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 GP3792SK

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) ByProduct Recovery Ltd

Title

First name

Last name

Address Control House

	A1 Business Park
	KNOTTINGLEY
	West Yorkshire
Postcode	WF11 0BU
Telephone - mobile	07824 323 318
Telephone - office	0113 232 2418
Email address	info@4r-group.co.uk

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

Document reference	

3 Contact details

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

Title	Mr	
First name	Adam	
Last name	Stone	
Telephone - mobile	07508 322259	
Telephone - office		
Email address	adam.stone@4r-group.co.uk / info@4r-group.co.uk	

4 About the deployment

4a Multiple deployments for one area of land

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

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

No ☒ *Go to section 4b*

Yes ☐ How many deployments are in the batch?

4b Nominated competent person

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

Title	Mr	
First name	Richard	
Last name	Evans	

Telephone - mobile	07506 672839
Telephone - office	
Email address	richard.evans@4r-group.co.uk / info@4r-group.co.uk

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

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

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

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

Document reference: 4R Training Certificate Waste to Land - RE *Go to section 4c*

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

CIWM / WAMITAB ☐

ESA / EU ☐

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

4c Which risk band does the activity fall within?

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

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

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

Table 1 – risk band

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

Bespoke mobile plant permit	Low risk deployment ☐	Medium risk deployment ☐	High risk deployment ☐

4d Additional information on sensitive receptors

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

bespoke permit?

No ☒

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

4e Site specific risk assessment

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

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

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

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

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

4f About the waste

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

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

Table 2 – waste types

	List of Waste code (6 digit)	**Waste description**	**Physical form**	**Waste producer**	**Total amount being spread/used** (tonnes)
e.g.	03 03 05	De-inked paper	Sludge	Smith's Newsprint	500
1	19 09 02	Potable water treatment sludge	Sludge cake	DCWW Bontgoch	683
2	19 09 02	Potable water treatment sludge	Liquid sludge	DCWW Bryngwyn	10050
3	19 09 02	Potable water treatment sludge	Liquid sludge	DCWW Capel Dewi	10050
4	19 09 02	Potable water treatment sludge	Liquid sludge	DCWW Crai	10050
5	19 09 02	Potable water treatment sludge	Sludge cake	DCWW Llechryd	1608
6	19 09 02	Potable water treatment sludge	Liquid sludge	DCWW Llechryd	9367
7					
8					
9					
10					
				Total tonnage	10050

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 18058 50353

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

Agricultural land ☒ Please give your County/ Parish/ Holding number 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	**4414**	**SN 18438 50142**	19 09 02	6.1
2	**2892**	**SN 18294 49926**	19 09 02	5.8
3	**6060**	**SN 18608 50623**	19 09 02	8.0
4	**5136**	**SN 18487 50347**	19 09 02	10.3
5	**4956**	**SN 17494 50559**	19 09 02	2.7
6	**5741**	**SN 17575 50413**	19 09 02	3.1
7	**7532**	**SN 17739 50330**	19 09 02	2.2
8	**8422**	**SN 17830 50222**	19 09 02	2.0
9				
10				
			Total hectares	40.2

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	07974 102696
Telephone - office	01239 612546
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	4414	Potable water treatment sludge	4R Group	167	PAN-005005
2	2892	Potable water treatment sludge	4R Group	74	PAN-005005
3	6060	Potable water treatment sludge	4R Group	142	PAN-005005

4	5136	Potable water treatment sludge	4R Group	125	PAN-005005
5	5741	Potable water treatment sludge	4R Group	141	PAN-005015
6	7532	Potable water treatment sludge	4R Group	91	PAN-005015
7	8422	Potable water treatment sludge	4R Group	64	PAN-005015
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 17958 50063	19 09 02	Above ground store for liquids	1250
2	SN 18153 50376	19 09 02	Lagoon for liquids	1250
3	SN 18291 50005	19 09 02	Field heap for cake	1608
4	SN 18278 50289	19 09 02	Field heap for cake	1608
5	SN 18335 50446	19 09 02	Field heap for cake	1608
6	SN 17862 50184	19 09 02	Field heap for cake	1608
7	SN 17694 50275	19 09 02	Field heap for cake	1608
8				
9	No more than 2858t shall	be stored across storage	options at any one time.	Of which, no more than
10	1250t shall be non-	stackable liquid.		

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	PSCAPPBYPRO0753
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)	☒	HF Map
Benefit statement (required for all deployments)	☒	HF ABS

Waste analysis (required for all deployments)	☒	Waste Analysis
Receiving soil analysis (required for all deployments)	☒	Soil Analysis
Site-specific risk assessment (in accordance with 4e)	☐	
Any other additional information	N/A	4R Training Certificate Waste to Land - RE
	N/A	
	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	Jon	
Last name	Smith	
On behalf of (if relevant)		
Today's date (DD/MM/YYYY)	28/02/2020	

Location Plan

Hafod Farm

Sites:
Hafod Farm
Ferwig
Cardigan
Ceredigion
SA43 1PU

Client:
Dŵr Cymru / Welsh Water

Key:

Spreading area

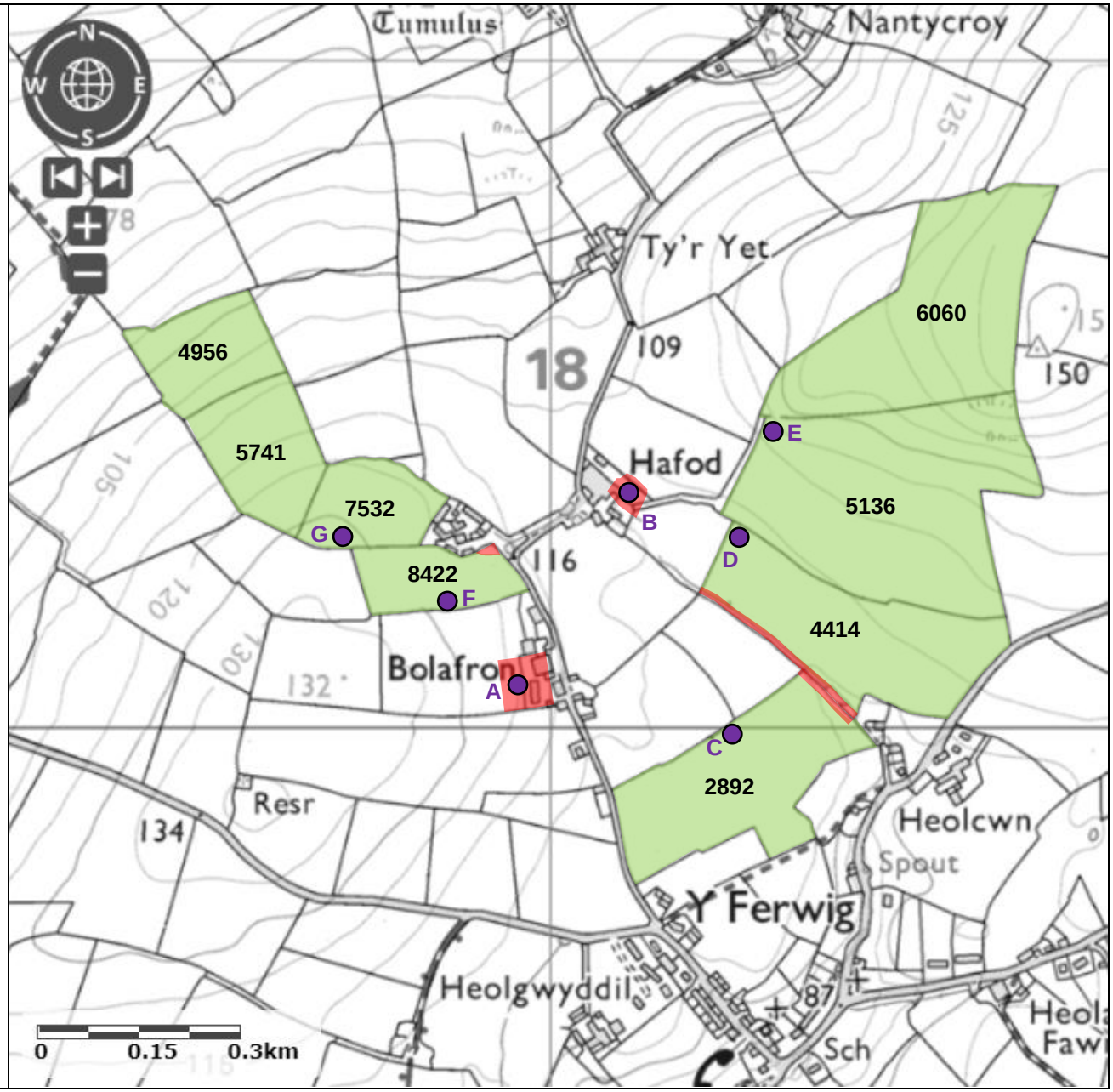
Non-spreading area

Location tags

Location tags:
Above ground storage tank
- A. SN 17958 50063

Lagoon
- B. SN 18153 50376

Field stockpiles
- C. SN 18291 50005
- D. SN 18278 50289
- E. SN 18335 50446
- F. SN 17862 50184
- G. SN 17694 50275



Agricultural Benefit Statement

For the application of beneficial wastes to fields at;

Hafod Farm, Ferwig, Cardigan, Ceredigion. SA43 1PU

28th February 2020

1 Person with appropriate technical expertise and permit details

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

- MSc Geoenvironmental Engineering
- BSc (Hons) Physical Geography
- Grad MCIWM

Verified by; K Brook, FQA FE/0829

Permit number under which this deployment application is being made: EPR/ GP3792SK

2 Where the waste is to be spread

Table 1. Where the waste is to be spread

Farm address:	Hafod Farm, Ferwig, Cardigan, Ceredigion. SA43 1PU	
Lagoon Grid Reference:	Refer to Table 4	
Area of the receiving land:	40.2ha	
Quantity to be stored at any one time:	Stackable (temporary field stockpile): 2,452t	Non-Stackable: 1,250t
Total maximum quantity to be spread:	10,050t	
Location map document reference:	HF Map	

3 What is the waste to be spread

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

Waste	***EWC Code***	***Description***	***Waste Producer***	***Additional Information***
1	19 09 02	Sludges from water clarification. Potable water treatment sludge.	DCWW Bontgoch	Stackable ferric sludge cake
2	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Bryngwyn	Non-stackable ferric liquid sludge
3	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Capel Dewi	Non-stackable ferric liquid sludge
4	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Crai	Non-stackable ferric liquid sludge
5	19 09 02	Sludges from water clarification. Potable water treatment sludge.	DCWW Llechryd	Stackable ferric sludge cake
6	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Llechryd	Non-stackable ferric liquid sludge

4 Operational details

4.1 Cropping details

Table 3. Cropping details

Current crop including projected yield if known:	Refer to tables 6-11
Is straw removed?	Y ☐ N ☐ N/A ☒
Following crop and any sensitive crops within rotation which you are amending the soil for in good time:	Refer to Tables 6-11
When do you intend to apply this waste; e.g. post-harvest – pre-ploughing, during seed bed cultivations, on the stubble over winter:	Spreading will only take place subject to ground conditions and following the Code of Good Agricultural Practice (Defra, 2011), NVZ regulations and the permit holder's Environmental Management System (EMS). Targeted periods of spreading on grass fields include spring, and after cutting of silage through summer and autumn. No more than 50t/ha of liquid sludge will be spread on a field in any 3-week period in accordance with CoGAP, and

	no more than 250t/ha will be spread within any 12-month period.

4.2 Waste storage

Table 4. Waste storage

How is the waste to be stored? *e.g. mobile tank, field heap, spread on delivery*	Stackable wastes: Field Stockpiles Non-stackable wastes: Lagoon/Spread on delivery.
Where is the waste to be stored prior to spreading?	Above the ground store A) SN 17958 50063 Lagoon B) SN 18153 50376 Stockpiles C) SN 18291 50005 D) SN 18278 50289 E) SN 18335 50446 F) SN 17862 50184 G) SN 17694 50275
Why were these storage locations chosen?	The storage locations are accessible by delivery vehicle near field entrances so the potential damage to fields by delivering vehicles is minimal. The storage locations are not within 10m of any ditch, watercourse, or footpath, nor within an SPZ1, and are at least 50m from any well spring or borehole. They are also a safe distance from overhead powerlines.

4.3 Waste application

Table 5. Waste application

How is the waste to be spread and why is it to be spread that way?	The cake will be spread using conventional rear discharge spreaders as this equipment is readily available to the farmer/contractor and the most appropriate for the material and application rates used. Liquid sludges will be surface spread by tractor and either an umbilical system or tanker, using a low-trajectory splash plate. An umbilical system or tanker will be used depending on which is better practicable on each field.
How do you plan to incorporate the waste following application?	There is no requirement for further incorporation of wastes on grass fields due to low ammonia content and minimal odour.
With liquid wastes is there any mole draining or sub-soiling planned?	No

Are there land drains in the field?	No
Other relevant operational information:	The wastes may be applied separately or in combination. If the wastes are applied in combination the total combined amount applied will not exceed 250t/ha, the total nitrogen loading will be less than 250kg/ha, and the amount of available nitrogen and total or available phosphate and potash (whichever is appropriate) will not exceed the fertiliser recommendation or the amount removed in crop offtake, whichever is the greater. Most fields have been spread with potable water treatment sludge in the last 12 months (please refer to table 4 in the LPD1 for details). All fields are between pH 5 and 6 so no alum based DCWW sludge can be spread on these fields.

Table 6. DCWW Bontgoch cake

Nutrient Requirements for Land at Hafod Farm

						N			P_2O_5				K_2O				Mg				
Field Reference	**Total Area**	**Sprd Area**	**Previous Crop**	**Next Crop**	**Soil pH**	**SNS**	**Req kg/ha**	***In Wst kg/ha**	**P Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**K Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**Mg Ind**	**Req kg/ha**	***In Wst kg/ha**	**Rate t/ha**	**Totals tonnes**
4414	6.4	6.1	Grass	Grass	5.4	Mod	250	0.0	3	20	80	**77	2+	220	282	**0.8	3	0	1.1	17	**104**
2892	5.8	5.8	Grass	Grass	5.5	Mod	250	0.0	3	20	80	**77	2-	310	282	**0.8	3	0	1.1	17	**99**
6060	8.0	8.0	Grass	Grass	5.5	Mod	250	0.0	3	20	80	**77	2+	220	282	**0.8	3	0	1.1	17	**136**
5136	10.3	10.3	Grass	Grass	5.1	Mod	250	0.0	2	80	80	**77	2+	220	282	**0.8	3	0	1.1	17	**175**
4956	2.7	2.7	Grass	Grass	5.5	Mod	250	0.0	4	0	80	**77	1	350	282	0.2	3	0	1.1	17	**46**
5741	3.1	3.1	Grass	Grass	5.4	Mod	250	0.0	4	0	80	**77	2-	310	282	**0.8	3	0	1.1	17	**53**
7532	2.2	2.2	Grass	Grass	5.5	Mod	250	0.0	3	20	80	**77	2+	220	282	**0.8	3	0	1.1	17	**37**
8422	2.0	2.0	Grass	Grass	5.3	Mod	250	0.0	4	0	80	**77	2+	220	282	**0.8	3	0	1.1	17	**34**
Ha	**40.5**	**40.2**																			**683**

Grass = 3 cut silage

Nutrient requirement based on values for grass with 3 cut silage (9-12t/ha target DM yield) described in RB209 (2017)

Crop use based on Grass totalling 47t/ha yield where 1.7kg/t P_2O_5 and 6kg/t K_2O removed in offtake (RB209, 2017)

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

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

Total N supplied at an application rate of 17t/ha is 47kg/ha

Table 7. DCWW Bryngwyn liquid

Nutrient Requirements for Land at Hafod Farm

						N			P_2O_5				K_2O				Mg				
Field Reference	**Total Area**	**Sprd Area**	**Previous Crop**	**Next Crop**	**Soil pH**	**SNS**	**Req kg/ha**	***In Wst kg/ha**	**P Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**K Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**Mg Ind**	**Req kg/ha**	***In Wst kg/ha**	**Rate t/ha**	**Totals tonnes**
4414	6.4	6.1	Grass	Grass	5.4	Mod	250	1.5	3	20	80	**9.7	2+	220	282	**1.0	3	0	1.1	250	**1525**
2892	5.8	5.8	Grass	Grass	5.5	Mod	250	1.5	3	20	80	**9.7	2-	310	282	**1.0	3	0	1.1	250	**1450**
6060	8.0	8.0	Grass	Grass	5.5	Mod	250	1.5	3	20	80	**9.7	2+	220	282	**1.0	3	0	1.1	250	**2000**
5136	10.3	10.3	Grass	Grass	5.1	Mod	250	1.5	2	80	80	**9.7	2+	220	282	**1.0	3	0	1.1	250	**2575**
4956	2.7	2.7	Grass	Grass	5.5	Mod	250	1.5	4	0	80	**9.7	1	350	282	0.2	3	0	1.1	250	**675**
5741	3.1	3.1	Grass	Grass	5.4	Mod	250	1.5	4	0	80	**9.7	2-	310	282	**1.0	3	0	1.1	250	**775**
7532	2.2	2.2	Grass	Grass	5.5	Mod	250	1.5	3	20	80	**9.7	2+	220	282	**1.0	3	0	1.1	250	**550**
8422	2.0	2.0	Grass	Grass	5.3	Mod	250	1.5	4	0	80	**9.7	2+	220	282	**1.0	3	0	1.1	250	**500**
Ha	**40.5**	**40.2**																			**10050**

Grass = 3 cut silage

Nutrient requirement based on values for grass with 3 cut silage (9-12t/ha target DM yield) described in RB209 (2017)

Crop use based on Grass totalling 47t/ha yield where 1.7kg/t P_2O_5 and 6kg/t K_2O removed in offtake (RB209, 2017)

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

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

Total N supplied at an application rate of 250t/ha is 33kg/ha

Table 8. DCWW Capel Dewi liquid

Nutrient Requirements for Land at Hafod Farm

						N			P_2O_5				K_2O				Mg				
Field Reference	**Total Area**	**Sprd Area**	**Previous Crop**	**Next Crop**	**Soil pH**	**SNS**	**Req kg/ha**	***In Wst kg/ha**	**P Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**K Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**Mg Ind**	**Req kg/ha**	***In Wst kg/ha**	**Rate t/ha**	**Totals tonnes**
4414	6.4	6.1	Grass	Grass	5.4	Mod	250	1.5	3	20	80	**22	2+	220	282	**4.2	3	0	2.1	250	**1525**
2892	5.8	5.8	Grass	Grass	5.5	Mod	250	1.5	3	20	80	**22	2-	310	282	**4.2	3	0	2.1	250	**1450**
6060	8.0	8.0	Grass	Grass	5.5	Mod	250	1.5	3	20	80	**22	2+	220	282	**4.2	3	0	2.1	250	**2000**
5136	10.3	10.3	Grass	Grass	5.1	Mod	250	1.5	2	80	80	**22	2+	220	282	**4.2	3	0	2.1	250	**2575**
4956	2.7	2.7	Grass	Grass	5.5	Mod	250	1.5	4	0	80	**22	1	350	282	0.8	3	0	2.1	250	**675**
5741	3.1	3.1	Grass	Grass	5.4	Mod	250	1.5	4	0	80	**22	2-	310	282	**4.2	3	0	2.1	250	**775**
7532	2.2	2.2	Grass	Grass	5.5	Mod	250	1.5	3	20	80	**22	2+	220	282	**4.2	3	0	2.1	250	**550**
8422	2.0	2.0	Grass	Grass	5.3	Mod	250	1.5	4	0	80	**22	2+	220	282	**4.2	3	0	2.1	250	**500**
Ha	**40.5**	**40.2**																			**10050**

Grass = 3 cut silage

Nutrient requirement based on values for grass with 3 cut silage (9-12t/ha target DM yield) described in RB209 (2017)

Crop use based on Grass totalling 47t/ha yield where 1.7kg/t P_2O_5 and 6kg/t K_2O removed in offtake (RB209, 2017)

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

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

Total N supplied at an application rate of 250t/ha is 54kg/ha

Table 9. DCWW Crai liquid

Nutrient Requirements for Land at Hafod Farm

						N			P_2O_5				K_2O				Mg				
Field Reference	**Total Area**	**Sprd Area**	**Previous Crop**	**Next Crop**	**Soil pH**	**SNS**	**Req kg/ha**	***In Wst kg/ha**	**P Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**K Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**Mg Ind**	**Req kg/ha**	***In Wst kg/ha**	**Rate t/ha**	**Totals tonnes**
4414	6.4	6.1	Grass	Grass	5.4	Mod	250	1.5	3	20	80	**12	2+	220	282	**3.4	3	0	1.4	250	**1525**
2892	5.8	5.8	Grass	Grass	5.5	Mod	250	1.5	3	20	80	**12	2-	310	282	**3.4	3	0	1.4	250	**1450**
6060	8.0	8.0	Grass	Grass	5.5	Mod	250	1.5	3	20	80	**12	2+	220	282	**3.4	3	0	1.4	250	**2000**
5136	10.3	10.3	Grass	Grass	5.1	Mod	250	1.5	2	80	80	**12	2+	220	282	**3.4	3	0	1.4	250	**2575**
4956	2.7	2.7	Grass	Grass	5.5	Mod	250	1.5	4	0	80	**12	1	350	282	0.7	3	0	1.4	250	**675**
5741	3.1	3.1	Grass	Grass	5.4	Mod	250	1.5	4	0	80	**12	2-	310	282	**3.4	3	0	1.4	250	**775**
7532	2.2	2.2	Grass	Grass	5.5	Mod	250	1.5	3	20	80	**12	2+	220	282	**3.4	3	0	1.4	250	**550**
8422	2.0	2.0	Grass	Grass	5.3	Mod	250	1.5	4	0	80	**12	2+	220	282	**3.4	3	0	1.4	250	**500**
Ha	**40.5**	**40.2**																			**10050**

Grass = 3 cut silage

Nutrient requirement based on values for grass with 3 cut silage (9-12t/ha target DM yield) described in RB209 (2017)

Crop use based on Grass totalling 47t/ha yield where 1.7kg/t P_2O_5 and 6kg/t K_2O removed in offtake (RB209, 2017)

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

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

Total N supplied at an application rate of 63t/ha is 140kg/ha

Table 10. DCWW Llechryd cake

Nutrient Requirements for Land at Hafod Farm

						N			P_2O_5				K_2O				Mg				
Field Reference	**Total Area**	**Sprd Area**	**Previous Crop**	**Next Crop**	**Soil pH**	**SNS**	**Req kg/ha**	***In Wst kg/ha**	**P Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**K Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**Mg Ind**	**Req kg/ha**	***In Wst kg/ha**	**Rate t/ha**	**Totals tonnes**
4414	6.4	6.1	Grass	Grass	5.4	Mod	250	1.8	3	20	80	**80	2+	220	282	**12	3	0	6.5	40	**244**
2892	5.8	5.8	Grass	Grass	5.5	Mod	250	1.8	3	20	80	**80	2-	310	282	**12	3	0	6.5	40	**232**
6060	8.0	8.0	Grass	Grass	5.5	Mod	250	1.8	3	20	80	**80	2+	220	282	**12	3	0	6.5	40	**320**
5136	10.3	10.3	Grass	Grass	5.1	Mod	250	1.8	2	80	80	**80	2+	220	282	**12	3	0	6.5	40	**412**
4956	2.7	2.7	Grass	Grass	5.5	Mod	250	1.8	4	0	80	**80	1	350	282	2.3	3	0	6.5	40	**108**
5741	3.1	3.1	Grass	Grass	5.4	Mod	250	1.8	4	0	80	**80	2-	310	282	**12	3	0	6.5	40	**124**
7532	2.2	2.2	Grass	Grass	5.5	Mod	250	1.8	3	20	80	**80	2+	220	282	**12	3	0	6.5	40	**88**
8422	2.0	2.0	Grass	Grass	5.3	Mod	250	1.8	4	0	80	**80	2+	220	282	**12	3	0	6.5	40	**80**
Ha	**40.5**	**40.2**																			**1608**

Grass = 3 cut silage

Nutrient requirement based on values for grass with 3 cut silage (9-12t/ha target DM yield) described in RB209 (2017)

Crop use based on Grass totalling 47t/ha yield where 1.7kg/t P_2O_5 and 6kg/t K_2O removed in offtake (RB209, 2017)

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

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

Total N supplied at an application rate of 40t/ha is 90kg/ha

Table 11. DCWW Llechryd liquid

Nutrient Requirements for Land at Hafod Farm

						N			P_2O_5				K_2O				Mg				
Field Reference	**Total Area**	**Sprd Area**	**Previous Crop**	**Next Crop**	**Soil pH**	**SNS**	**Req kg/ha**	***In Wst kg/ha**	**P Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**K Ind**	**Req kg/ha**	**Crop Use kg/ha**	***In Wst kg/ha**	**Mg Ind**	**Req kg/ha**	***In Wst kg/ha**	**Rate t/ha**	**Totals tonnes**
4414	6.4	6.1	Grass	Grass	5.4	Mod	250	5.8	3	20	80	**80	2+	220	282	**14	3	0	6.5	233	**1421**
2892	5.8	5.8	Grass	Grass	5.5	Mod	250	5.8	3	20	80	**80	2-	310	282	**14	3	0	6.5	233	**1351**
6060	8.0	8.0	Grass	Grass	5.5	Mod	250	5.8	3	20	80	**80	2+	220	282	**14	3	0	6.5	233	**1864**
5136	10.3	10.3	Grass	Grass	5.1	Mod	250	5.8	2	80	80	**80	2+	220	282	**14	3	0	6.5	233	**2400**
4956	2.7	2.7	Grass	Grass	5.5	Mod	250	5.8	4	0	80	**80	1	350	282	2.7	3	0	6.5	233	**629**
5741	3.1	3.1	Grass	Grass	5.4	Mod	250	5.8	4	0	80	**80	2-	310	282	**14	3	0	6.5	233	**722**
7532	2.2	2.2	Grass	Grass	5.5	Mod	250	5.8	3	20	80	**80	2+	220	282	**14	3	0	6.5	233	**513**
8422	2.0	2.0	Grass	Grass	5.3	Mod	250	5.8	4	0	80	**80	2+	220	282	**14	3	0	6.5	233	**466**
Ha	**40.5**	**40.2**																			**9367**

Grass = 3 cut silage

Nutrient requirement based on values for grass with 3 cut silage (9-12t/ha target DM yield) described in RB209 (2017)

Crop use based on Grass totalling 47t/ha yield where 1.7kg/t P_2O_5 and 6kg/t K_2O removed in offtake (RB209, 2017)

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

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

Total N supplied at an application rate of 233t/ha is 93kg/ha

5 Compliance with NVZ regulations

Table 12. Compliance with NVZ regulations

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

Applicable to:

If yes, please indicate the appropriate period:

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

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

If no, applications will be carried out as per CoGAP i.e. when ground conditions are suitable and when no heavy rain is forecast.</td></tr>
<tr><td>Will application rates comply with crop requirement and field/whole farm limit?</td><td>Please refer to Tables 6-11</td></tr>
<tr><td>Previous applications:</td><td>Please refer to Table 4 of the LPD1</td></tr>
</table>

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

6.1 Receiving soils

The nutrient status of individual fields to be registered are provided in tables 6-11 above. General soil type(s) for the fields to be registered are;

Table 13. Soil type

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

The soil analyses (**Soil Analysis**) shows the soils to have sufficient background concentrations of Mg (i.e. ADAS Index 3). It is therefore unlikely that the crop will require any additional input of Mg over the course of the cropping cycle.

6.2 Waste characterisation

Full characterisations of individual wastes with total and available nutrients at the recommended rates for each waste stream are supplied in **Waste Analysis**. This information is further summarised against the nutrient requirements for proposed crops in Tables 6-11.

Limiting factors for the different wastes are as follows;

- All cakes and Llechryd liquid: Phosphate
- All other liquids: Max rate of 250t/ha

6.3 Summary of benefits

These wastes are a source of essential elements N, P, K, macronutrients Mg, Ca, S and provide trace amounts of micronutrients. Wastes are beneficially used to replace a proportion of the bagged mineral fertiliser used by farmers. The recommended application rates shown in Tables 6-11 are based on the crop requirement and soil analysis.

Clean water treatment sludges contain significant amounts of organic matter, for example, the dry solids in Bontgoch cake consist of 43% organic matter. Additions of organic matter to soil will 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. Organic matter is a particularly good source of N and S, and organic acids that aid nutrient solubility and uptake, as well as enhancing microbial activity for enhanced nutrient cycling in soils.

6.4 Additional requirements

Fields may require additional N, P, and K to achieve optimum yield.

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

7.1 Potentially Toxic Elements (PTEs)

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

7.2 Other waste characteristics

The pH levels in the wastes range from 5.3 – 6.6.

It is unlikely that soil pH will decrease following the application detailed here due to the extensive buffering capacity of the receiving soils. The pH levels of the receiving soils are between 5.1 and 5.5, therefore it is unlikely that availability of any naturally occurring heavy metals present in these soils will become more available after application of these wastes.

7.3 Operational factors

1. Solid wastes will be spread using conventional rear discharge spreaders.
2. Liquid wastes will be surface spread, applied using a low trajectory splash plate.
3. Potential compaction of receiving soil will be mitigated by suitable adjustment of tyres/tyre pressure to match soil conditions, direction of spreading and load to be spread.
4. Sampling methods will be consistent with those set out in the RB209, and the analysis for PTEs are consistent with the code of agricultural practice.
5. Wastes will be applied when ground and weather conditions are suitable, following CoGAP to avoid soil damage including wheel ruts, compaction, structural damage, erosion and run-off.

8 Sensitive human and environmental receptors

There are no identified risks to local potentially sensitive receptors. This is because the risk of emissions produced from the waste activity is low due to waste type and distance to the receptors from the activity.

Locations of sensitive receptors are shown in **HF Map**. Prevailing winds are south-westerly.

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

Generic measures (in addition to permit requirements and following the EMS) to reduce potential negative impacts of the proposed spreading operation will be as follows;

1. Spreading will only be undertaken when weather conditions are suitable within restrictions outlined in CoGAP and any relevant closed periods.
2. Spreading will not be carried out in any areas of a field that will be sub-soiled.
3. Machinery operations will take account of soil conditions, slopes *etc.*
4. Liquid spreading machinery will be turned off and lifted away from soil prior to turning at the end of each run.
5. Machinery will be checked daily when in use, regularly serviced and spreading equipment calibrated. Umbilical hoses will be regularly checked for damage to prevent leaks.
6. Machinery turns will not be executed in the buffer strips.
7. Waste deliveries to field/stores will be supervised.
8. All spillages will be reported immediately to NRW.

10 Contingency planning

Replacement spreading machinery will be available to prevent waste being retained in faulty machinery. Hire vehicles will be used if required. All machinery will be fully serviced.

There will be a sufficient number of trained staff available to ensure that the operation continues throughout operational hours (*i.e.* there will be sufficient cover for illness, holiday *etc.*).

In adverse weather, storage is available until ground/weather conditions become favourable for land application.

In circumstances where the wastes cannot be stored or spread beyond normal capacities, wastes will be diverted to a local alternative deployment or DCWW sewage treatment works.

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BONTGOCH WTW
BONTGOCH

SLUDGE CAKE

SLUDGE CAKE

Sample Reference :

BONTGOCH SLUDGE CAKE

Sample Matrix : SLUDGE CAKE

Laboratory References	
Report Number	45471
Sample Number	99770

Date Received	26-FEB-2019
Date Reported	05-MAR-2019

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

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

ANALYTICAL RESULTS *on 'dry matter' basis.*

Determinand	Value	Units
Oven Dry Matter	19.3	%
Conductivity 1:6 [Fresh]	91	uS/cm
Total Nitrogen	1.44	% w/w
Ammonium Nitrogen	<10	mg/kg
Total Phosphorus (P)	10259	mg/kg
Total Potassium (K)	211	mg/kg
Total Magnesium (Mg)	1036	mg/kg
Total Copper (Cu)	30.6	mg/kg
Total Zinc (Zn)	534	mg/kg
Total Sulphur (S)	2594	mg/kg

Released by ..... *Darren Whitbread* ..... Date ..... *05/03/19* .....

NRM Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS
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BONTGOCH WTW
BONTGOCH

SLUDGE CAKE

SLUDGE CAKE

Sample Reference :

BONTGOCH SLUDGE CAKE

Sample Matrix : SLUDGE CAKE

Laboratory References	
Report Number	45471
Sample Number	99770

Date Received	26-FEB-2019
Date Reported	05-MAR-2019

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

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

ANALYTICAL RESULTS *on 'dry matter' basis.*

Determinand	Value	Units
Total Calcium (Ca)	13278	mg/kg
Total Iron (Fe)	326569	mg/kg
Total Lead (Pb)	45.5	mg/kg
Total Cadmium (Cd)	2.20	mg/kg
Total Mercury (Hg)	<0.1	mg/kg
Total Nickel (Ni)	69.8	mg/kg
Total Chromium (Cr)	29.4	mg/kg
Total Sodium (Na)	142	mg/kg
pH 1:6 [Fresh]	6.40	
Organic Matter LOI	43.4	% w/w

Released by *Darren Whitbread* Date *05/03/19*

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BONTGOCH WTW
BONTGOCH

SLUDGE CAKE

SLUDGE CAKE

Laboratory References	
Report Number	45471
Sample Number	99770

Sample Reference :

BONTGOCH SLUDGE CAKE

Sample Matrix : SLUDGE CAKE

Date Received	26-FEB-2019
Date Reported	05-MAR-2019

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

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

ANALYTICAL RESULTS *on 'dry matter' basis.*

Determinand	Value	Units
Lime Equivalent as CaCO3	9.3	% w/w
Total Aluminium	8083	mg/kg
Total Arsenic (As)	21.1	mg/kg
Neutralising Value as CaO [TNV]	5.2	% w/w

Released by ..... *Darren Whitbread* ..... Date ..... *05/03/19* .....

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DCWW Potable Water Treatment Sludge

Analysis of Bontgoch sludge cake

Date: 05/03/19

Report no. 45471
Sample no 99770

Application rate (t/ha)	**17**
Application rate (t/acre)	**7**
pH	**6.4**
Dry solids (%)	**19.3**
Organic matter (%)	**43.4**

NUTRIENT CONTENT

			Total		Available	
TOTALS	**result**	**units**	**(kg/tonne)**	**(kg/ha)**	**(kg/tonne)**	**(kg/ha)**
Nitrogen (N)	1.44	%	2.78	47.2	0.00	0.0
Ammonium-N	10	mg/kg	0.00	0.0		
Phosphorus (P)	10259	mg/kg	1.98	33.7		
Phosphate (P_2O_5)			4.51	76.7	0.9	15.3
Potassium (K)	211	mg/kg	0.04	0.7		
Potash (K_2O)			0.05	0.8	0.0	0.2
Magnesium (Mg)	1036	mg/kg	0.20	3.4		
Magnesium (MgO)			0.32	5.4	0.1	1.1
Sulphur (S)	2594	mg/kg	0.50	8.5		
Sulphur (SO_3)			1.25	21.3	0.1	2.1

POTENTIALLY TOXIC ELEMENTS

			Amount		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	534.0	mg/kg	103.1	1.75	15.00
Copper	30.6	mg/kg	5.91	0.10	7.50
Nickel	69.8	mg/kg	13.47	0.23	3.00
Lead	45.5	mg/kg	8.78	0.15	15.00
Cadmium	2.20	mg/kg	0.42	0.01	0.15
Chromium	29.4	mg/kg	5.67	0.10	15.00
Mercury	0.1	mg/kg	0.02	0.00	0.10
Arsenic	21.1	mg/kg	4.07	0.07	0.70
Other Elements					
Aluminium	8083	mg/kg	1560.0	26.5	
Iron	326569	mg/kg	63027.8	1071.5	

To convert from kg/tonne to units/ton multiply by 2
To convert from kg/ha to units/acre multiply by 0.8

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	

DCWW Potable Water Treatment Sludge

Analysis of Bryngwyn liquid sludge

Date: 09/01/20 Lab ref no. S 6591307

Application rate (t/ha)	**250**
Application rate (t/acre)	**100**
pH	**6.0**
Dry solids (%)	**2.4**
Organic matter (%)	**33.7**

NUTRIENT CONTENT

			Total		Available	
TOTALS	**result**	**units**	**(kg/tonne)**	**(kg/ha)**	**(kg/tonne)**	**(kg/ha)**
Nitrogen (N)	0.55	%	0.13	33.4	0.01	1.5
Ammonium-N	250	mg/kg	0.01	1.5		
Phosphorus (P)	697	mg/kg	0.02	4.2		
Phosphate (P_2O_5)			0.04	9.7	0.0	1.9
Potassium (K)	136	mg/kg	0.00	0.8		
Potash (K_2O)			0.00	1.0	0.0	0.2
Magnesium (Mg)	551	mg/kg	0.01	3.3		
Magnesium (MgO)			0.02	5.4	0.0	1.1
Sulphur (S)	2920	mg/kg	0.07	17.7		
Sulphur (SO_3)			0.18	44.3	0.0	4.4

POTENTIALLY TOXIC ELEMENTS

			Amount		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	121.0	mg/kg	2.9	0.74	15.00
Copper	4.8	mg/kg	0.12	0.03	7.50
Nickel	3.5	mg/kg	0.09	0.02	3.00
Lead	5.3	mg/kg	0.13	0.03	15.00
Cadmium	0.38	mg/kg	0.01	0.00	0.15
Chromium	10.4	mg/kg	0.25	0.06	15.00
Mercury	0.8	mg/kg	0.02	0.01	0.10
Arsenic	24.7	mg/kg	0.60	0.15	0.70
Other Elements					
Aluminium	1980	mg/kg	48.1	12.0	
Iron	401000	mg/kg	9744.3	2436.1	

To convert from kg/tonne to units/ton multiply by 2
To convert from kg/ha to units/acre multiply by 0.8

Dŵr Cymru
Welsh Water

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		30	
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	

DCWW Potable Water Treatment Sludge

Analysis of Capel Dewi liquid sludge

Date: 09/01/20 Lab ref no. S 6591305

Application rate (t/ha)	**250**
Application rate (t/acre)	**100**
pH	**6.2**
Dry solids (%)	**2.4**
Organic matter (%)	**35.3**

NUTRIENT CONTENT

			Total		Available	
TOTALS	**result**	**units**	**(kg/tonne)**	**(kg/ha)**	**(kg/tonne)**	**(kg/ha)**
Nitrogen (N)	0.88	%	0.21	53.5	0.01	1.5
Ammonium-N	251	mg/kg	0.01	1.5		
Phosphorus (P)	1580	mg/kg	0.04	9.6		
Phosphate (P_2O_5)			0.09	21.9	0.0	4.4
Potassium (K)	579	mg/kg	0.01	3.5		
Potash (K_2O)			0.02	4.2	0.0	0.8
Magnesium (Mg)	1060	mg/kg	0.03	6.4		
Magnesium (MgO)			0.04	10.3	0.0	2.1
Sulphur (S)	4430	mg/kg	0.11	26.9		
Sulphur (SO_3)			0.27	67.3	0.0	6.7

POTENTIALLY TOXIC ELEMENTS

			Amount		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	138.0	mg/kg	3.4	0.84	15.00
Copper	14.4	mg/kg	0.35	0.09	7.50
Nickel	10.2	mg/kg	0.25	0.06	3.00
Lead	10.0	mg/kg	0.24	0.06	15.00
Cadmium	0.38	mg/kg	0.01	0.00	0.15
Chromium	14.4	mg/kg	0.35	0.09	15.00
Mercury	0.8	mg/kg	0.02	0.00	0.10
Arsenic	30.0	mg/kg	0.73	0.18	0.70
Other Elements					
Aluminium	45300	mg/kg	1100.8	275.2	
Iron	324000	mg/kg	7873.2	1968.3	

To convert from kg/tonne to units/ton multiply by 2
To convert from kg/ha to units/acre multiply by 0.8

Dŵr Cymru
Welsh Water

Sample Analysis Report

Sampling Point No -	79114	**Location -**	CRAY WTW SLUDGE TANKERING POINT
Date Sampled -	20-Jan-20	**Time Taken -**	14:30
Originator -	SEWAGE	**Purpose -**	EQO/DIRECTIVE COMPLIANCE
Laboratory -	GLASLYN	**Lab Ref No -**	S 6599611
Sampler -	EXTA	**No Results -**	20
Type -			

Sample Results

Code	Determinand Name	Units		Result	Limit
238	Magnesium	MG/KG		647	
288	ALUMINIUM (DRY WT)	MG/KG		3330	
357	ARSENIC (DRY WT)	MG/KG		33.6	
4620	pH	PH UNITS		5.3	
7774	WTW MERCURY TOTAL	MG/KG	LT	0.77	
8241	LOSS ON IGNITION	%		36.4	
9233	Ammoniacal nitrogen	MG/KG	LT	234	
9234	Sulphur	MG/KG		9080	
9271	Cadmium	MG/KG	LT	0.36	
9272	CHROMIUM TOTAL	MG/KG		11.5	
9273	Copper	MG/KG		13.3	
9275	Nickel	MG/KG	LT	5.1	
9276	LEAD TOTAL	MG/KG		24.2	
9277	ZINC TOTAL	MG/KG		137	
9278	IRON TOTAL	MG/KG		416000	
9281	% Dry solids	%		2.62	
9282	% Minerals	%		63.6	
9283	% K (dry weight)	%		0.0436	
9284	% P (dry weight)	%		0.0788	
9285	% N (dry weight)	%		0.909	

DCWW Potable Water Treatment Sludge

Analysis of Crai liquid sludge

Date: 20/01/20 Lab ref no. S 6599611

Application rate (t/ha)	**250**
Application rate (t/acre)	**100**
pH	**5.3**
Dry solids (%)	**2.6**
Organic matter (%)	**36.4**

NUTRIENT CONTENT

			Total		Available	
TOTALS	**result**	**units**	**(kg/tonne)**	**(kg/ha)**	**(kg/tonne)**	**(kg/ha)**
Nitrogen (N)	0.91	%	0.24	59.5	0.01	1.5
Ammonium-N	234	mg/kg	0.01	1.5		
Phosphorus (P)	788	mg/kg	0.02	5.2		
Phosphate (P_2O_5)			0.05	11.8	0.0	2.4
Potassium (K)	436	mg/kg	0.01	2.9		
Potash (K_2O)			0.01	3.4	0.0	0.7
Magnesium (Mg)	647	mg/kg	0.02	4.2		
Magnesium (MgO)			0.03	6.8	0.0	1.4
Sulphur (S)	9080	mg/kg	0.24	59.5		
Sulphur (SO_3)			0.59	148.7	0.1	14.9

POTENTIALLY TOXIC ELEMENTS

			Amount		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	137.0	mg/kg	3.6	0.90	15.00
Copper	13.3	mg/kg	0.35	0.09	7.50
Nickel	5.1	mg/kg	0.13	0.03	3.00
Lead	24.2	mg/kg	0.63	0.16	15.00
Cadmium	0.36	mg/kg	0.01	0.00	0.15
Chromium	11.5	mg/kg	0.30	0.08	15.00
Mercury	0.8	mg/kg	0.02	0.01	0.10
Arsenic	33.6	mg/kg	0.88	0.22	0.70
Other Elements					
Aluminium	3330	mg/kg	87.2	21.8	
Iron	416000	mg/kg	10899.2	2724.8	

To convert from kg/tonne to units/ton multiply by 2
To convert from kg/ha to units/acre multiply by 0.8

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LLECHRYD WTW
LLECHRYD
CARDIGAN

SLUDGE

SLUDGE ANALYSIS RESULTS

Sample Reference :

LLECHRYD CAKE

Sample Matrix : SLUDGE

Laboratory References	
Report Number	85955
Sample Number	109334

Date Received	04-FEB-2020
Date Reported	10-FEB-2020

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

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

ANALYTICAL RESULTS *on 'dry matter' basis.*

Determinand	Value	Units
Oven Dry Matter	21.6	%
Conductivity 1:6 [Fresh]	72	uS/cm
Total Nitrogen	1.04	% w/w
Ammonium Nitrogen	209	mg/kg
Total Phosphorus (P)	4047	mg/kg
Total Potassium (K)	1133	mg/kg
Total Magnesium (Mg)	2342	mg/kg
Total Copper (Cu)	42.6	mg/kg
Total Zinc (Zn)	221	mg/kg
Total Sulphur (S)	1888	mg/kg

Released by ..... *Myles Nicholson* ..... Date ..... *10/02/20* .....

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LLECHRYD WTW
LLECHRYD
CARDIGAN

SLUDGE

SLUDGE ANALYSIS RESULTS

Sample Reference :

LLECHRYD CAKE

Sample Matrix : SLUDGE

Laboratory References	
Report Number	85955
Sample Number	109334

Date Received	04-FEB-2020
Date Reported	10-FEB-2020

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

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

ANALYTICAL RESULTS *on 'dry matter' basis.*

Determinand	Value	Units
Total Calcium (Ca)	7144	mg/kg
Total Iron (Fe)	261777	mg/kg
Total Lead (Pb)	27.7	mg/kg
Total Cadmium (Cd)	0.43	mg/kg
Total Mercury (Hg)	<0.1	mg/kg
Total Nickel (Ni)	28.9	mg/kg
Total Chromium (Cr)	41.3	mg/kg
Total Sodium (Na)	231	mg/kg
pH 1:6 [Fresh]	5.47	
Total Aluminium	10470	mg/kg

Released by *Myles Nicholson* Date *10/02/20*

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LLECHRYD WTW
LLECHRYD
CARDIGAN

SLUDGE

SLUDGE ANALYSIS RESULTS

Sample Reference :

LLECHRYD CAKE

Sample Matrix : SLUDGE

Laboratory References	
Report Number	85955
Sample Number	109334

Date Received	04-FEB-2020
Date Reported	10-FEB-2020

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

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

ANALYTICAL RESULTS *on 'dry matter' basis.*

Determinand	Value	Units
Total Arsenic (As)	24.6	mg/kg

Released by *Myles Nicholson* Date *10/02/20*

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DCWW Potable Water Treatment Sludge

Analysis of Llechryd sludge cake

Date: 10/02/20

Report no. 85955
Sample no 109334

Application rate (t/ha)	**40**
Application rate (t/acre)	**16**
pH	**5.5**
Dry solids (%)	**21.6**

NUTRIENT CONTENT

			Total		Available	
TOTALS	**result**	**units**	**(kg/tonne)**	**(kg/ha)**	**(kg/tonne)**	**(kg/ha)**
Nitrogen (N)	1.04	%	2.25	89.9	0.05	1.8
Ammonium-N	209	mg/kg	0.05	1.8		
Phosphorus (P)	4047	mg/kg	0.87	35.0		
Phosphate (P_2O_5)			1.99	79.7	0.4	15.9
Potassium (K)	1133	mg/kg	0.24	9.8		
Potash (K_2O)			0.29	11.7	0.1	2.3
Magnesium (Mg)	2342	mg/kg	0.51	20.2		
Magnesium (MgO)			0.81	32.4	0.2	6.5
Sulphur (S)	1888	mg/kg	0.41	16.3		
Sulphur (SO_3)			1.02	40.8	0.1	4.1

POTENTIALLY TOXIC ELEMENTS

			Amount		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	221.0	mg/kg	47.7	1.91	15.00
Copper	42.6	mg/kg	9.20	0.37	7.50
Nickel	28.9	mg/kg	6.24	0.25	3.00
Lead	27.7	mg/kg	5.98	0.24	15.00
Cadmium	0.43	mg/kg	0.09	0.00	0.15
Chromium	41.3	mg/kg	8.92	0.36	15.00
Mercury	0.1	mg/kg	0.02	0.00	0.10
Arsenic	24.6	mg/kg	5.31	0.21	0.70
Other Elements					
Aluminium	10470	mg/kg	2261.5	90.5	
Iron	261777	mg/kg	56543.8	2261.8	

To convert from kg/tonne to units/ton multiply by 2
To convert from kg/ha to units/acre multiply by 0.8

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LLECHRYD WTW
LLECHRYD
CARDIGAN

SLUDGE

SLUDGE

Sample Reference :

LLECHRYD LIQUID

Sample Matrix : SLUDGE

Laboratory References	
Report Number	85962
Sample Number	91867

Date Received	04-FEB-2020
Date Reported	11-FEB-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	3.69	%
Conductivity 1:6	53.6	uS/cm
Total Kjeldahl Nitrogen	0.04	% w/w
Ammonium Nitrogen	<25	mg/kg
Total Phosphorus (P)	150	mg/kg
Total Potassium (K)	49.0	mg/kg
Total Magnesium (Mg)	87.7	mg/kg
Total Copper (Cu)	1.59	mg/kg
Total Zinc (Zn)	8.14	mg/kg
Total Sulphur (S)	79.4	mg/kg

Released by ..... *Myles Nicholson* ..... Date ..... *11/02/20* .....

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LLECHRYD WTW
LLECHRYD
CARDIGAN

SLUDGE

SLUDGE

Sample Reference :

LLECHRYD LIQUID

Sample Matrix : SLUDGE

Laboratory References	
Report Number	85962
Sample Number	91867

Date Received	04-FEB-2020
Date Reported	11-FEB-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 Calcium (Ca)	235	mg/kg
Total Iron (Fe)	8906	mg/kg
Total Lead (Pb)	1.02	mg/kg
Total Cadmium (Cd)	0.02	mg/kg
Total Mercury (Hg)	<0.05	mg/kg
Total Nickel (Ni)	1.00	mg/kg
Total Chromium (Cr)	1.32	mg/kg
Total Sodium (Na)	19.6	mg/kg
pH 1:6 [Fresh]	6.41	
Total Aluminium	364	mg/kg

Released by *Myles Nicholson* Date *11/02/20*

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LLECHRYD WTW
LLECHRYD
CARDIGAN

SLUDGE

SLUDGE

Sample Reference :

LLECHRYD LIQUID

Sample Matrix : SLUDGE

Laboratory References	
Report Number	85962
Sample Number	91867

Date Received	04-FEB-2020
Date Reported	11-FEB-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 Arsenic (As)	0.87	mg/kg

Released by *Myles Nicholson* Date *11/02/20*

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DCWW Potable Water Treatment Sludge

Analysis of Llechryd liquid sludge

Date: 11/02/20

Lab report no. 85962
Lab sample no. 91867

Application rate (t/ha)	**233**
Application rate (t/acre)	**93**
pH	**6.41**
Dry solids (%)	**3.69**

NUTRIENT CONTENT

			Total		Available	
TOTALS	**result**	**units**	**(kg/tonne)**	**(kg/ha)**	**(kg/tonne)**	**(kg/ha)**
Nitrogen (N)	0.04	%	0.40	93.2	0.03	5.8
Ammonium-N	25	mg/kg	0.03	5.8		
Phosphorus (P)	150	mg/kg	0.15			
Phosphate (P_2O_5)			0.34	79.7	0.07	15.9
Potassium (K)	49	mg/kg	0.05			
Potash (K_2O)			0.06	13.7	0.01	2.7
Magnesium (Mg)	87.7	mg/kg	0.09			
Magnesium (MgO)			0.14	32.7	0.03	6.5
Sulphur (S)	79.4	mg/kg	0.08			
Sulphur (SO_3)			0.20	46.3	0.04	9.3

POTENTIALLY TOXIC ELEMENTS

			Rate		Limit
TOTALS	**result**	**units**	**(g/tonne)**	**(kg/ha)**	**(kg/ha/yr)**
Zinc	8.14	mg/kg	8.14	1.90	15.00
Copper	1.59	mg/kg	1.59	0.37	7.50
Nickel	1.00	mg/kg	1.00	0.23	3.00
Lead	1.0	mg/kg	1.02	0.24	15.00
Cadmium	0.02	mg/kg	0.02	0.00	0.15
Chromium	1.32	mg/kg	1.32	0.31	15.00
Mercury	0.05	mg/kg	0.05	0.01	0.10
Arsenic	0.87	mg/kg	0.87	0.20	0.70
Other Elements					
Aluminium	364	mg/kg	364.0	84.8	
Iron	8906	mg/kg	8906.0	2075.1	

To convert from kg/tonne to units/ton multiply by 2
To convert from kg/ha to units/acre multiply by 0.8

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SA48 7RJ
Tel. : 01570 471 516

M629

Please quote the above code for all enquiries

Client : MORRIS DAVIES
HAFOD

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 19610/16

Date Received 21-Nov-16
Date Reported 22-Nov-16

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details		Soil pH	Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details		P	K	Mg	P	K	Mg
79004/16	1	**BOLAFRON 4414** [redacted]	**5.4**	**3**	**2+**	**3**	**32.8**	**201**	**116**
79005/16	2	**BOLAFRON 2892** [redacted]	**5.5**	**3**	**2-**	**3**	**36.0**	**126**	**136**
79006/16	3	**BOLAFRON 6060** [redacted]	**5.5**	**3**	**2+**	**3**	**29.2**	**221**	**155**
79007/16	4	**BOLAFRON 5136** [redacted]	**5.1**	**2**	**2+**	**3**	**22.2**	**216**	**142**
[redacted]									
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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 DEFRA Fertiliser Recommendations RB209 8th Edition (Appendix 4).

Released by *Dr R C Wilkinson* On behalf of NRM Ltd Date *22/11/16*

Independently Analysed by **NRM,** a division of **Cawood Scientific Ltd,** Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS
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SA48 7RJ
Tel. : 01570 471 516

M629

Please quote the above code for all enquiries

Client : MORRIS DAVIES
HAFOD

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 19609/16

Date Received 21-Nov-16
Date Reported 22-Nov-16

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details		Soil pH	Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details		P	K	Mg	P	K	Mg
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
78999/16	2	**BOLAFRON 8422** [redacted]	**5.3**	**4**	**2+**	**3**	**64.8**	**213**	**143**
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]									

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Released by *Dr R C Wilkinson* On behalf of NRM Ltd Date *22/11/16*

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Client :	MORRIS DAVIES HAFOD

M629

Please quote the above code for all enquiries

Sample Matrix : Agricultural Soil

Laboratory Reference

Card Number 19607/16

Date Received	21-Nov-16
Date Reported	22-Nov-16

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details		Soil pH	Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details		P	K	Mg	P	K	Mg
[redacted]									
[redacted]									
[redacted]									
[redacted]									
[redacted]									
78991/16	6	**BOLAFRON 7532** [redacted]	**5.5**	**3**	**2+**	**3**	**44.4**	**217**	**142**

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M629

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Client : MORRIS DAVIES
HAFOD

Sample Matrix : Agricultural Soil

Laboratory Reference
Card Number 19612/16

Date Received 21-Nov-16
Date Reported 22-Nov-16

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
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
79019/16	4	**BOLAFRON 5741** [redacted]	**5.4**	**4**	**2-**	**3**	**49.2**	**124**	**133**
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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Laboratory Reference

Card Number 19611/16

Date Received	21-Nov-16
Date Reported	22-Nov-16

SOIL ANALYSIS REPORT

Laboratory Sample Reference	Field Details		Soil pH	Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details		P	K	Mg	P	K	Mg
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
79013/16	4	**BOLAFRON 4956** [redacted]	**5.5**	**4**	**1**	**3**	**49.0**	**95**	**142**
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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This is to certify that

Richard Evans

Has successfully completed

Recycling Waste to Land Training

Including: Environmental Permitting, How to Comply with your Land Spreading Permit, 4R's Environmental Management System, Requirements of Technically Competent Managers and Nominated Competent Persons, and Adherence to Quality Protocols

At: 4R Newent Office

Date: 22/02/18

Trainer's Name: Dr Becky Wheeler

Training Organisation: In-House

Renewal Date: Ongoing

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