



### Ammonia Screening Results



**DEVELOPMENT:** Erection of a poultry rearing unit including silos and associated works

**LOCATION:** Pentre Farm  
Coedway  
Shrewsbury  
Shropshire  
SY5 9AW

**CLIENT:** B P Lewis & Son

**Roger Parry & Partners LLP**  
The Estates Office, 20 Salop Road, Oswestry, Shropshire, SY11 2NU  
Tel: 01691655334 Fax: 01691 657798  
Email: [richard@rogerparry.net](mailto:richard@rogerparry.net)

*Also at: 1 Berriew Street, Welshpool, Powys, SY21 7SQ  
Tel: 01938 554499 Fax: 01938 554462  
email: [welshpool@rogerparry.net](mailto:welshpool@rogerparry.net)*

*Also at: Hogstow Hall, Minsterley, Shrewsbury, SY5 0HZ  
Tel: 01743 791336 Fax: 01743 792770  
email: [mail@rogerparry.net](mailto:mail@rogerparry.net)*

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The Estates Office  
20 Salop Road,  
Oswestry  
Shropshire  
SY11 2NU

Phone 01691 655 334

[mail@rogerparry.net](mailto:mail@rogerparry.net)  
[www.rogerparry.net](http://www.rogerparry.net)

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## Introduction

It is proposed to erect a poultry rearing unit with silos and associated works at Pentre Farm to accommodate a maximum of 38,000 birds.

The purpose of this report is to explain and examine if the proposed development will have any impact on the ecological interest of the area. Particular note is given to the levels of ammonia which shall arise from the proposed poultry unit.

## Location

The proposed development is located on the outskirts of Coedway. The development is approximately 400 metres away from Pentre Farm.

It is noted that there is an existing range of modern farm buildings positioned between the Farmhouse and the proposed development. The existence of modern buildings adjoining the proposed development is beneficial as it provides an ideal screen for the development from the Farmhouse.

## Environmental Sites

Within a 10km radius of the application site, there are 11 environmental sites, ranging from 4.2km to 9.7km away from the proposed site:

	Region	Site Name	Site Code	Designation Status	Distance from Installation (m)	Sensitive Habitats
1.	Wales	Trewern Brook	1960	SSSI	4285	Non-sensitive Habitat
2.	Wales	Trewern Brook	4419	SSSI	4323	Non-sensitive Habitat
3.	Wales	Breidden Hill	4511	SSSI	4388	Sensitive Habitat
4.	Wales	River Severn at Montford	1826	SSSI	5142	Non-sensitive Habitat
5.	Wales	Shrawardine Pool	2093	SSSI	5223	Sensitive Habitat
6.	Wales	Moel y Golfa	6218	SSSI	5346	Sensitive Habitat
7.	Wales	Lin Can Moss	2413	SSSI	6572	Sensitive Habitat



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20 Salop Road,  
Oswestry  
Shropshire  
SY11 2NU

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[mail@rogerparry.net](mailto:mail@rogerparry.net)  
[www.rogerparry.net](http://www.rogerparry.net)

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8.	Wales	Montgomery Canal	4304	SSSI	8042	Non-sensitive Habitat
9.	Wales	Montgomery Canal	UK0030213	SAC	8045	Sensitive Habitat
10.	Wales	Gwaith Brics Buttington / Buttingotn Brickworks	5338	SSSI	8937	Non-sensitive Habitat
11.	Wales	Morton Pool & Pasture	2416	SSSI	9726	Sensitive Habitat

## SCAIL Modelling – Assessment of Ammonia

The SCAIL calculation stands for a Simply Calculation of Atmospheric Impact Limits. It is a screening tool for assessing the impact from agricultural sources on semi-natural areas such as SSSI's. The SCAIL model was developed from the Integrated Pollution Prevention and Control (IPPC) Directive which requires permits for pig and poultry systems with more than a certain number of livestock. It is noted that for poultry units the IPPC directive only applies to poultry units with more than 40,000 places. The SCAIL model provides a worse case scenario to the impact of such developments.

The Environment Agency provide detailed guidance regarding Ammonia, Nitrogen and Background levels together with sources, critical loads and levels from farming operations within their document "H1 Environmental Risk Assessment for Permits, Annex B – Intensive Farming" December 2011 (ERA H1).

ERA H1 Section 7.4.3 states that

*"An emission is insignificant where PC process contribution is <4% of Critical Levels for SACs, SPAs and Ramsars, <20% for SSSIs and <50% for local and national nature reserves, ancient woodland and local wildlife sites".*

As well as housing the birds, the application of manure to the land can have an impact on designated sites. The application proposed will see manure taken from the building every 10 days and spread on the available farm land in accordance with the Codes of Good Agricultural and Environmental Condition and Cross Compliance Regulations.

Manure will be:

- Spread in suitable weather conditions
- At least 10 metres away from any water course
- Incorporated into the ground within a maximum of 24 hours after application



The Estates Office  
20 Salop Road,  
Oswestry  
Shropshire  
SY11 2NU

Phone 01691 655 334

[mail@rogerparry.net](mailto:mail@rogerparry.net)  
[www.rogerparry.net](http://www.rogerparry.net)

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Simple Calculation of Atmospheric Impact Limits

[Scail Home](#) | [User Guide](#) | [SCAIL-Agriculture Report](#) | [Regulator Contact Details](#) | [Contact Us](#) | [Online Tutorial](#)

We have made a number of improvements to the SCAIL for agriculture tool. We have added cattle as a livestock option to cover their emissions. These are set out for housing, landspreading, manure/slurry storage, grazing and outdoor yards. Users can also add their own emissions. The layout should be simpler to use with larger font and input boxes. If you experience any issues then please [Contact Us](#)

Simple Calculation of Atmospheric Impact Limits from Agricultural Sources (SCAIL-Agriculture) is a screening tool for assessing the impact from pig and poultry farms on human health and on semi-natural areas like SSSIs and SACs. The model provides an estimate of the amount of acidity and nitrogen deposited from a farm as well as predictions of air concentrations of odour and PM10. These values can then be used to assess whether impact limits for human health or habitats are exceeded or not.

Information regarding the use of SCAIL-Agriculture as a screening tool and instructions for completing the assessment form are provided in the SCAIL-Agriculture User Guide. The User Guide also contains background information on regulatory requirements for the use of SCAIL-Agriculture, including instances where further detailed modelling of emissions will be required. **The relevant regulatory authority should be consulted for guidance regarding assessment requirements for planning and permitting purposes.**

[LOAD INPUT DATA](#)

Project Details	
Project Notes	Pentre Farm
Project Run Mode	<input checked="" type="radio"/> Conservative Met <input type="radio"/> Realistic Met
Location Details	
Select Country	Wales
Installation Details	
Installation	1
Installation Name	Pentre Farm
Installation Location	334467,315200 <input type="checkbox"/> Landranger * x,y <a href="#">CHOOSE/VERIFY LOCATION</a>
Source Details	
Source	1 <input type="checkbox"/> Pig <input checked="" type="checkbox"/> Poultry <input type="checkbox"/> Cattle <input type="checkbox"/> User defined emissions
New or Existing Source	New
Source Name	Pentre Farm
Source Location	Provides a link to GoogleMaps to check the location. 334467,315200 <input type="checkbox"/> Landranger * x,y <a href="#">VERIFY LOCATION</a>
Source Type	Housing
Type	Pullets
Details	Fan ventilated, fully littered floor, non leaking drinkers
Livestock Number	38000
Housing Floor Area	1951.32 m <sup>2</sup>
Naturally Ventad	<input type="checkbox"/>
Building Height	5.81 m
Fan Location	Roof
No. of Fans (optional)	12

<http://www.scail.ceh.ac.uk/cgi-bin/agriculture/input.pl>

1/2



11 Severn Street,  
Welshpool  
Powys  
SY21 7AG

Phone 01938 554499

[mail@rogerparry.net](mailto:mail@rogerparry.net)  
[www.rogerparry.net](http://www.rogerparry.net)

Offices also at Minsterley

Fan Diameter: 0.40 m  
 Fan Flowrate: 5.05 m<sup>3</sup>/s  
 The Estates Office  
 20 Sedop Road  
 Gwent ST11 2NU  
 Tel: 01691 657798  
 Fax: 01691 655338  
 Email: info@rogerparry.net  
 www.rogerparry.net

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Pollutant	Source Emissions	Running total of emissions	Units
NO <sub>x</sub>	2280	2280	(kg)
PM <sub>10</sub>	1254	1254	(kg)
CO <sub>2</sub>	59184000	59184000	(kg)

**Designated Site details:**

Search Radius: 10 km

No. of Designated Sites: 11 found

Site No.	Name	Distance(km)	Designation	Easting	Northing
1	Trewem Brook	4.285	SSSI	331058	312603
2	Trewem Brook	4.323	SSSI	331013	312600
3	Breddden Hill	4.388	SSSI	330104	314736
4	River Severn At Montford	5.142	SSSI	339608	315234
5	Shewardine Pool	5.223	SSSI	339622	316036
6	Moel y Gofa	5.346	SSSI	329730	312721
7	Lin Can Moss	6.572	SSSI	337426	321067
8	Montgomery Canal	8.042	SSSI	326529	316493
9	Montgomery Canal	8.045	SAC	326526	316492
10	Gweith Brics Buttington / Buttington Brickworks	9.937	SSSI	327003	310284
11	Morton Pool & Pasture	9.726	SSSI	330072	323876

**User specified site**

Select

Site Name:

Site Location:

Habitat within site:

**Human Health Receptor Details**

Receptor: Select  PM<sub>10</sub> percentile:

Receptor Name:

Receptor Location:



Breidden Hill SSSI 4.3km (Grid Ref: 330104, 314736)

Site Code: 4511  
 Designation Status: SSSI  
 Distance from Installation (m): 4388  
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Dep N (kg/ha/yr)	Dep Acid (kEq H <sup>+</sup> /ha/yr)	Conc PM <sub>10</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )
1	Pentre Farm	1	1	-	2.3	-	0.01	0.05	0.004	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H <sup>+</sup> /ha/yr)	PM <sub>10</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )
Process Contribution (PC) at receptor edge Background concentration at receptor edge	0.01 2.90 2.91	0.05 24.50 24.55	0.004 1.94 (N:1.75 S:0.19) 1.94	- - -	- - -
<b>Predicted Environmental Concentration/Deposition (PEC)</b>					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	8.0 Acid grassland	maxN: 1.80 maxS: 1.58 minN: 0.22 Acid grassland	-	-
% of relevant standard PC	Lower: 1% Upper: 0%	1%	0%	-	-
% of relevant standard PEC	Lower: 291% Upper: 97%	307%	108%	-	-
<b>EXCEEDANCE</b>	Lower: 1.91 Upper: No exceedance	16.55	0.14	-	-



11 Severn Street,  
 Welshpool  
 Powys  
 SY21 7AG

Phone 01938 554499

[mail@rogerparry.net](mailto:mail@rogerparry.net)  
[www.rogerparry.net](http://www.rogerparry.net)

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Shrawardine Pool SSSI 5.2km (Grid Ref: 339622, 316036)

Site Code: 2093  
 Designation Status: SSSI  
 Distance from Installation (m): 5223  
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM <sub>10</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )
1	Pentre Farm	1	1	-	2.3	-	0.01	0.04	0.003	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM <sub>10</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )
Process Contribution (PC) at receptor edge	0.01	0.05	0.004	-	-
Background concentration at receptor edge	2.48	20.30	1.62 (N:1.45 S:0.17)	-	-
	2.49	20.35	1.62	-	-
<b>Predicted Environmental Concentration/Deposition (PEC)</b>					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	10.0 Fen marsh and swamp - lowland	maxN: 1.06 maxS: 0.84 minN: 0.22 Fen marsh and swamp - lowland	-	-
% of relevant standard PC	Lower: 1% Upper: 0%	1%	0%	-	-
% of relevant standard PEC	Lower: 249% Upper: 83%	204%	153%	-	-
<b>EXCEEDANCE</b>	Lower: 1.49 Upper: No exceedance	10.35	0.56	-	-



11 Severn Street,  
 Welshpool  
 Powys  
 SY21 7AG

Phone 01938 554499

[mail@rogerparry.net](mailto:mail@rogerparry.net)  
[www.rogerparry.net](http://www.rogerparry.net)

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Moel y Golfa SSSI 5.3km (Grid Ref: 329730, 312721)

Site Code: 6218  
 Designation Status: SSSI  
 Distance from Installation (m): 5346  
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM <sub>10</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )
1	Pentre Farm	1	1	-	2.3	-	0.01	0.06	0.004	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM <sub>10</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )
Process Contribution (PC) at receptor edge	0.01	0.08	0.005	-	-
Background concentration at receptor edge	2.08	31.22	2.44 (N:2.23 S:0.21)	-	-
<b>Predicted Environmental Concentration/Deposition (PEC)</b>	2.09	31.3	2.44	-	-
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0  Broad-leaved, mixed and yew woodland	maxN: 1.61 maxS: 1.47 minN: 0.14 Broad-leaved, mixed and yew woodland	-	-
% of relevant standard PC	Lower: 1% Upper: 0%	2%	1%	-	-
% of relevant standard PEC	Lower: 209% Upper: 70%	626%	152%	-	-
<b>EXCEEDANCE</b>	Lower: 1.09 Upper: No exceedance	26.30	0.83	-	-



11 Severn Street,  
 Welshpool  
 Powys  
 SY21 7AG

Phone 01938 554499

[mail@rogerparry.net](mailto:mail@rogerparry.net)  
[www.rogerparry.net](http://www.rogerparry.net)

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Lin Can Moss SSSI 6.5km (Grid Ref: 337426, 321067)

Site Code: 2413  
 Designation Status: SSSI  
 Distance from Installation (m): 6572  
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM <sub>10</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )
1	Pentre Farm	1	1	-	2.3	-	0.01	0.03	0.002	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM <sub>10</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )
Process Contribution (PC) at receptor edge	0.01	0.05	0.004	-	-
Background concentration at receptor edge	2.62	20.16	1.59 (N:1.44 S:0.15)	-	-
	2.63	20.21	1.59	-	-
<b>Predicted Environmental Concentration/Deposition (PEC)</b>					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0 Bog - lowland	maxN: 0.51 maxS: 0.19 minN: 0.32 Bog - lowland	-	-
% of relevant standard PC	Lower: 1% Upper: 0%	1%	0%	-	-
% of relevant standard PEC	Lower: 263% Upper: 88%	404%	312%	-	-
<b>EXCEEDANCE</b>	Lower: 1.63 Upper: No exceedance	15.21	1.08	-	-



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 Welshpool  
 Powys  
 SY21 7AG

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[mail@rogerparry.net](mailto:mail@rogerparry.net)  
[www.rogerparry.net](http://www.rogerparry.net)

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Montgomery Canal SAC 8.0km (Grid ref: 326526, 316492)

Site Code: UK0030213  
 Designation Status: SAC  
 Distance from Installation (m): 8045  
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM <sub>10</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )
1	Pentre Farm	1	1	-	2.3	-	0	0.02	0.002	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM <sub>10</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )
Process Contribution (PC) at receptor edge	0.00	0.00	0.000	-	-
Background concentration at receptor edge	2.60	21.56	1.73 (N:1.54 S:0.19)	-	-
	2.6	21.56	1.73	-	-
<b>Predicted Environmental Concentration/Deposition (PEC)</b>					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	3.0  Luronium natans	Luronium natans	-	-
% of relevant standard PC	Lower: 0% Upper: 0%	0%	n/a	-	-
% of relevant standard PEC	Lower: 260% Upper: 87%	719%	n/a	-	-
<b>EXCEEDANCE</b>	Lower: 1.60 Upper: No exceedance	18.56	n/a	-	-



11 Severn Street,  
 Welshpool  
 Powys  
 SY21 7AG

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[www.rogerparry.net](http://www.rogerparry.net)

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Morton Pool & Pasture SSSI 9.7km (Grid ref: 330072, 323876)

Site Code: 2416  
 Designation Status: SSSI  
 Distance from Installation (m): 9726  
 Receptor Type: Habitat

Installation Information

No.	Name	No. of sources	No. of new sources	PM <sub>10</sub> (t/a)	NH <sub>3</sub> (t/a)	Odour (kOu/a)	Conc NH <sub>3</sub> (µg/m <sup>3</sup> )	Dep N (kg/ha/yr)	Dep Acid (kEq H+/ha/yr)	Conc PM <sub>10</sub> (µg/m <sup>3</sup> )	Conc Odour (Ou/m <sup>3</sup> )
1	Pentre Farm	1	1	-	2.3	-	0	0.03	0.002	-	-

Total Depositions/Concentrations and Exceedances

Concentrations/Depositions and Critical Loads/Levels	NH <sub>3</sub> (µg/m <sup>3</sup> )	N Dep. (kg N/ha/yr)	Acid Dep. (kEq H+/ha/yr)	PM <sub>10</sub> (µg/m <sup>3</sup> )	Odour (Ou/m <sup>3</sup> )
Process Contribution (PC) at receptor edge	0.00	0.00	0.000	-	-
Background concentration at receptor edge	2.32	31.78	2.46 (N:2.27 S:0.19)	-	-
	2.32	31.78	2.46	-	-
<b>Predicted Environmental Concentration/Deposition (PEC)</b>					
Environmental Assessment Level or Critical Load / Level	Lower: 1 Upper: 3	5.0  Broad-leaved, mixed and yew woodland	maxN: 1.59 maxS: 1.45 minN: 0.14 Broad-leaved, mixed and yew woodland	-	-
% of relevant standard PC	Lower: 0% Upper: 0%	0%	0%	-	-
% of relevant standard PEC	Lower: 232% Upper: 77%	636%	155%	-	-
<b>EXCEEDANCE</b>	Lower: 1.32 Upper: No exceedance	26.78	0.87	-	-



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 Welshpool  
 Powys  
 SY21 7AG

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SSSI Name	Background Levels		Contribution to ammonia average (NH3) concentration from this proposal	Critical level for habitat (ug)	% contribution to NH3 critical levels (CL for habitat is 3ug)*	Contribution to Nitrogen (N) deposition from this proposal	CL for habitat (kg/ha /yr)	% contribution to N critical loads (CL for habitat Low Level)
	NH3 (ug)	N (kg)						
Breidden Hill	2.90	24.50	0.01	3	0.33%	0.05	8	0.625%
Shrawardine Pool	2.48	20.30	0.01	3	0.33%	0.05	10	0.5%
Moel y Golfa	2.08	31.22	0.01	3	0.33%	0.08	5	1.6%
Lin Can Moss	2.62	20.16	0.01	3	0.33%	0.05	5	1%
Montgomery Canal	2.60	21.56	0.00	3	0%	0	3	0%
Morton Pool & Pasture	2.32	31.78	0.00	3	0%	0	5	0%

## Conclusion

Based upon the results of the preliminary ammonia screening assessment, it is considered that the CCW would not require further modelling of ammonia emissions for the proposed poultry farm as ammonia emissions have been screened as insignificant following use of the SCAIL screening tool.



11 Severn Street,  
Welshpool  
Powys  
SY21 7AG

Phone 01938 554499

[mail@rogerparry.net](mailto:mail@rogerparry.net)  
[www.rogerparry.net](http://www.rogerparry.net)

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