0	1		
Potash (K_2O)		0.00		0.0	1	0.0	0
Magnesium (Mg)	551	13.39	mg/kg	0.0	3		
Magnesium (MgO)		0.00		0.0	6	0.0	1
Sulphur (S)	2920	70.96	mg/kg	0.1	18		
Sulphur (SO_3)		0.00		0.2	44	0.0	4

POTENTIALLY TOXIC ELEMENTS

				Rate		Limit	% of Annual Addition Limit
	Dry Wt result	**Wet Wt result**	**Units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**	
Zinc	121	2.94	mg/kg	2.94	0.74	15.00	5%
Copper	4.77	0.12	mg/kg	0.12	0.03	7.50	0%
Nickel	3.54	0.09	mg/kg	0.09	0.02	3.00	1%
Lead	5.34	0.13	mg/kg	0.13	0.03	15.00	0%
Cadmium	0.38	0.01	mg/kg	0.01	0.00	0.15	2%
Chromium	10.4	0.25	mg/kg	0.25	0.06	15.00	0%
Arsenic	24.7	0.60	mg/kg	0.60	0.15	0.70	21%
Mercury	0.83	0.02	mg/kg	0.02	0.01	0.10	5%
Other Elements							
Iron	401000	9744.30	mg/kg	9744.30	2436		
Aluminium	1980	48.11	mg/kg	48.11	12		

Dŵr Cymru
Welsh Water

Sample Analysis Report

Sampling Point No -	79131	**Location -**	BRYNGWYN WTW SLUDGE TANKERING
Date Sampled -	09-Jan-20	**Time Taken -**	15:30
Originator -	SEWAGE	**Purpose -**	EQO/DIRECTIVE COMPLIANCE
Laboratory -	GLASLYN	**Lab Ref No -**	S 6591307
Sampler -	EXTA	**No Results -**	20
Type -			

Sample Results

Code	Determinand Name	Units		Result	Limit
238	Magnesium	MG/KG		551	
288	ALUMINIUM (DRY WT)	MG/KG		1980	
357	ARSENIC (DRY WT)	MG/KG	LT	24.7	
4620	pH	PH UNITS		6	
7774	WTW MERCURY TOTAL	MG/KG	LT	0.83	
8241	LOSS ON IGNITION	%		33.7	
9233	Ammoniacal nitrogen	MG/KG	LT	250	
9234	Sulphur	MG/KG		2920	
9271	Cadmium	MG/KG	LT	0.38	
9272	CHROMIUM TOTAL	MG/KG		10.4	
9273	Copper	MG/KG	LT	4.77	
9275	Nickel	MG/KG	LT	3.54	
9276	LEAD TOTAL	MG/KG	LT	5.34	
9277	ZINC TOTAL	MG/KG		121	
9278	IRON TOTAL	MG/KG		401000	
9281	% Dry solids	%		2.43	
9282	% Minerals	%		66.3	
9283	% K (dry weight)	%		0.0136	
9284	% P (dry weight)	%		0.0697	
9285	% N (dry weight)	%		0.55	

LT - Less Than **GT - Greater Than**

Comments -

Signed -

08 June 2020

DWR CYMRU WELSH WATER - CAPEL DEWI WTW

Analysis of water treatment sludge

Sampling Point No: 122055
Date: 09/01/2020

Application rate (t/ha)	**230.0**
Application rate (t/acre)	**93.1**
pH	**6.20**
Dry solids (%)	**2.43**
Organic Matter(%)	**35.3**

NUTRIENT CONTENT

				Total		Readily Available	
	Dry Wt result	**Wet Wt result**	**Units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.88	0.02	%	0.2	49	0.0	5
Ammonium N	251	6.10	mg/kg	0.0	1		
Phosphorus (P)	1580	38.39	mg/kg	0.0	9		
Phosphate (P_2O_5)		0.00		0.1	20	0.0	4
Potassium (K)	579	14.07	mg/kg	0.0	3		
Potash (K_2O)		0.00		0.0	4	0.0	1
Magnesium (Mg)	1060	25.76	mg/kg	0.0	6		
Magnesium (MgO)		0.00		0.0	10	0.0	2
Sulphur (S)	4430	107.65	mg/kg	0.1	25		
Sulphur (SO_3)		0.00		0.3	62	0.0	6

POTENTIALLY TOXIC ELEMENTS

				Rate		Limit	% of Annual Addition Limit
	Dry Wt result	**Wet Wt result**	**Units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**	
Zinc	138	3.35	mg/kg	3.35	0.77	15.00	5%
Copper	14.4	0.35	mg/kg	0.35	0.08	7.50	1%
Nickel	10.2	0.25	mg/kg	0.25	0.06	3.00	2%
Lead	10	0.24	mg/kg	0.24	0.06	15.00	0%
Cadmium	0.38	0.01	mg/kg	0.01	0.00	0.15	1%
Chromium	14.4	0.35	mg/kg	0.35	0.08	15.00	1%
Arsenic	17.2	0.42	mg/kg	0.42	0.10	0.70	14%
Mercury	0.82	0.02	mg/kg	0.02	0.00	0.10	5%
Other Elements							
Iron	324000	7873.20	mg/kg	7873.20	1811		
Aluminium	45300	1100.79	mg/kg	1100.79	253		

DWR CYMRU WELSH WATER - CAPEL DEWI WTW

Analysis of water treatment sludge

Sampling Point No: 122055
Date: 09/01/2020

Application rate (t/ha)	**250.0**
Application rate (t/acre)	**101.2**
pH	**6.20**
Dry solids (%)	**2.43**
Organic Matter(%)	**35.3**

NUTRIENT CONTENT

				Total		Readily Available	
	Dry Wt result	**Wet Wt result**	**Units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.88	0.02	%	0.2	53	0.0	5
Ammonium N	251	6.10	mg/kg	0.0	2		
Phosphorus (P)	1580	38.39	mg/kg	0.0	10		
Phosphate (P_2O_5)		0.00		0.1	22	0.0	4
Potassium (K)	579	14.07	mg/kg	0.0	4		
Potash (K_2O)		0.00		0.0	4	0.0	1
Magnesium (Mg)	1060	25.76	mg/kg	0.0	6		
Magnesium (MgO)		0.00		0.0	11	0.0	2
Sulphur (S)	4430	107.65	mg/kg	0.1	27		
Sulphur (SO_3)		0.00		0.3	67	0.0	7

POTENTIALLY TOXIC ELEMENTS

				Rate		Limit	% of Annual Addition Limit
	Dry Wt result	**Wet Wt result**	**Units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**	
Zinc	138	3.35	mg/kg	3.35	0.84	15.00	6%
Copper	14.4	0.35	mg/kg	0.35	0.09	7.50	1%
Nickel	10.2	0.25	mg/kg	0.25	0.06	3.00	2%
Lead	10	0.24	mg/kg	0.24	0.06	15.00	0%
Cadmium	0.38	0.01	mg/kg	0.01	0.00	0.15	2%
Chromium	14.4	0.35	mg/kg	0.35	0.09	15.00	1%
Arsenic	17.2	0.42	mg/kg	0.42	0.10	0.70	15%
Mercury	0.82	0.02	mg/kg	0.02	0.00	0.10	5%
Other Elements							
Iron	324000	7873.20	mg/kg	7873.20	1968		
Aluminium	45300	1100.79	mg/kg	1100.79	275		

Sample Analysis Report

Sampling Point No -	122055	**Location -**	Capel Dewi WTW Sludge Tankering Point
Date Sampled -	09-Jan-20	**Time Taken -**	15:28
Originator -	SEWAGE	**Purpose -**	EQO/DIRECTIVE COMPLIANCE
Laboratory -	GLASLYN	**Lab Ref No -**	S 6591305
Sampler -	EXTA	**No Results -**	20
Type -			

Sample Results

Code	Determinand Name	Units		Result	Limit
238	Magnesium	MG/KG		1060	
288	ALUMINIUM (DRY WT)	MG/KG		45300	
357	ARSENIC (DRY WT)	MG/KG		17.2	
4620	pH	PH UNITS		6.2	
7774	WTW MERCURY TOTAL	MG/KG	LT	0.82	
8241	LOSS ON IGNITION	%		35.3	
9233	Ammoniacal nitrogen	MG/KG	LT	251	
9234	Sulphur	MG/KG		4430	
9271	Cadmium	MG/KG	LT	0.38	
9272	CHROMIUM TOTAL	MG/KG		14.4	
9273	Copper	MG/KG		14.4	
9275	Nickel	MG/KG		10.2	
9276	LEAD TOTAL	MG/KG		10	
9277	ZINC TOTAL	MG/KG		138	
9278	IRON TOTAL	MG/KG		324000	
9281	% Dry solids	%		2.43	
9282	% Minerals	%		64.7	
9283	% K (dry weight)	%		0.0579	
9284	% P (dry weight)	%		0.158	
9285	% N (dry weight)	%		0.88	

LT - Less Than **GT - Greater Than**

Comments -

Signed -

08 June 2020

DWR CYMRU WELSH WATER - STRATA FLORIDA WTW

Analysis of water treatment sludge

Sampling Point No: 100519
Date: 04/02/2020

Application rate (t/ha)	**86.0**
Application rate (t/acre)	**34.8**
pH	**6.20**
Dry solids (%)	**7.23**
Organic Matter(%)	**60.9**

NUTRIENT CONTENT

				Total		Readily Available	
	Dry Wt result	**Wet Wt result**	**Units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.763	0.06	%	0.6	47	0.1	5
Ammonium N	271	19.59	mg/kg	0.0	2		
Phosphorus (P)	2800	202.44	mg/kg	0.2	17		
Phosphate (P_2O_5)		0.00		0.5	40	0.1	8
Potassium (K)	120	8.68	mg/kg	0.0	1		
Potash (K_2O)		0.00		0.0	1	0.0	0
Magnesium (Mg)	253	18.29	mg/kg	0.0	2		
Magnesium (MgO)		0.00		0.0	3	0.0	1
Sulphur (S)	5020	362.95	mg/kg	0.4	31		
Sulphur (SO_3)		0.00		0.9	78	0.1	8

POTENTIALLY TOXIC ELEMENTS

				Rate		Limit	% of Annual Addition Limit
	Dry Wt result	**Wet Wt result**	**Units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**	
Zinc	100	7.23	mg/kg	7.23	0.62	15.00	4%
Copper	21.7	1.57	mg/kg	1.57	0.13	7.50	2%
Nickel	9.3	0.67	mg/kg	0.67	0.06	3.00	2%
Lead	58.3	4.22	mg/kg	4.22	0.36	15.00	2%
Cadmium	0.44	0.03	mg/kg	0.03	0.00	0.15	2%
Chromium	7.81	0.56	mg/kg	0.56	0.05	15.00	0%
Arsenic	39.5	2.86	mg/kg	2.86	0.25	0.70	35%
Mercury	0.28	0.02	mg/kg	0.02	0.00	0.10	2%
Other Elements							
Iron	24200	1749.66	mg/kg	1749.66	150		
Aluminium	134000	9688.20	mg/kg	9688.20	833		

DWR CYMRU WELSH WATER - STRATA FLORIDA WTW

Analysis of water treatment sludge

Sampling Point No: 100519
Date: 04/02/2020

Application rate (t/ha)	**172.0**
Application rate (t/acre)	**69.6**
pH	**6.20**
Dry solids (%)	**7.23**
Organic Matter(%)	**60.9**

NUTRIENT CONTENT

				Total		Readily Available	
	Dry Wt result	**Wet Wt result**	**Units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.763	0.06	%	0.6	95	0.1	9
Ammonium N	271	19.59	mg/kg	0.0	3		
Phosphorus (P)	2800	202.44	mg/kg	0.2	35		
Phosphate (P_2O_5)		0.00		0.5	80	0.1	16
Potassium (K)	120	8.68	mg/kg	0.0	1		
Potash (K_2O)		0.00		0.0	2	0.0	0
Magnesium (Mg)	253	18.29	mg/kg	0.0	3		
Magnesium (MgO)		0.00		0.0	5	0.0	1
Sulphur (S)	5020	362.95	mg/kg	0.4	62		
Sulphur (SO_3)		0.00		0.9	156	0.1	16

POTENTIALLY TOXIC ELEMENTS

				Rate		Limit	% of Annual Addition Limit
	Dry Wt result	**Wet Wt result**	**Units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**	
Zinc	100	7.23	mg/kg	7.23	1.24	15.00	8%
Copper	21.7	1.57	mg/kg	1.57	0.27	7.50	4%
Nickel	9.3	0.67	mg/kg	0.67	0.12	3.00	4%
Lead	58.3	4.22	mg/kg	4.22	0.72	15.00	5%
Cadmium	0.44	0.03	mg/kg	0.03	0.01	0.15	4%
Chromium	7.81	0.56	mg/kg	0.56	0.10	15.00	1%
Arsenic	39.5	2.86	mg/kg	2.86	0.49	0.70	70%
Mercury	0.28	0.02	mg/kg	0.02	0.00	0.10	3%
Other Elements							
Iron	24200	1749.66	mg/kg	1749.66	301		
Aluminium	134000	9688.20	mg/kg	9688.20	1666		

Dŵr Cymru
Welsh Water

Sample Analysis Report

Sampling Point No -	100519	**Location -**	STRATA FLORIDA WTW SLUDGE TANKER
Date Sampled -	04-Feb-20	**Time Taken -**	20:04
Originator -	SEWAGE	**Purpose -**	EQO/DIRECTIVE COMPLIANCE
Laboratory -	GLASLYN	**Lab Ref No -**	S 6614675
Sampler -	EXTA	**No Results -**	20
Type -			

Sample Results

Code	Determinand Name	Units		Result	Limit
238	Magnesium	MG/KG		253	
288	ALUMINIUM (DRY WT)	MG/KG		134000	
357	ARSENIC (DRY WT)	MG/KG		39.5	
4620	pH	PH UNITS		6.2	
7774	WTW MERCURY TOTAL	MG/KG	LT	0.28	
8241	LOSS ON IGNITION	%		60.9	
9233	Ammoniacal nitrogen	MG/KG	LT	271	
9234	Sulphur	MG/KG		5020	
9271	Cadmium	MG/KG		0.44	
9272	CHROMIUM TOTAL	MG/KG		7.81	
9273	Copper	MG/KG		21.7	
9275	Nickel	MG/KG		9.3	
9276	LEAD TOTAL	MG/KG		58.3	
9277	ZINC TOTAL	MG/KG		100	
9278	IRON TOTAL	MG/KG		24200	
9281	% Dry solids	%		7.23	
9282	% Minerals	%		39.1	
9283	% K (dry weight)	%		0.012	
9284	% P (dry weight)	%		0.28	
9285	% N (dry weight)	%		0.763	

LT - Less Than **GT - Greater Than**

Comments -

Signed -

08 June 2020

PENDERYN DISTILLERY

Analysis of spent wash

Sample Ref: Penderyn spent wash (liquid waste) **Report Number: 96462**
Date: 28/04/2020

Application rate (t/ha)	**15.0**
Application rate (t/acre	**6.1**
pH	**4.50**
Dry solids (%)	**2.2**

NUTRIENT CONTENT

			Total		Readily Available	
TOTALS	**Wet Wt result**	**units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.08	%	0.8	12	0.1	1
Ammonium-N	25.00	mg/kg	0.0	0		
Phosphorus (P)	363.00	mg/kg	0.4	5		
Phosphate (P_2O_5)			0.8	12	0.4	6
Potassium (K)	686.00	mg/kg	0.7	10		
Potash (K_2O)			0.8	12	0.7	11
Magnesium (Mg)	145.00	mg/kg	0.1	2		
Magnesium (MgO)			0.2	4	0.0	0
Sulphur (S)	87.10	mg/kg	0.1	1		
Sulphur (SO_3)			0.2	3	0.0	1

POTENTIALLY TOXIC ELEMENTS

			Rate		Limit
TOTALS	**w/w result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	0.65	mg/kg	0.65	0.01	15.00
Copper	3.22	mg/kg	3.22	0.05	7.50
Nickel	0.20	mg/kg	0.20	0.00	3.00
Lead	0.50	mg/kg	0.50	0.01	15.00
Cadmium	0.01	mg/kg	0.01	0.00	0.15
Chromium	0.62	mg/kg	0.62	0.01	15.00
Mercury	0.05	mg/kg	0.05	0.00	0.10

All results expressed on sample as received. The ammonium N, lead, cadmium, mercury and nickel concentrations are less than the minimum level of detection, consequently, the calculated values will be less than those shown.

PENDERYN DISTILLERY

Analysis of spent wash

Sample Ref: Penderyn spent wash (liquid waste) **Report Number: 96462**
Date: 28/04/2020

Application rate (t/ha)	**48.0**
Application rate (t/acre	**19.4**
pH	**4.50**
Dry solids (%)	**2.2**

NUTRIENT CONTENT

			Total		Readily Available	
TOTALS	**Wet Wt result**	**units**	**(kg/t)**	**(kg/ha)**	**(kg/t)**	**(kg/ha)**
Nitrogen (N)	0.08	%	0.8	38	0.1	4
Ammonium-N	25.00	mg/kg	0.0	1		
Phosphorus (P)	363.00	mg/kg	0.4	17		
Phosphate (P_2O_5)			0.8	40	0.4	20
Potassium (K)	686.00	mg/kg	0.7	33		
Potash (K_2O)			0.8	40	0.7	36
Magnesium (Mg)	145.00	mg/kg	0.1	7		
Magnesium (MgO)			0.2	12	0.0	1
Sulphur (S)	87.10	mg/kg	0.1	4		
Sulphur (SO_3)			0.2	10	0.0	2

POTENTIALLY TOXIC ELEMENTS

			Rate		Limit
TOTALS	**w/w result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	0.65	mg/kg	0.65	0.03	15.00
Copper	3.22	mg/kg	3.22	0.15	7.50
Nickel	0.20	mg/kg	0.20	0.01	3.00
Lead	0.50	mg/kg	0.50	0.02	15.00
Cadmium	0.01	mg/kg	0.01	0.00	0.15
Chromium	0.62	mg/kg	0.62	0.03	15.00
Mercury	0.05	mg/kg	0.05	0.00	0.10

All results expressed on sample as received. The ammonium N, lead, cadmium, mercury and nickel concentrations are less than the minimum level of detection, consequently, the calculated values will be less than those shown.

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PENDERY DISTILLERY

LIQUID WASTE

LIQUID WASTE

Sample Reference :

PENDRYN-LIQUID WASTE

Sample Matrix : LIQUID WASTE

Laboratory References	
Report Number	96462
Sample Number	95047

Date Received	28-APR-2020
Date Reported	11-MAY-2020

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Oven Dry Solids	2.20	%
Conductivity 1:6	1089	uS/cm
Total Kjeldahl Nitrogen	0.08	% w/w
Nitrate Nitrogen	<10	mg/kg
Ammonium Nitrogen	<25	mg/kg
Total Phosphorus (P)	363	mg/kg
Total Potassium (K)	686	mg/kg
Total Magnesium (Mg)	145	mg/kg
Total Copper (Cu)	3.22	mg/kg
Total Zinc (Zn)	0.65	mg/kg

Released by ..... *Gina Graham* ..... Date ..... *11/05/20* .....

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

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PENDERY DISTILLERY

LIQUID WASTE

LIQUID WASTE

Laboratory References

Report Number	96462
Sample Number	95047

Sample Reference :

PENDRYN-LIQUID WASTE

Sample Matrix : LIQUID WASTE

Date Received	28-APR-2020
Date Reported	11-MAY-2020

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
Total Sulphur (S)	87.1	mg/kg
Total Calcium (Ca)	48.1	mg/kg
Total Lead (Pb)	<0.5	mg/kg
Total Cadmium (Cd)	<0.01	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	<0.2	mg/kg
Total Chromium (Cr)	0.62	mg/kg
Total Sodium (Na)	1165	mg/kg
pH 1:6 [Fresh]	4.50	
B.O.D. [fresh]	15120	mg/l

Released by ..... *Gina Graham* ..... Date ..... *11/05/20* .....

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PENDERY DISTILLERY

LIQUID WASTE

LIQUID WASTE

Sample Reference :

PENDRYN-LIQUID WASTE

Sample Matrix : LIQUID WASTE

Laboratory References	
Report Number	96462
Sample Number	95047

Date Received	28-APR-2020
Date Reported	11-MAY-2020

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

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

ANALYTICAL RESULTS *on 'as received' basis.*

Determinand	Value	Units
C.O.D. [fresh]	30530	mg/l

Released by *Gina Graham* Date *11/05/20*

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

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Contact : STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH
Tel. : 01239 613 741

V850

Please quote the above code for all enquiries

Client : M DAVIES
HEOLGWYDDIL
HAFORD FARM
FERWIG
CARDIGAN

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 73420/20

Date Received 13-May-20
Date Reported 14-May-20

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
516278/20	1	**HEOLGWYDDIL 3** *No cropping details given*	**5.8**	**2**	**2-**	**3**	**23.6**	**162**	**102**
516279/20	2	**HEOLGWYDDIL 6** *No cropping details given*	**5.8**	**2**	**2-**	**2**	**19.8**	**138**	**95**
516280/20	3	**HEOLGWYDDIL 7** *No cropping details given*	**6.4**	**2**	**2+**	**3**	**24.6**	**230**	**113**
516281/20	4	**HEOLGWYDDIL 8** *No cropping details given*	**6.0**	**2**	**1**	**2**	**24.2**	**117**	**90**

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 14/05/20

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Registered Number: 05655711

PAAG
Professional Agricultural Analysis Group

SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 3 HEOLGWYDDIL 1145

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CARDIGAN
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V850

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M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

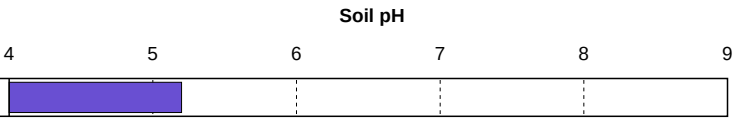
Laboratory References

Report Number	14521
Sample Number	389333

ANALYTICAL RESULTS *on 'dry matter' basis.*

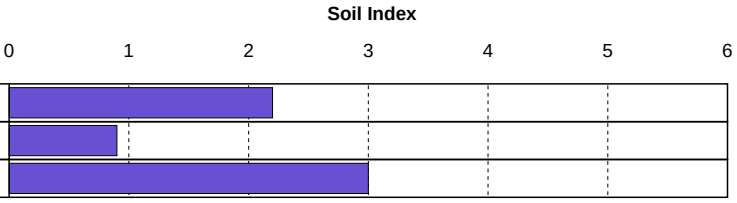
pH (1)

Determinand	Result
Soil pH	5.2



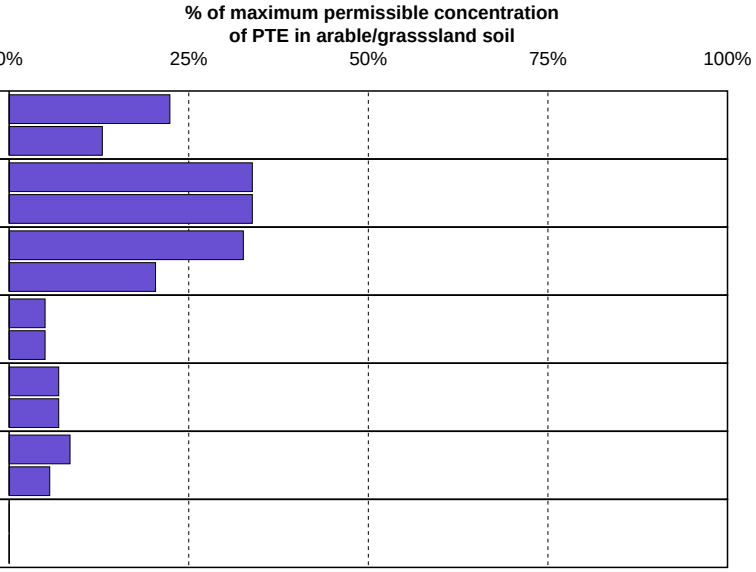
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	17.8	2
Soil Potassium as K	58.4	0
Soil Magnesium as Mg	108	3



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	17.9	Arable	80
		Grassland	138
Total Zinc as Zn	67.7	Arable	200
		Grassland	200
Total Nickel as Ni	16.3	Arable	50
		Grassland	80
Total Cadmium as Cd	0.15	Arable	3
		Grassland	3
Total Lead as Pb	20.7	Arable	300
		Grassland	300
Total Chromium as Cr	33.9	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	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 *Darren Whitbread* Date *05/06/18*

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

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 3 HEOLGWYDDIL 1145

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V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

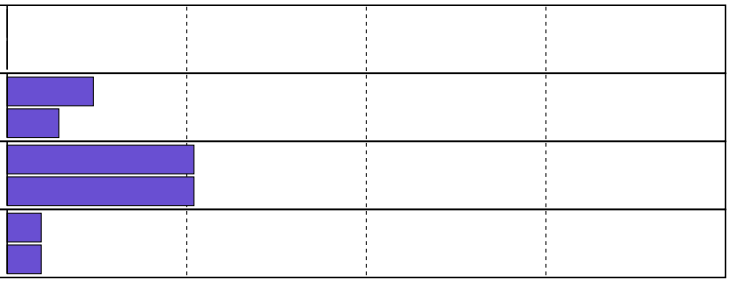
Laboratory References

Report Number	14521
Sample Number	389333

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.36	Arable	3
		Grassland	5
Total Arsenic as As	13.0	Arable	50
		Grassland	50
Fluoride as Fl	23.7	Arable	500
		Grassland	500



(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 Darren Whitbread Date 05/06/18

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

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 5 HEOLGWYDDIL 0577

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

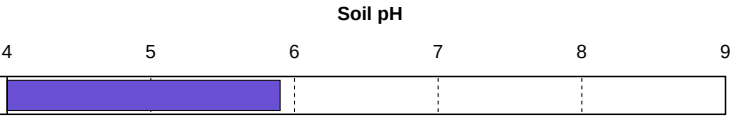
Date Received	30-MAY-2018
Date Reported	05-JUN-2018

Laboratory References

Report Number	14521
Sample Number	389335

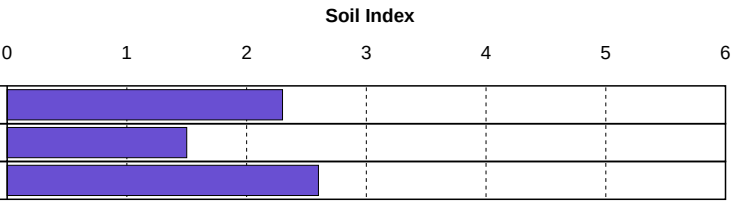
ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)



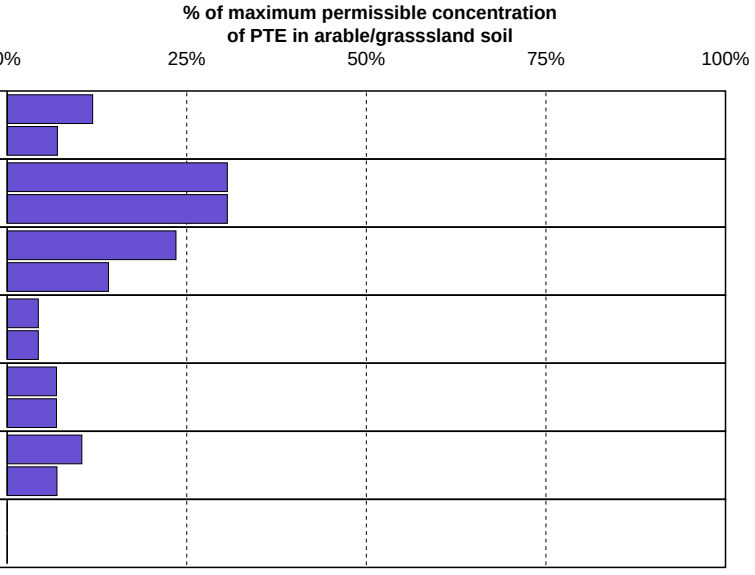
Determinand	Result
Soil pH	5.9

Soil Nutrients (1)



Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	18.8	2
Soil Potassium as K	92.3	1
Soil Magnesium as Mg	84.3	2

Potentially Toxic Elements (2)



Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	11.9	Arable	100
		Grassland	170
Total Zinc as Zn	61.3	Arable	200
		Grassland	200
Total Nickel as Ni	14.1	Arable	60
		Grassland	100
Total Cadmium as Cd	0.13	Arable	3
		Grassland	3
Total Lead as Pb	20.6	Arable	300
		Grassland	300
Total Chromium as Cr	41.6	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	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 *Darren Whitbread* Date *05/06/18*

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

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 5 HEOLGWYDDIL 0577

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

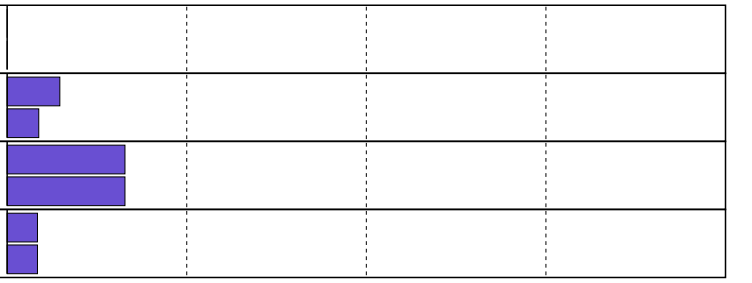
Laboratory References

Report Number	14521
Sample Number	389335

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.22	Arable	3
		Grassland	5
Total Arsenic as As	8.2	Arable	50
		Grassland	50
Fluoride as Fl	21.1	Arable	500
		Grassland	500



(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 Darren Whitbread Date 05/06/18

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 6 HEOLGWYDDIL 8879

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

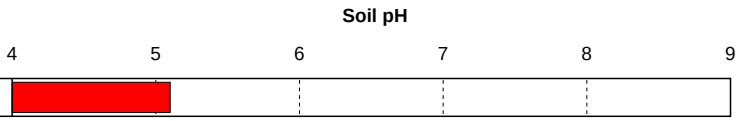
Laboratory References

Report Number	14521
Sample Number	389336

ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)

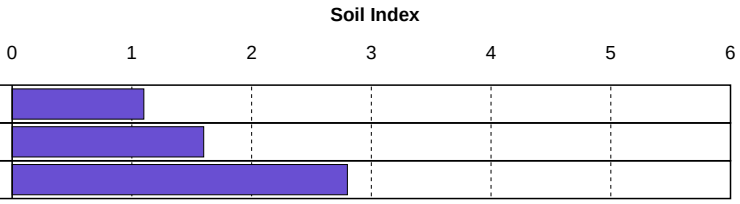
Determinand	Result
Soil pH	5.1



Alert. The soil pH value is less than 5.2 (see footnote 2)

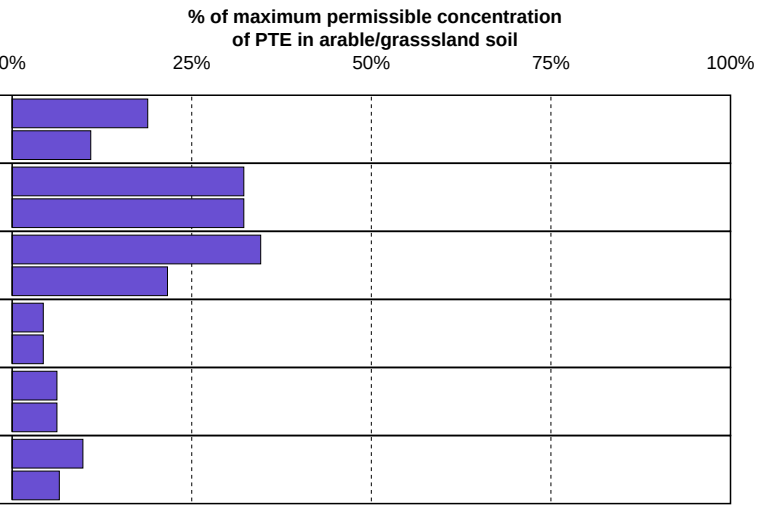
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	11.4	1
Soil Potassium as K	97.9	1
Soil Magnesium as Mg	92.0	2



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	15.1	Arable	80
		Grassland	138
Total Zinc as Zn	64.5	Arable	200
		Grassland	200
Total Nickel as Ni	17.3	Arable	50
		Grassland	80
Total Cadmium as Cd	0.13	Arable	3
		Grassland	3
Total Lead as Pb	18.7	Arable	300
		Grassland	300
Total Chromium as Cr	39.4	Arable	400
		Grassland	600



(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 ..... Darren Whitbread ..... Date ..... 05/06/18 .....

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 6 HEOLGWYDDIL 8879

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

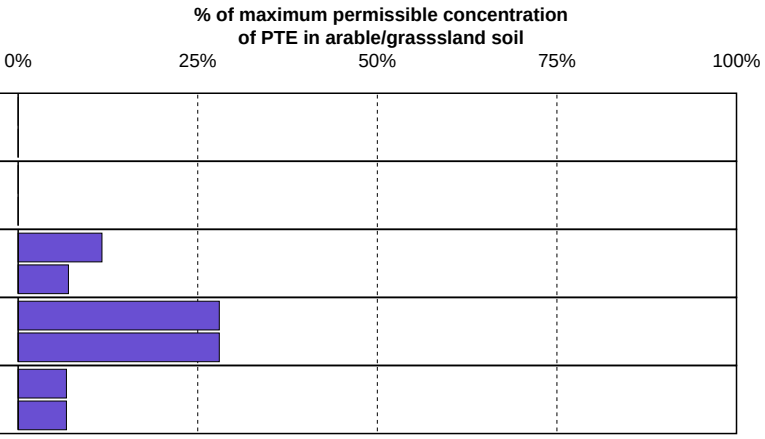
Laboratory References

Report Number	14521
Sample Number	389336

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Mercury as Hg	<0.2	Arable	1
		Grassland	1.5
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.35	Arable	3
		Grassland	5
Total Arsenic as As	14.0	Arable	50
		Grassland	50
Fluoride as Fl	33.6	Arable	500
		Grassland	500



(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 Darren Whitbread Date 05/06/18

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 7 HEOLGWYDDIL 7581

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

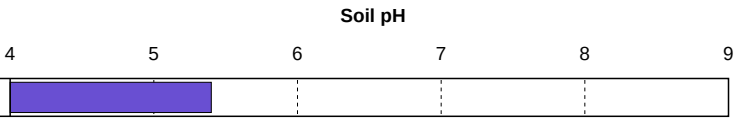
Date Received	30-MAY-2018
Date Reported	05-JUN-2018

Laboratory References

Report Number	14521
Sample Number	389337

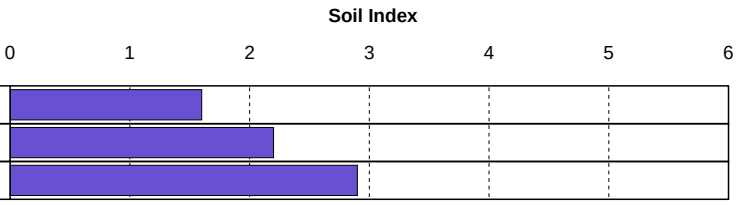
ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)



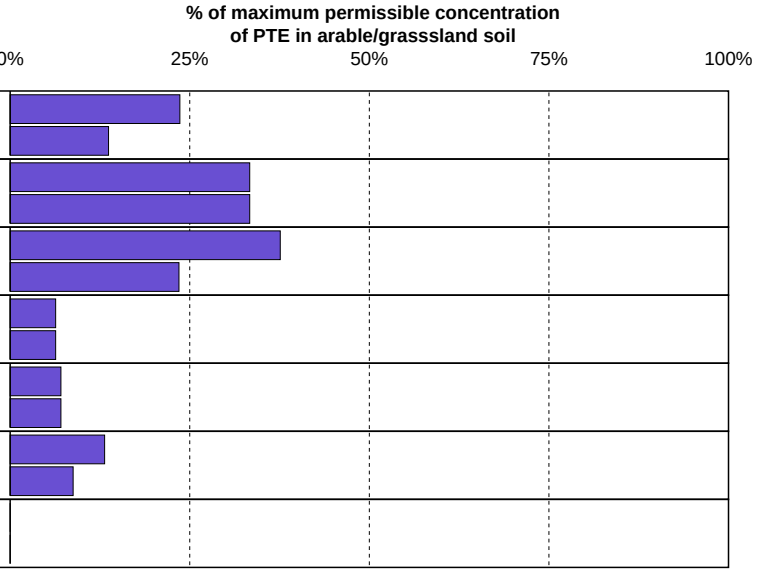
Determinand	Result
Soil pH	5.4

Soil Nutrients (1)



Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	14.4	1
Soil Potassium as K	146	2-
Soil Magnesium as Mg	98.3	2

Potentially Toxic Elements (2)



Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	18.9	Arable	80
		Grassland	138
Total Zinc as Zn	66.7	Arable	200
		Grassland	200
Total Nickel as Ni	18.8	Arable	50
		Grassland	80
Total Cadmium as Cd	0.19	Arable	3
		Grassland	3
Total Lead as Pb	21.2	Arable	300
		Grassland	300
Total Chromium as Cr	52.6	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	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 *Darren Whitbread* Date *05/06/18*

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 7 HEOLGWYDDIL 7581

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

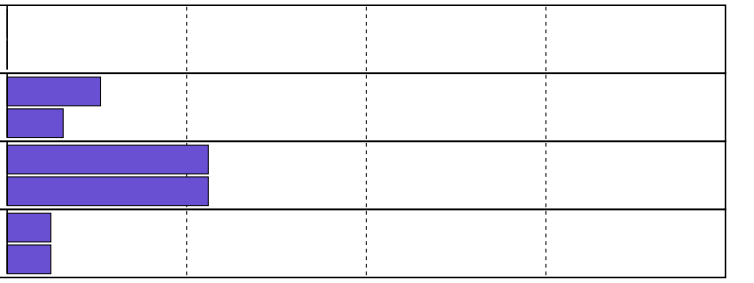
Laboratory References

Report Number	14521
Sample Number	389337

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.39	Arable	3
		Grassland	5
Total Arsenic as As	14.0	Arable	50
		Grassland	50
Fluoride as Fl	30.4	Arable	500
		Grassland	500



(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 Darren Whitbread Date 05/06/18

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

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 8 HEOLGWYDDIL 6185

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

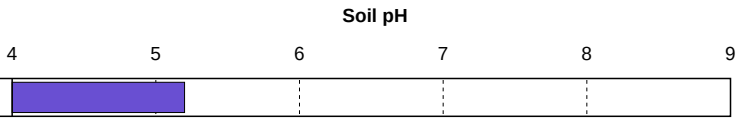
Date Received	30-MAY-2018
Date Reported	05-JUN-2018

Laboratory References

Report Number	14521
Sample Number	389338

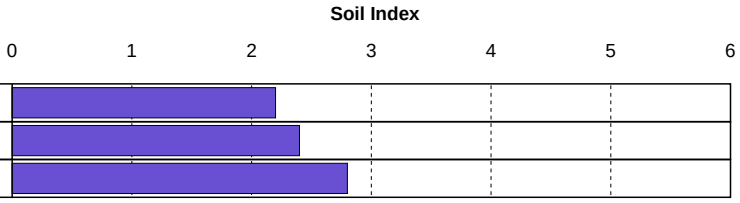
ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)



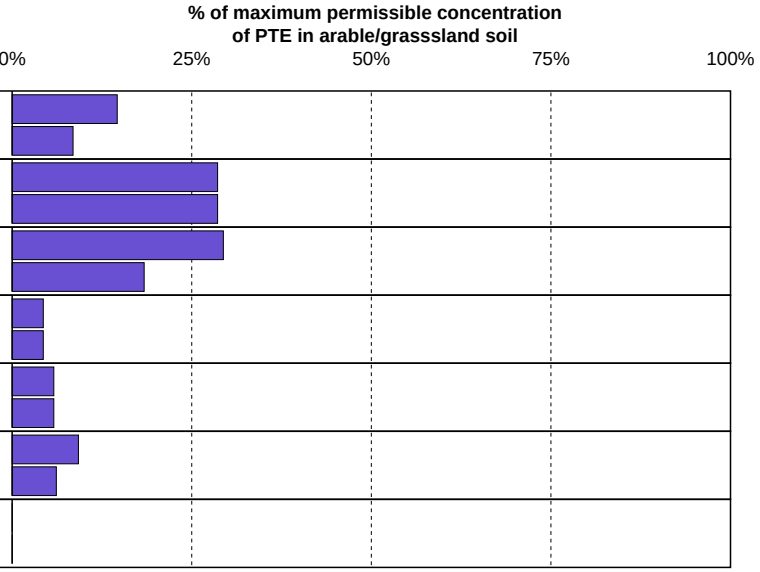
Determinand	Result
Soil pH	5.2

Soil Nutrients (1)



Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	18.0	2
Soil Potassium as K	172	2-
Soil Magnesium as Mg	95.3	2

Potentially Toxic Elements (2)



Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	11.7	Arable	80
		Grassland	138
Total Zinc as Zn	57.2	Arable	200
		Grassland	200
Total Nickel as Ni	14.7	Arable	50
		Grassland	80
Total Cadmium as Cd	0.13	Arable	3
		Grassland	3
Total Lead as Pb	17.4	Arable	300
		Grassland	300
Total Chromium as Cr	36.9	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	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 *Darren Whitbread* Date *05/06/18*

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - 8 HEOLGWYDDIL 6185

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

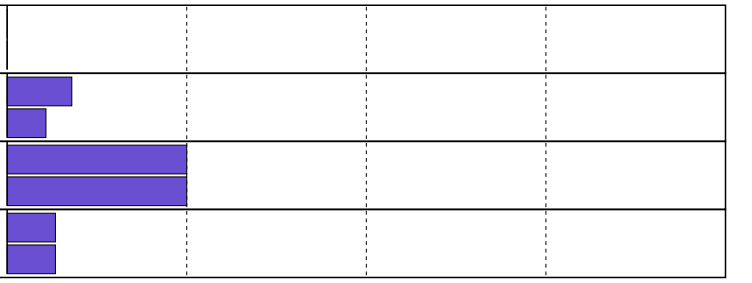
Laboratory References

Report Number	14521
Sample Number	389338

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.27	Arable	3
		Grassland	5
Total Arsenic as As	12.5	Arable	50
		Grassland	50
Fluoride as Fl	33.6	Arable	500
		Grassland	500



(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 Darren Whitbread Date 05/06/18

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Contact : STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH
Tel. : 01239 613 741

V850

Please quote the above code for all enquiries

Client : M DAVIES
BOLAFRON
HAFORD FARM
FERWIG
CARDIGAN

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 73418/20

Date Received 13-May-20
Date Reported 14-May-20

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
516268/20	1	**BOLAFRON 4** *No cropping details given*	**5.4**	**4**	**3**	**3**	**67.0**	**280**	**148**
516269/20	2	**BOLAFRON 5** *No cropping details given*	**5.6**	**4**	**2-**	**3**	**58.8**	**142**	**140**
516270/20	3	**BOLAFRON 6** *No cropping details given*	**5.6**	**4**	**1**	**3**	**47.4**	**94**	**123**
516271/20	4	**BOLAFRON 8** *No cropping details given*	**5.5**	**3**	**1**	**3**	**29.0**	**74**	**104**
516272/20	5	**BOLAFRON 9** *No cropping details given*	**5.8**	**3**	**1**	**3**	**29.8**	**109**	**135**

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 14/05/20

NRM Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS
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Registered Number: 05655711

PAAG Professional Agricultural Analysis Group

SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 4

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

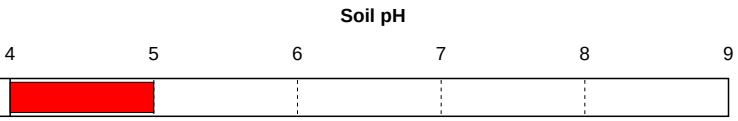
Laboratory References

Report Number	14519
Sample Number	389324

ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)

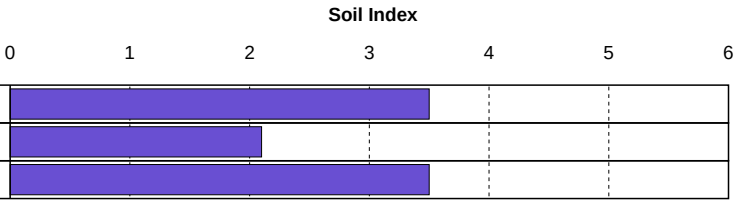
Determinand	Result
Soil pH	5.0



Alert. The soil pH value is less than 5.2 (see footnote 2)

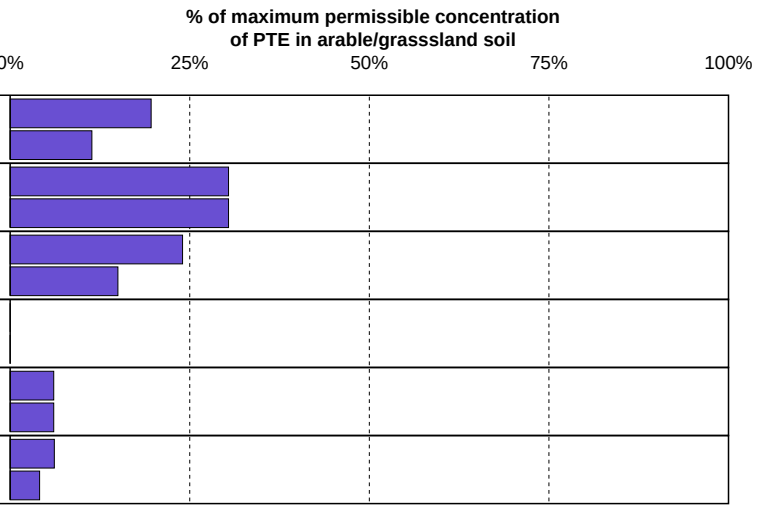
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	35.8	3
Soil Potassium as K	135	2-
Soil Magnesium as Mg	144	3



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	15.7	Arable	80
		Grassland	138
Total Zinc as Zn	60.8	Arable	200
		Grassland	200
Total Nickel as Ni	12.0	Arable	50
		Grassland	80
Total Cadmium as Cd	<0.1	Arable	3
		Grassland	3
Total Lead as Pb	18.2	Arable	300
		Grassland	300
Total Chromium as Cr	24.6	Arable	400
		Grassland	600



(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.

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 4

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

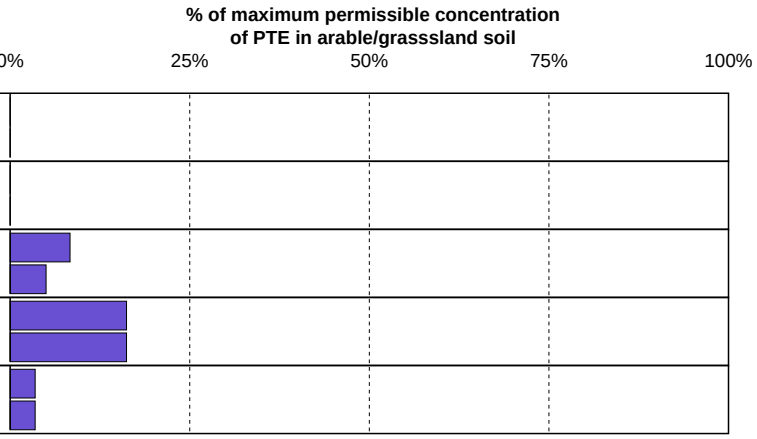
Laboratory References

Report Number	14519
Sample Number	389324

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Mercury as Hg	<0.2	Arable	1
		Grassland	1.5
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.25	Arable	3
		Grassland	5
Total Arsenic as As	8.1	Arable	50
		Grassland	50
Fluoride as Fl	17.4	Arable	500
		Grassland	500



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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 Darren Whitbread Date 05/06/18

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 5

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

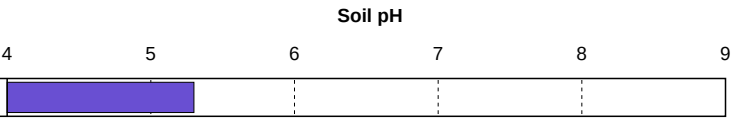
Laboratory References

Report Number	14519
Sample Number	389325

ANALYTICAL RESULTS *on 'dry matter' basis.*

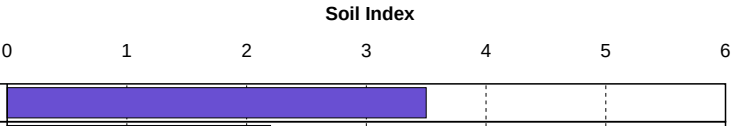
pH (1)

Determinand	Result
Soil pH	5.3



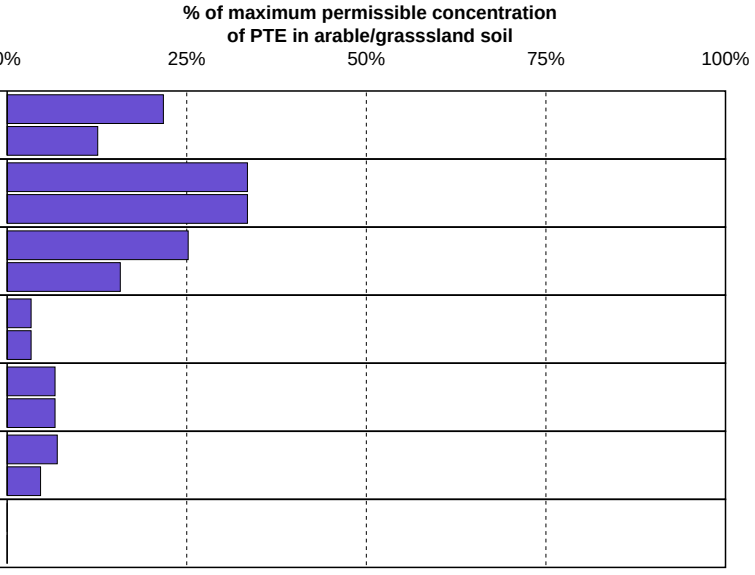
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	35.8	3
Soil Potassium as K	154	2-
Soil Magnesium as Mg	134	3



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	17.4	Arable	80
		Grassland	138
Total Zinc as Zn	66.9	Arable	200
		Grassland	200
Total Nickel as Ni	12.6	Arable	50
		Grassland	80
Total Cadmium as Cd	0.10	Arable	3
		Grassland	3
Total Lead as Pb	20.0	Arable	300
		Grassland	300
Total Chromium as Cr	27.9	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	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.

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 5

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

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M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

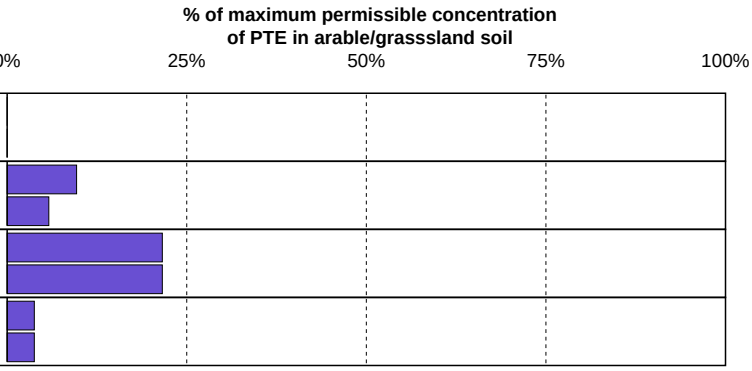
Laboratory References

Report Number	14519
Sample Number	389325

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.29	Arable	3
		Grassland	5
Total Arsenic as As	10.8	Arable	50
		Grassland	50
Fluoride as Fl	18.9	Arable	500
		Grassland	500



(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.

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 6

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

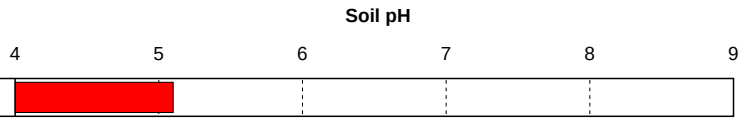
Laboratory References

Report Number	14519
Sample Number	389326

ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)

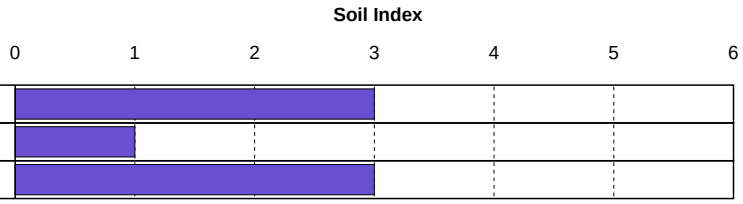
Determinand	Result
Soil pH	5.1



Alert. The soil pH value is less than 5.2 (see footnote 2)

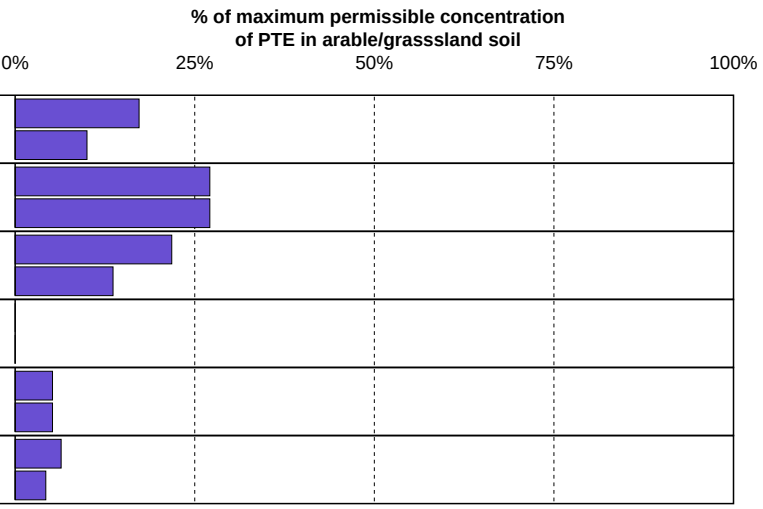
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	27.0	3
Soil Potassium as K	65.7	1
Soil Magnesium as Mg	107	3



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	13.8	Arable	80
		Grassland	138
Total Zinc as Zn	54.2	Arable	200
		Grassland	200
Total Nickel as Ni	10.9	Arable	50
		Grassland	80
Total Cadmium as Cd	<0.1	Arable	3
		Grassland	3
Total Lead as Pb	15.6	Arable	300
		Grassland	300
Total Chromium as Cr	25.6	Arable	400
		Grassland	600



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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 6

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

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M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

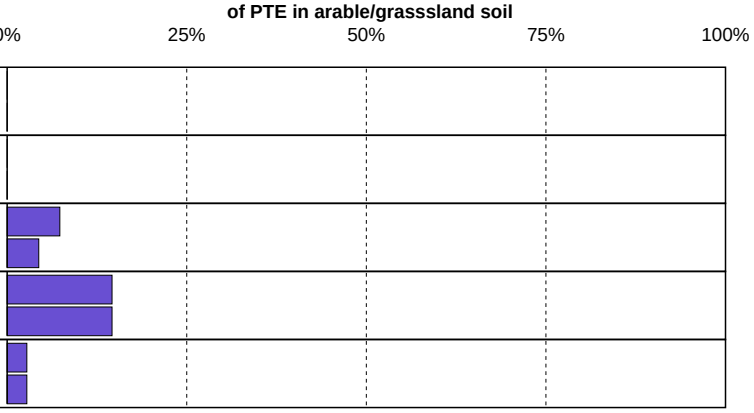
Laboratory References

Report Number	14519
Sample Number	389326

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Mercury as Hg	<0.2	Arable	1
		Grassland	1.5
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.22	Arable	3
		Grassland	5
Total Arsenic as As	7.3	Arable	50
		Grassland	50
Fluoride as Fl	13.7	Arable	500
		Grassland	500



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Released by Darren Whitbread Date 05/06/18

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 7

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

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M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

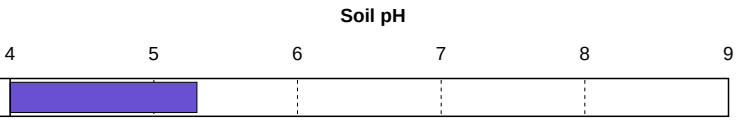
Laboratory References

Report Number	14519
Sample Number	389327

ANALYTICAL RESULTS *on 'dry matter' basis.*

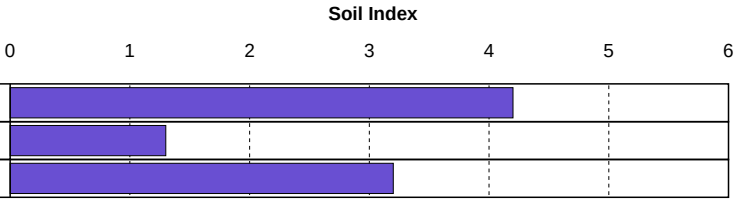
pH (1)

Determinand	Result
Soil pH	5.3



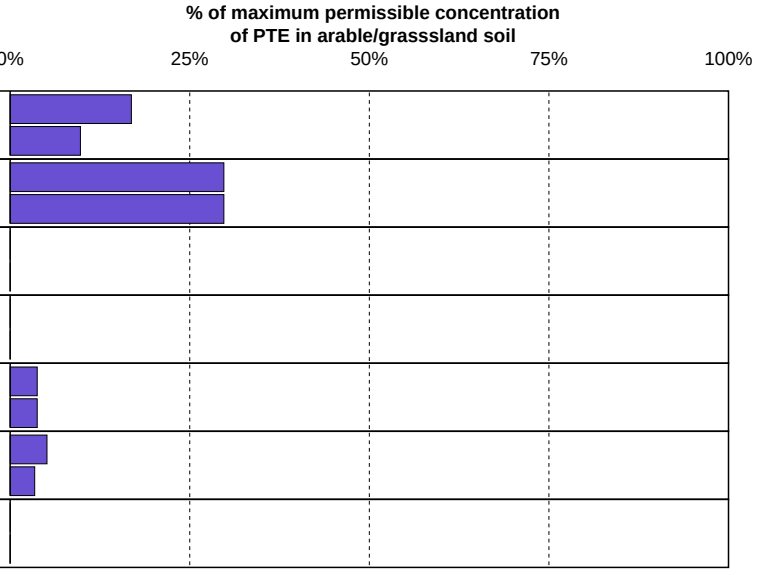
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	52.4	4
Soil Potassium as K	79.8	1
Soil Magnesium as Mg	122	3



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	13.5	Arable	80
		Grassland	138
Total Zinc as Zn	59.5	Arable	200
		Grassland	200
Total Nickel as Ni	<10	Arable	50
		Grassland	80
Total Cadmium as Cd	<0.1	Arable	3
		Grassland	3
Total Lead as Pb	11.3	Arable	300
		Grassland	300
Total Chromium as Cr	20.5	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	Arable	1
		Grassland	1.5



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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 7

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

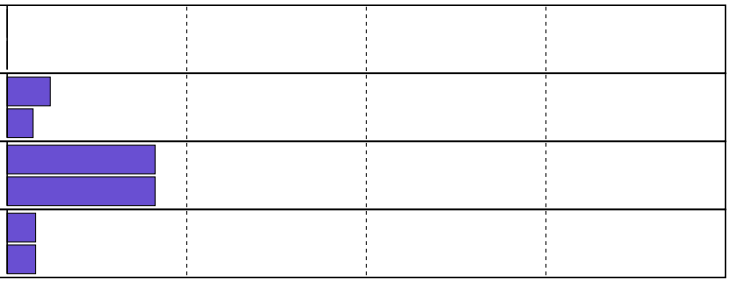
Laboratory References

Report Number	14519
Sample Number	389327

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.18	Arable	3
		Grassland	5
Total Arsenic as As	10.3	Arable	50
		Grassland	50
Fluoride as Fl	19.8	Arable	500
		Grassland	500



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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 8

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

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M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

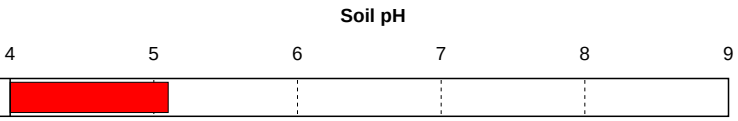
Laboratory References

Report Number	14519
Sample Number	389328

ANALYTICAL RESULTS *on 'dry matter' basis.*

pH (1)

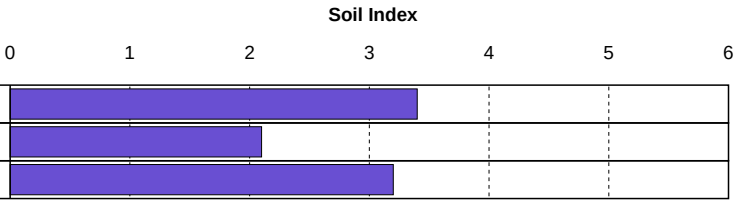
Determinand	Result
Soil pH	5.1



Alert. The soil pH value is less than 5.2 (see footnote 2)

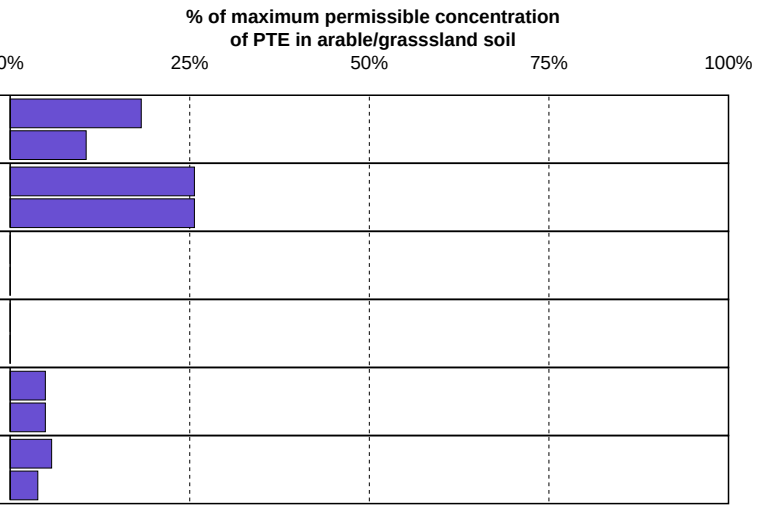
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	34.4	3
Soil Potassium as K	133	2-
Soil Magnesium as Mg	118	3



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	14.6	Arable	80
		Grassland	138
Total Zinc as Zn	51.3	Arable	200
		Grassland	200
Total Nickel as Ni	<10	Arable	50
		Grassland	80
Total Cadmium as Cd	<0.1	Arable	3
		Grassland	3
Total Lead as Pb	14.7	Arable	300
		Grassland	300
Total Chromium as Cr	23.1	Arable	400
		Grassland	600



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Released by ..... Darren Whitbread ..... Date ..... 05/06/18 .....

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

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 8

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

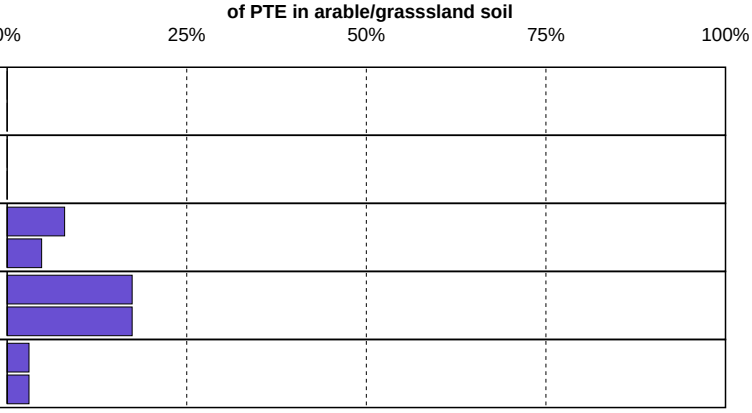
Laboratory References

Report Number	14519
Sample Number	389328

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Mercury as Hg	<0.2	Arable	1
		Grassland	1.5
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.24	Arable	3
		Grassland	5
Total Arsenic as As	8.7	Arable	50
		Grassland	50
Fluoride as Fl	15.2	Arable	500
		Grassland	500



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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 *Darren Whitbread*

Date *05/06/18*

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 9

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

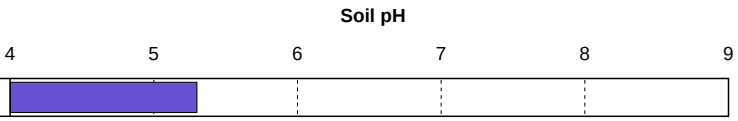
Laboratory References

Report Number	14519
Sample Number	389329

ANALYTICAL RESULTS *on 'dry matter' basis.*

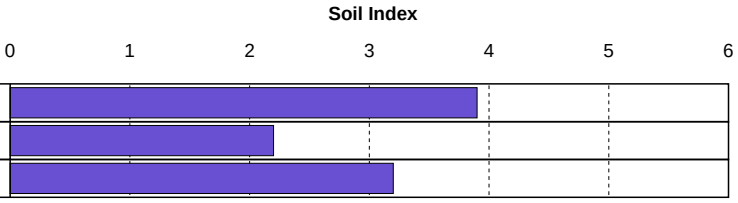
pH (1)

Determinand	Result
Soil pH	5.3



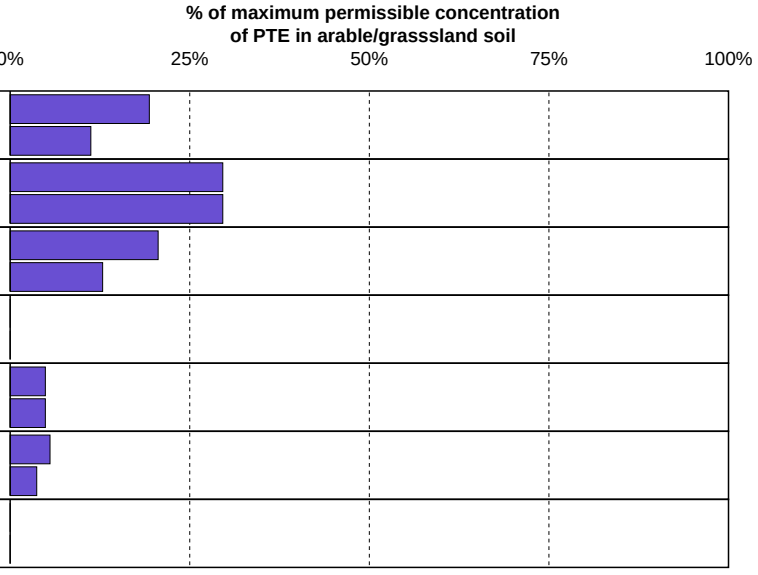
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	44.4	3
Soil Potassium as K	145	2-
Soil Magnesium as Mg	123	3



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	15.5	Arable	80
		Grassland	138
Total Zinc as Zn	59.2	Arable	200
		Grassland	200
Total Nickel as Ni	10.3	Arable	50
		Grassland	80
Total Cadmium as Cd	<0.1	Arable	3
		Grassland	3
Total Lead as Pb	14.7	Arable	300
		Grassland	300
Total Chromium as Cr	22.2	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	Arable	1
		Grassland	1.5



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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - BOLAFRON 9

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

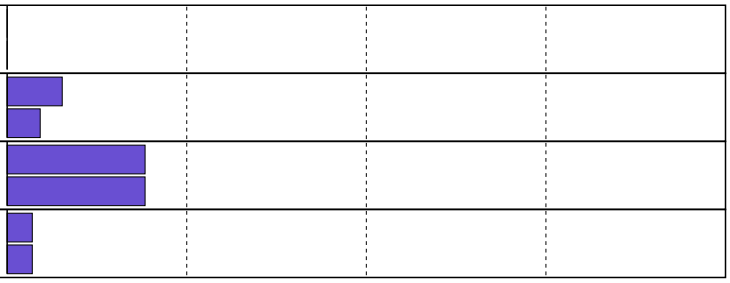
Laboratory References

Report Number	14519
Sample Number	389329

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.23	Arable	3
		Grassland	5
Total Arsenic as As	9.6	Arable	50
		Grassland	50
Fluoride as Fl	17.5	Arable	500
		Grassland	500



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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.

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - HAFOD 1741

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

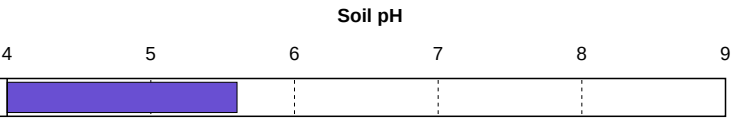
Laboratory References

Report Number	14520
Sample Number	389330

ANALYTICAL RESULTS *on 'dry matter' basis.*

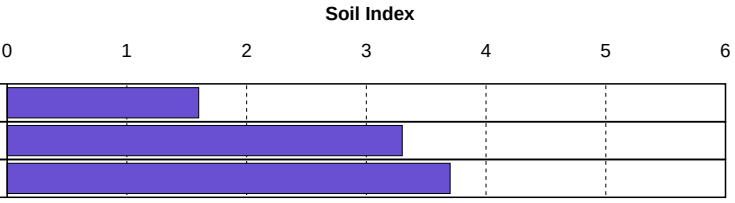
pH (1)

Determinand	Result
Soil pH	5.6



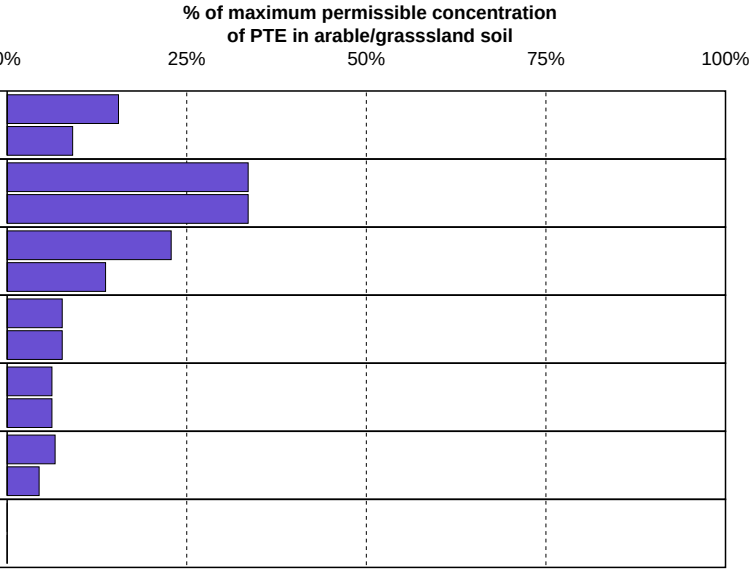
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	14.2	1
Soil Potassium as K	293	3
Soil Magnesium as Mg	160	3



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	15.5	Arable	100
		Grassland	170
Total Zinc as Zn	67.1	Arable	200
		Grassland	200
Total Nickel as Ni	13.7	Arable	60
		Grassland	100
Total Cadmium as Cd	0.23	Arable	3
		Grassland	3
Total Lead as Pb	18.7	Arable	300
		Grassland	300
Total Chromium as Cr	26.7	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	Arable	1
		Grassland	1.5



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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - HAFOD 1741

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

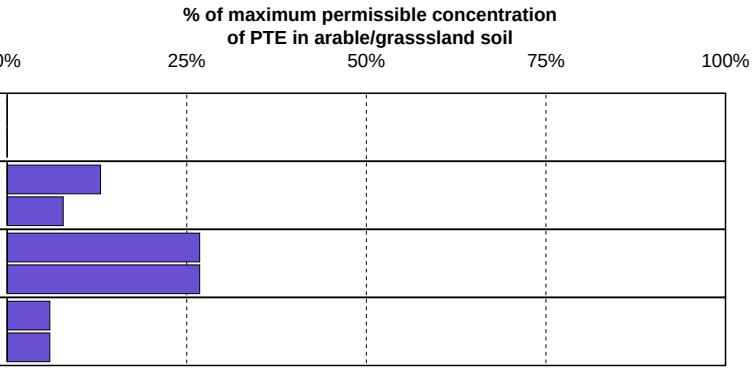
Laboratory References

Report Number	14520
Sample Number	389330

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.39	Arable	3
		Grassland	5
Total Arsenic as As	13.4	Arable	50
		Grassland	50
Fluoride as Fl	29.7	Arable	500
		Grassland	500



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Released by Darren Whitbread Date 05/06/18

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - HAFOD 2455

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

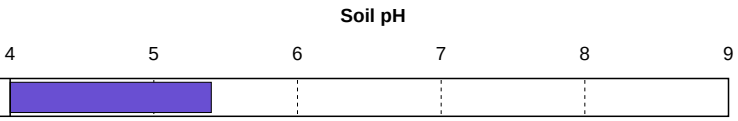
Laboratory References

Report Number	14520
Sample Number	389331

ANALYTICAL RESULTS *on 'dry matter' basis.*

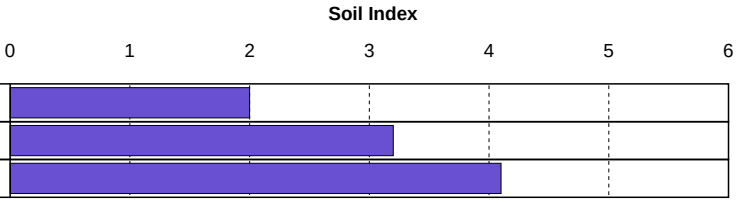
pH (1)

Determinand	Result
Soil pH	5.4



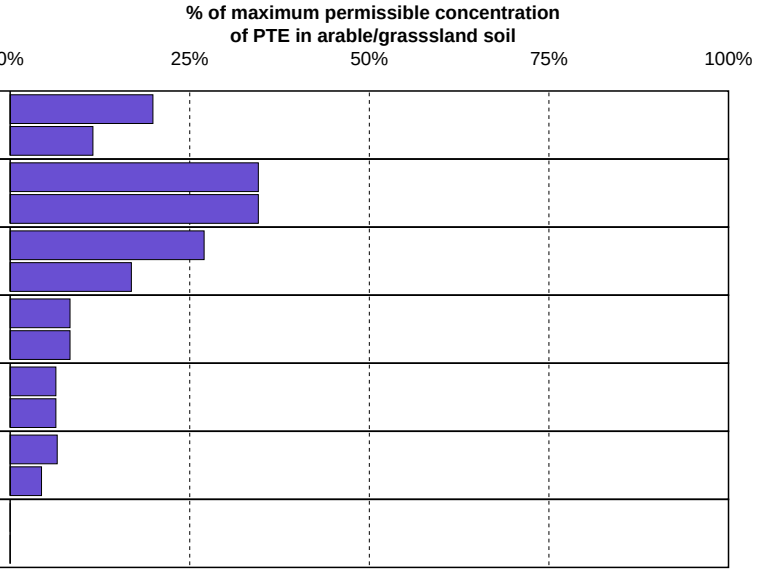
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	16.0	2
Soil Potassium as K	277	3
Soil Magnesium as Mg	190	4



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	15.9	Arable	80
		Grassland	138
Total Zinc as Zn	69.1	Arable	200
		Grassland	200
Total Nickel as Ni	13.5	Arable	50
		Grassland	80
Total Cadmium as Cd	0.25	Arable	3
		Grassland	3
Total Lead as Pb	19.1	Arable	300
		Grassland	300
Total Chromium as Cr	26.2	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	Arable	1
		Grassland	1.5



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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - HAFOD 2455

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

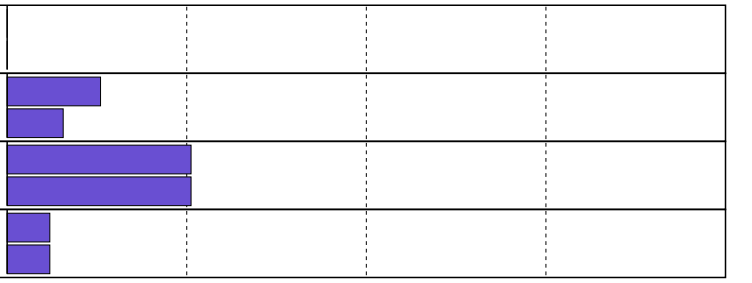
Laboratory References

Report Number	14520
Sample Number	389331

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.39	Arable	3
		Grassland	5
Total Arsenic as As	12.8	Arable	50
		Grassland	50
Fluoride as Fl	29.7	Arable	500
		Grassland	500



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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - HAFOD 4067

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

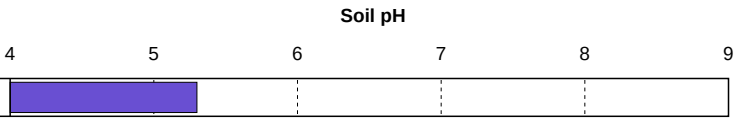
Laboratory References

Report Number	14520
Sample Number	389332

ANALYTICAL RESULTS *on 'dry matter' basis.*

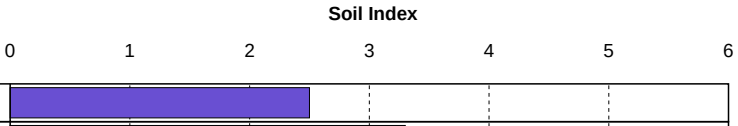
pH (1)

Determinand	Result
Soil pH	5.3



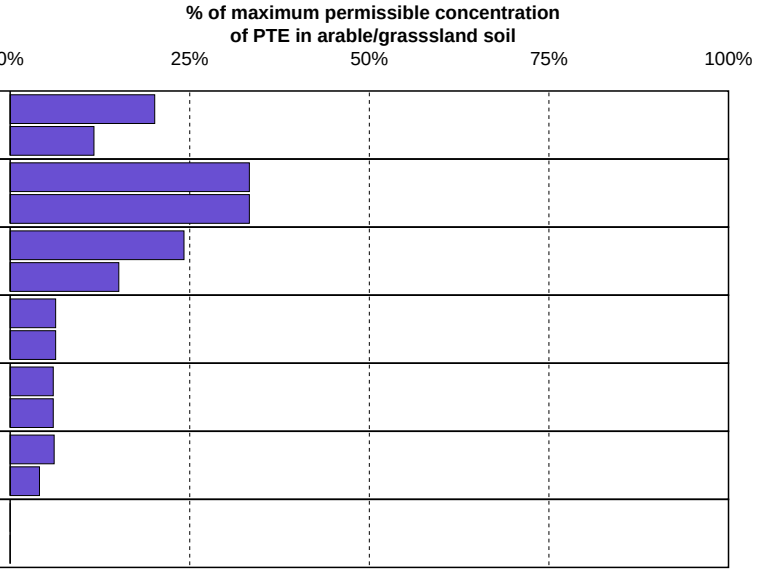
Soil Nutrients (1)

Determinand	Result mg/litre	Soil Index
Soil Phosphorus as P	21.0	2
Soil Potassium as K	290	3
Soil Magnesium as Mg	179	4



Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Copper as Cu	16.1	Arable	80
		Grassland	138
Total Zinc as Zn	66.6	Arable	200
		Grassland	200
Total Nickel as Ni	12.1	Arable	50
		Grassland	80
Total Cadmium as Cd	0.19	Arable	3
		Grassland	3
Total Lead as Pb	18.0	Arable	300
		Grassland	300
Total Chromium as Cr	24.5	Arable	400
		Grassland	600
Total Mercury as Hg	<0.2	Arable	1
		Grassland	1.5



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Released by *Darren Whitbread* Date *05/06/18*

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SOIL CHEMICAL ANALYSIS REPORT FOR FIELD - HAFOD 4067

STEPSIDE AGRI
STEPSIDE FARM
GWBERT ROAD
CARDIGAN
SA43 1PH

V850

Please quote above code for all enquiries

M DAVIES
HAFOD FARM
FERWIG

SOIL

Date Received	30-MAY-2018
Date Reported	05-JUN-2018

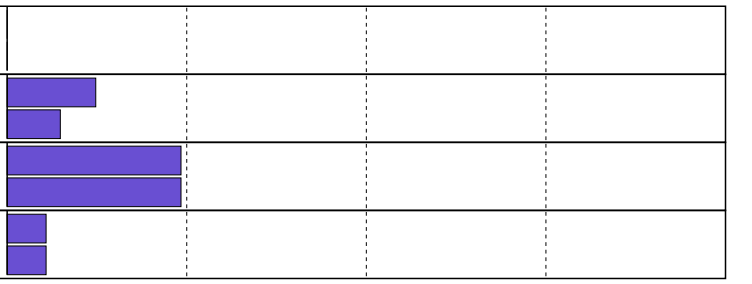
Laboratory References

Report Number	14520
Sample Number	389332

ANALYTICAL RESULTS *on 'dry matter' basis.*

Potentially Toxic Elements (2)

Determinand	Result mg/kg		Maximum mg/kg
Total Molybdenum as Mo	<1	Arable	4
		Grassland	4
Total Selenium as Se	0.37	Arable	3
		Grassland	5
Total Arsenic as As	12.1	Arable	50
		Grassland	50
Fluoride as Fl	27.1	Arable	500
		Grassland	500



(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 ..... *Darren Whitbread* ..... Date ..... *05/06/18* .....

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

NRM Laboratories is a division of Cawood Scientific Ltd, Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS Registered Number: 05655711