Agricultural Benefit Statement

For the application of beneficial wastes to fields at;

Park Farm, Malthouse Lane, Caerleon, Newport. NP18 3PB

15th December 2021

1 Person with appropriate technical expertise and permit details

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

- MGeol Environmental Earth Sciences;
- C.Env Chartered Environmentalist;
- WAMITAB (4): Land Remediation

Verified by; Chris Ash FQA (FE/6324)

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:	Park Farm, Malthouse Lane, Caerleon, Newport. NP18 3PB	
Stockpile grid reference:	Refer to Table 4	
Area of the receiving land:	45.95ha	
Quantity to be stored at any one time:	Stackable: 3,000t	Non-Stackable: N/A
Total maximum quantity to be spread:	10737t	
Location map document reference:	Park Farm Spreading Map (Amended)	

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 effluent.	DCWW Court Farm	Stackable ferric sludge cake
2	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Pontsticill	Stackable alum sludge cake
3	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Pontsticill	Non-stackable alum liquid sludge
4	19 06 06	Whole digestate from anaerobic treatment of source segregated biodegradable waste.	Andigestion Ltd.	SP3132VU
5	19 09 02	Sludges from water clarification. Potable water treatment effluent.	DCWW Hirwaun	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 6-10 below
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 6-10
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 (late Feb – Apr), 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: N/A spread on delivery
Where is the waste to be stored prior to spreading?	**Storage Locations:** *Easting* / *Northing* A 332221 192038 B 331723 191759 C 331799 191797
Why were these storage locations chosen?	The stockpile locations are accessible by delivering vehicle, near field entrances so the potential damage to fields by delivering vehicles is minimal. The stockpiles are not within 10m of any ditch, watercourse, or footpath, not within a SPZ1, and are at least 50m from any well spring or borehole. They are also a safe distance from overhead powerlines. These are presented and detailed on the spreading map. These locations have been adjusted from the previous / historic storage locations following comments from NRW.

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 cakes 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 rates it is to be applied at. Liquids and sludges will be surface spread by tractor and tanker using a low-trajectory splash plate / dribble bar trailing shoe or similar. Respect will be given to no spread zones and steeply sloping areas.
How do you plan to incorporate the waste following application?	There is no requirement for further incorporation of wastes on grass fields.
With liquid wastes is there any mole draining or sub-soiling planned? *Are there land drains in the field?*	No to both

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. Alum based sludge (DCWW Pontsticill cake and liquid) will not be spread on fields with a pH significantly less than pH6.

Table 6. Court Farm WTW

Nutrient Requirements for Land at Park Farm

Field Reference	Total Area	Sprd Area	Previous Crop	Next Crop	pH	N			P_2O_5				K_2O				Mg			Rate	Totals
						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	t/ha	tonnes
1	3.18	3.01	Grass	Grass	6.1	Mod	235	232	2	85	65	65	2-	170	228	48	3	0	9.5	92	**277**
2	5.66	5.15	Grass	Grass	6	Mod	235	232	1	145	65	13	2-	170	228	48	3	0	9.5	92	**474**
3	2.32	2.32	Grass	Grass	5.9	Mod	235	232	2	85	65	65	2-	170	228	48	3	0	9.5	92	**213**
4	3.31	3.03	Grass	Grass	5.8	Mod	235	232	1	145	65	13	2+	120	228	48	3	0	9.5	92	**279**
[redacted]																					
6	7.38	5.97	Grass	Grass	5.9	Mod	235	232	1	145	65	13	2-	170	228	48	3	0	9.5	92	**549**
7	3.31	2.98	Grass	Grass	5.9	Mod	235	232	1	145	65	13	2+	120	228	48	3	0	9.5	92	**274**
8	5.11	5.10	Grass	Grass	5.9	Mod	235	232	1	145	65	13	2-	170	228	48	3	0	9.5	92	**469**
9	7.43	6.29	Grass	Grass	6.5	Mod	235	232	0	205	65	13	0	260	228	9.5	3	0	9.5	92	**579**
10	5.87	5.18	Grass	Grass	6.4	Mod	235	232	0	205	65	13	0	260	228	9.5	3	0	9.5	92	**477**
11	8.43	6.92	Grass	Grass	6.6	Mod	235	232	0	205	65	13	0	260	228	9.5	3	0	9.5	92	**637**
Ha	**52.00**	**45.95**																			**3950**

Grass = 2 cut silage with aftermath grazing, FB = fodder beer

Nutrient requirement based on values for grass with 2 cuts of silage (23&15 t FW/ha) with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2020)

Grass crop use based on yield totalling 38t/ha where 1.7kg/t P_2O_5 and 6.0kg/t K_2O removed in offtake (RB209, 2020)

To account for aftermath grazing, 1/2 of the P & K requirement for grazing has been added, and 10kg/ha P and 20kg/ha K is added to crop use

*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 160t/ha is 231kg/ha

Table 7. Pontsticill WTW cake

Nutrient Requirements for Land at Park Farm

Field Reference	Total Area	Sprd Area	Previous Crop	Next Crop	pH	N			P_2O_5				K_2O				Mg			Rate	Totals
						SNS	Req	*In Wst	P Ind	Req	Crop Use	*In Wst	K Ind	Req	Crop Use	*In Wst	Mg Ind	Req	*In Wst		
							kg/ha	kg/ha		kg/ha	kg/ha	kg/ha		kg/ha	kg/ha	kg/ha		kg/ha	kg/ha	t/ha	tonnes
1	3.18	3.01	Grass	Grass	6.1	Mod	235	187	2	85	65	65	2-	170	228	9.6	3	0	6	109	328
2	5.66	5.15	Grass	Grass	6	Mod	235	187	1	145	65	13	2-	170	228	9.6	3	0	6	109	561
3	2.32	2.32	Grass	Grass	5.9	Mod	235	187	2	85	65	65	2-	170	228	9.6	3	0	6	109	253
4	3.31	3.03	Grass	Grass	5.8	Mod	235	187	1	145	65	13	2+	120	228	9.6	3	0	6	109	330
6	7.38	5.97	Grass	Grass	5.9	Mod	235	187	1	145	65	13	2-	170	228	9.6	3	0	6	109	651
7	3.31	2.98	Grass	Grass	5.9	Mod	235	187	1	145	65	13	2+	120	228	9.6	3	0	6	109	325
8	5.11	5.10	Grass	Grass	5.9	Mod	235	187	1	145	65	13	2-	170	228	9.6	3	0	6	109	556
9	7.43	6.29	Grass	Grass	6.5	Mod	235	187	0	205	65	13	0	260	228	1.9	3	0	6	109	686
10	5.87	5.18	Grass	Grass	6.4	Mod	235	187	0	205	65	13	0	260	228	1.9	3	0	6	109	565
11	8.43	6.92	Grass	Grass	6.6	Mod	235	187	0	205	65	13	0	260	228	1.9	3	0	6	109	754
Ha	**52.00**	**45.95**																			**4680**

Grass = 2 cut silage with aftermath grazing, FB = fodder beer

Nutrient requirement based on values for grass with 2 cuts of silage (23&15 t FW/ha) with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2020)
Grass crop use based on yield totalling 38t/ha where 1.7kg/t P_2O_5 and 6.0kg/t K_2O removed in offtake (RB209, 2020)

To account for aftermath grazing, 1/2 of the P & K requirement for grazing has been added, and 10kg/ha P and 20kg/ha K is added to crop use
*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 160t/ha is 186.5kg/ha

Table 8. Pontsticill WTW liquid

Nutrient Requirements for Land at Park Farm

						N			P_2O_5				K_2O				Mg				
Field Reference	Total Area	Sprd Area	Previous Crop	Next Crop	pH	SNS	Req kg/ha	*In Wst kg/ha	P Ind	Req kg/ha	Crop Use kg/ha	*In Wst kg/ha	K Ind	Req kg/ha	Crop Use kg/ha	*In Wst kg/ha	Mg Ind	Req kg/ha	*In Wst kg/ha	Rate t/ha	Totals tonnes
1	3.18	3.01	Grass	Grass	6.1	Mod	235	27	2	85	65	10	2-	170	228	5.1	3	0	3.9	250	**753**
2	5.66	5.15	Grass	Grass	6	Mod	235	27	1	145	65	2	2-	170	228	5.1	3	0	3.9	250	**1288**
3	2.32	2.32	Grass	Grass	5.9	Mod	235	27	2	85	65	10	2-	170	228	5.1	3	0	3.9	250	**580**
4	3.31	3.03	Grass	Grass	5.8	Mod	235	27	1	145	65	2	2+	120	228	5.1	3	0	3.9	250	**758**
[redacted]																					
6	7.38	5.97	Grass	Grass	5.9	Mod	235	27	1	145	65	2	2-	170	228	5.1	3	0	3.9	250	**1493**
7	3.31	2.98	Grass	Grass	5.9	Mod	235	27	1	145	65	2	2+	120	228	5.1	3	0	3.9	250	**745**
8	5.11	5.10	Grass	Grass	5.9	Mod	235	27	1	145	65	2	2-	170	228	5.1	3	0	3.9	250	**1275**
9	7.43	6.29	Grass	Grass	6.5	Mod	235	27	0	205	65	2	0	260	228	1	3	0	3.9	250	**1573**
10	5.87	5.18	Grass	Grass	6.4	Mod	235	27	0	205	65	2	0	260	228	1	3	0	3.9	250	**1295**
11	8.43	6.92	Grass	Grass	6.6	Mod	235	27	0	205	65	2	0	260	228	1	3	0	3.9	250	**1730**
Ha	**52.00**	**45.95**																			**10735**

Grass = 2 cut silage with aftermath grazing, FB = fodder beer

Nutrient requirement based on values for grass with 2 cuts of silage (23&15 t FW/ha) with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2020)

Grass crop use based on yield totalling 38t/ha where 1.7kg/t P_2O_5 and 6.0kg/t K_2O removed in offtake (RB209, 2020)

To account for aftermath grazing, 1/2 of the P & K requirement for grazing has been added, and 10kg/ha P and 20kg/ha K is added to crop use

*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 160t/ha is 27kg/ha

Table 9. Andigestion anaerobic digestate

Nutrient Requirements for Land at Park Farm

						N			P_2O_5				K_2O				Mg				
Field Reference	Total Area	Sprd Area	Previous Crop	Next Crop	pH	SNS	Req kg/ha	*In Wst kg/ha	P Ind	Req kg/ha	Crop Use kg/ha	*In Wst kg/ha	K Ind	Req kg/ha	Crop Use kg/ha	*In Wst kg/ha	Mg Ind	Req kg/ha	*In Wst kg/ha	Rate t/ha	Totals tonnes
1	3.18	3.01	Grass	Grass	6.1	Mod	235	143	2	85	65	45*	2-	170	228	109*	3	0	1.3	47	**141**
2	5.66	5.15	Grass	Grass	6	Mod	235	143	1	145	65	27	2-	170	228	109*	3	0	1.3	47	**242**
3	2.32	2.32	Grass	Grass	5.9	Mod	235	143	2	85	65	45*	2-	170	228	109*	3	0	1.3	47	**109**
4	3.31	3.03	Grass	Grass	5.8	Mod	235	143	1	145	65	27	2+	120	228	109*	3	0	1.3	47	**142**
6	7.38	5.97	Grass	Grass	5.9	Mod	235	143	1	145	65	27	2-	170	228	109*	3	0	1.3	47	**281**
7	3.31	2.98	Grass	Grass	5.9	Mod	235	143	1	145	65	27	2+	120	228	109*	3	0	1.3	47	**140**
8	5.11	5.10	Grass	Grass	5.9	Mod	235	143	1	145	65	27	2-	170	228	109*	3	0	1.3	47	**240**
9	7.43	6.29	Grass	Grass	6.5	Mod	235	143	0	205	65	27	0	260	228	98	3	0	1.3	47	**296**
10	5.87	5.18	Grass	Grass	6.4	Mod	235	143	0	205	65	27	0	260	228	98	3	0	1.3	47	**243**
11	8.43	6.92	Grass	Grass	6.6	Mod	235	143	0	205	65	27	0	260	228	98	3	0	1.3	47	**325**
Ha	**52.00**	**45.95**																			**2018**

Grass = 2 cut silage with aftermath grazing, FB = fodder beer

Nutrient requirement based on values for grass with 2 cuts of silage (23&15 t FW/ha) with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2020)

Grass crop use based on yield totalling 38t/ha where 1.7kg/t P_2O_5 and 6.0kg/t K_2O removed in offtake (RB209, 2020)

To account for aftermath grazing, 1/2 of the P & K requirement for grazing has been added, and 10kg/ha P and 20kg/ha K is added to crop use

*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 147t/ha is 235kg/ha

Table 10. DCWW Hirwaun

Nutrient Requirements for Land at Park Farm

Field Reference	Total Area	Sprd Area	Previous Crop	Next Crop	pH	N			P_2O_5				K_2O				Mg			Rate	Totals
						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	t/ha	tonnes
1	3.18	3.01	Grass	Grass	6.1	Mod	235	54	2	85	65	11	2-	170	228	2.3	3	0	1.2	250	**753**
2	5.66	5.15	Grass	Grass	6	Mod	235	54	1	145	65	2	2-	170	228	2.3	3	0	1.2	250	**1288**
3	2.32	2.32	Grass	Grass	5.9	Mod	235	54	2	85	65	11	2-	170	228	2.3	3	0	1.2	250	**580**
4	3.31	3.03	Grass	Grass	5.8	Mod	235	54	1	145	65	2	2+	120	228	2.3	3	0	1.2	250	**758**
[redacted]																					
6	7.38	5.97	Grass	Grass	5.9	Mod	235	54	1	145	65	2	2-	170	228	2.3	3	0	1.2	250	**1493**
7	3.31	2.98	Grass	Grass	5.9	Mod	235	54	1	145	65	2	2+	120	228	2.3	3	0	1.2	250	**745**
8	5.11	5.10	Grass	Grass	5.9	Mod	235	54	1	145	65	2	2-	170	228	2.3	3	0	1.2	250	**1275**
9	7.43	6.29	Grass	Grass	6.5	Mod	235	54	0	205	65	2	0	260	228	0.5	3	0	1.2	250	**1573**
10	5.87	5.18	Grass	Grass	6.4	Mod	235	54	0	205	65	2	0	260	228	0.5	3	0	1.2	250	**1295**
11	8.43	6.92	Grass	Grass	6.6	Mod	235	54	0	205	65	2	0	260	228	0.5	3	0	1.2	250	**1730**
Ha	**52.00**	**45.95**																			**10735**

Grass = 2 cut silage with aftermath grazing, FB = fodder beer

Nutrient requirement based on values for grass with 2 cuts of silage (23&15 t FW/ha) with aftermath grazing (target DM yield 9-12t/ha) described in RB209 (2020)
Grass crop use based on yield totalling 38t/ha where 1.7kg/t P_2O_5 and 6.0kg/t K_2O removed in offtake (RB209, 2020)

To account for aftermath grazing, 1/2 of the P & K requirement for grazing has been added, and 10kg/ha P and 20kg/ha K is added to crop use
*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 160t/ha is 54kg/ha

5 Compliance with NVZ regulations

Table 10. Compliance with NVZ regulations

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

Applicable to:

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>Refer to Tables 6 – 10</td></tr>
<tr><td>Previous applications:</td><td>Refer to 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 6-9 above. General soil type(s) for the fields to be registered are;

Table 12. 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 ample background concentrations of Mg (*i.e.* ADAS Index 3-4). 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 6-9 above.

The limiting factors for the different wastes are as follows;

- Court Farm, Ponsticill cake and Andigestion: total N
- Pontsticill & Hirwaun liquid: 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 6-10 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 Pontsticill cake consist of 51% 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 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 6.4 to 8.1.

It is unlikely that soil pH will decrease following the application detailed here due to the extensive buffering capacity of the receiving soils. The pH levels of the receiving soils are ≥ 5.0 therefore it is unlikely that availability of any naturally occurring heavy metals present in these soils will become more available after application of these wastes.

7.3 Operational factors

1. Solid wastes will be spread using conventional rear discharge spreaders.
2. Liquid wastes will be surface spread, applied using a low trajectory splash plate/dribble bars or similar.
3. Potential compaction of receiving soil will be mitigated by suitable adjustment of tyres/tyre pressure to match soil conditions, direction of spreading and load to be spread.
4. Wastes will be applied when ground and weather conditions are suitable, following CoGAP to avoid soil damage including wheel ruts, compaction, structural damage, erosion and run-off.

8 Sensitive human and environmental receptors

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 **Park Farm Spreading Maps**. 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.