



CLEVE HILL SOLAR PARK

OTHER DEADLINE 4 SUBMISSIONS WRITTEN REPRESENTATION BY THE APPLICANT ON FERTILISER USE

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www.clevehillsolar.com



CLEVE HILL
SOLAR PARK

21st August 2019



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Dr Paul Phillips
Operational Director
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Dear Paul,

Proposed Solar Farm at Cleve Hill Farm

Based on an **average cropped area of 354.3ha** over the last 6 years at Cleve Hill Farm (Appendix 8) and typical annual pesticide and fertiliser applications (Appendices 1-4), I have calculated the following annual pesticide **active ingredient** and fertiliser **available nutrient** loading should the land continue to be farmed in the current arable cropping rotation (Appendix 5).

Summary of Farm Pesticide and Fertiliser Use Current Practice (Appendix 6)

	Kg per Ha	Farm Total (Kg)
Total Pesticide Active Ingredients per Year	7.33	2597
Total Available Fertiliser Nutrients per Year	208.74	73956

With the Solar Farm and an arable reversion habitat management area (AR HMA) of 50 ha in place, the annual loading based on the application of 525T of Farmyard Manure to the AR HMA per annum would be as follows;

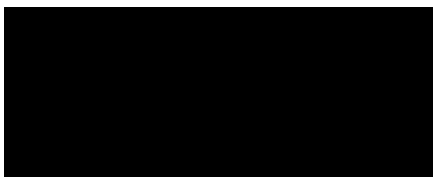
Summary of Farm Pesticide (Nil) and Fertiliser Use with Solar Farm in Place and 50ha Permanent Grass (Appendix 7)

	Kg per Ha	Farm Total (Kg)
Total Pesticide Active Ingredients per Year	0	0
Total Available Fertiliser Nutrients per Year	134.82	6741

A more detailed breakdown of pesticide and fertiliser products and active ingredients can be found in Appendices 1-7.

Please get in touch if I can be of further assistance.

Yours sincerely,



Roger Bryan BSC Agriculture(Hons)

Senior Partner, Crop Management Partner

Appendix 1 Winter Wheat Typical Pesticide and Fertiliser Annual Inputs

Product Name	Active Ingredient	Active Group	Total applied per season L/Kg per Ha	Grammes of active per L/Kg	Kg of active per ha	Pesticide type
Pesticides						
TDS Major	metaldehyde		5.00	40	0.200	m
Lambdastar	Lambda-cyhalothrin	Pyrethroid	0.10	100	0.010	i
Motif	glyphosate	Glycine derivative	4.00	360	1.440	h
Avadex	tri-allate	thiocarbamate	15.00	150	2.250	h
Herold	flufenacet	Anilide	0.30	400	0.120	h
Herold	diflufenican	Anilide		200	0.060	h
Macho	flufenacet	Anilide	0.50	480	0.240	h
Anthem	pendimethalin	Dinitroaniline	3.00	400	1.200	h
Horus	Mesosulfuron-methyl	Sulfonyurea	1.50	10	0.015	h
Horus	Iodosulfuron-methyl-sodium	Sulfonyurea		2	0.003	h
Ally Max SX	metsulfuron-methyl	Sulfonyurea	0.04	143	0.006	h
Ally Max SX	tribenuron-methyl	Sulfonyurea	0.04	143	0.006	h
Stabilan 750	chlormequat	Quaternary ammonium compound	2.00	750	1.500	g
Tridus	trinexapac-methyl	Cyclohexanecarboxylate	0.20	250	0.050	g
Terpal	2-chloroethylphosphonic acid	Ethylene generator	1.00	155	0.155	g
Terpal	Mepiquat chloride	Quaternary ammonium compound		305	0.305	g
Alto Elite	cyproconazole	Triazole	1.00	40	0.040	f
Alto Elite	chlorothalonil	Phthalonitrile		375	0.375	f
Elatus Era	prothioconazole	Triazole	0.80	150	0.120	f

Elatus Era	Benzovindiflupyr	Pyrazole-4-carboxamide		75	0.060	f
Abringo	chlorothalonil	Phthalonitrile	2.00	500	1.000	f
Adexar	epoxiconazole	Triazole	1.00	62.5	0.063	f
Adexar	fluxapyroxad	Pyrazole-4-carboxamide		62.5	0.063	f
Proline	prothioconazole	Triazole	0.30	275	0.083	f
Toledo	tebuconazole	Triazole	0.30	480	0.144	f
Sparkler	alkoxylated alcohols	Non-Ionic Wetting Agent	1.00	300	0.300	a
Biopower	Alkylethersulfate	sodium salt	1.00	276.5	0.277	a
Activator 90	alcohol ethoxylates	Non-Ionic Wetting Agent	0.10	750	0.075	a

Total	40.18		10.158
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Fertilisers

Liquid Manganese	Manganese	Manganese sulphate	4.00	150	0.600
Magnite	Magnesium	Magnesium Nitrate	2	150	0.300
Urea	CH4N2O	Amide	500	460	230.000
Ammonium Sulphate		Ammonium	100	210	21.000
		Sulphate		60	6.000
Triple Super Phosphate	Phosphate	P2o5	120	460	55.200
Total					313.100

Pesticide Type Key a;adjuvant f;fungicide g;growth regulator h;herbicide i;insecticide m;molluscicide

Appendix 2 Spring Barley Typical Pesticide and Fertiliser Annual Inputs

Product Name	Active Ingredient	Active Group	Total applied per season L/Kg per Ha	Grammes of active per L/Kg	Kg of active per ha	Pesticide type
Pesticides						
TDS Major	metaldehyde	none	5.00	40	0.200	m
Motif	glyphosate	Glycine derivative	4.00	360	1.440	h
Liberator	flufenacet	Anilide	0.30	400	0.120	h
Liberator	diflufenican	Anilide		100	0.030	h
Crystal	flufenacet	Anilide	2.00	60	0.120	h
Crystal	pendimethalin	Dinitroaniline		300	0.600	h
Harmony M SX	metsulfuron-methyl	Sulfonyurea	0.10	40	0.004	h
Harmony M SX	thifensulfuron-methyl	Sulfonyurea		400	0.040	h
Tridus	trinexapac-methyl	Cyclohexanecarboxylate	0.20	250	0.050	g
Terpal	2-chloroethylphosphonic acid	Ethylene generator	0.75	155	0.116	g
Terpal	Mepiquat chloride	Quaternary ammonium compound		305	0.229	g
Siltra	Bixafen	Pyrazole-4-carboxamide	0.80	60	0.048	f
Siltra	Prothioconazole	Triazole		200	0.160	f
Abringo	chlorothalonil	Phthalonitrile	2.00	500	1.000	f
Sparkler	alkoxylated alcohols	Non-Ionic Wetting Agent	1.00	300	0.300	a

Total	16.15		4.457
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Fertilisers						
Liquid Manganese	Manganese sulphate	Manganese sulphate	2.00	150	0.300	
Urea	CH4N2O	Amide	300	460	138	
Ammonium Sulphate		Ammonium	100	210	21	
		Sulphate		0.6	0.060	
Triple Super Phosphate	Phosphate	P2o5	64	460	29	

Total	466.00		188.800
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Pesticide Type Key a;adjuvant f;fungicide g;growth regulator h;herbicide i;insecticide m;molluscicide

Appendix 3 Winter Beans Typical Pesticide and Fertiliser Annual Inputs

Product Name	Active Ingredient	Active Group	Total applied per season L/Kg per Ha	Grammes of active per L/Kg	Kg of active per ha	Pesticide type
Pesticides						
Lambdastar	Lambda-cyhalothrin	Pyrethroid	0.15	100	0.015	i
Motif	glyphosate	Glycine derivative	4.00	360	1.440	h
Setanta Flo	propyzamide	Amide	2.1	400	0.840	h
Nirvana	pendimethalin	Dinitroaniline	3	250	0.750	h
Nirvana	imazamox	Imidazolinone		16.7	0.050	h
Zone 36CS		Isoxazolidinone	0.25	360	0.090	h
Troy	bentazone	Diazinone	2	480	0.960	h
Alto Elite	cyproconazole	Triazole	3.00	40	0.120	f
Alto Elite	chlorothalonil	Phthalonitrile		375	1.125	f
Sparkler	alkoxylated alcohols	Non-Ionic Wetting Agent	1.00	300	0.300	a
Phase 2	Methylated Seed Oil	rapeseed fatty acid esters	1	952	0.952	a

Total	16.50		6.642
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Fertilisers						
Liquid Manganese	Manganese	Manganese sulphate	2.00	150	0.300	
Nutriwise Fosfya		Phosphorus Pentoxide	2	280	0.560	
		Potassium oxide		190	0.380	
Polysulphate		Sulphate	100	480	48.000	
		Magnesium		60	6.000	
		Potassium oxide		140	14.000	
Triple Super Phosphate	Phosphate	P2o5	64	460	29.440	
Total			168.00		98.680	

Pesticide Type Key a;adjuvant f;fungicide g;growth regulator h;herbicide i;insecticide
m;molluscicide

Appendix 4 Fallow Typical Pesticide and Fertiliser Annual Inputs

Product Name	Active Ingredient	Active Group	Total applied per season L/Kg per Ha	Grammes of active per L/Kg	Kg of active per ha	Pesticide type
Pesticides						
Motif	glyphosate	Glycine derivative	6.00	360	2.160	h
Sparkler	alkoxylated alcohols	Non-Ionic Wetting Agent	1.00	300	0.300	a
Total			7.00		2.460	
Fertilisers						
None					0.000	
Total			0.00		0	
Pesticide Type Key	a;adjuvant f;fungicide g;growth regulator h;herbicide i;insecticide m;molluscicide					

Appendix 5 Farm Cropping Current Practice

Cropping Hectares	2020	2019	2018	2017	2016	2015	Average
Winter Wheat	288.8	118.7	0	134.7	238.8	116	149.5
Spring Barley	0	98	235.3	219.3	0	0	92.1
Winter Beans	65.2	137.4	118.7	0	0	238.8	93.4
Fallow	0	0	0	0	116	0	19.3
						Total	354.3

Appendix 6 Annual Farm Pesticide and Fertiliser Use Current Practice

	Cropping 6 Year Average Ha	Total Pesticide Kg per Ha per Year	Total Pesticide Kg Active Ingredient per Ha per Year	Farm Pesticide Kg per Year	Farm Pesticide Kg Active Ingredient per Year	Total Fertiliser Kg per Ha per Year	Total Fertiliser Kg Available Nutrients per Ha per Year	Farm Fertiliser Kg per Crop per Year	Farm Fertiliser Kg Available Nutrient per Crop per Year
Wheat	149.5	40.18	10.16	6006.91	1518.92	726.00	313.10	108537.00	46808.45
Spring Barley	92.1	16.15	4.46	1487.42	410.77	466.00	194.74	42918.60	17935.55
Beans	93.4	16.50	6.64	1540.28	619.84	168.00	98.68	15682.80	9211.78
Fallow	19.3	7.00	2.46	135.33	47.56	0.00	0.00	0.00	0.00
Farm Total				9169.93	2597.09			167138.40	73955.78
Average per Ha				25.88	7.33			471.76	208.74

Appendix 7 Farm Pesticide (Nil) and Fertiliser Use with Solar Farm in Place and 50ha Permanent Grass

Based on Assumption of 525T of Farmyard Applied Annually

	Total kg/T	Total Kg per ha at 10.5t/ha	Available Nutrient %	Available kg/t	Available Kg per ha at 10.5t/ha
Nitrogen	6.00	63.00	10	0.60	6.30
Phosphate	3.20	33.60	60	1.92	20.16
Potassium	9.40	98.70	90	8.46	88.83
Sulphate	2.40	25.20	10	0.24	2.52
Magnesium	1.80	18.90	90	1.62	17.01
Total Nutrient Kg/ha		239.40			134.82
Total Kg Farm Nutrient on 50ha		11970			6741.00

Appendix 8 Cleve Hill Farm Map Planned Cropping 2020 Harvest (WH-Wheat, BE- Beans, UN-Un-named). Excludes faded out field.

