



**Breeding Bird and Breeding  
Wader Surveys**

**M4 Corridor around Newport**

For

**RPS Plc**

Project No.: MRPS108/003

August 2015

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FIGURE 5E SUMMARY OF BREEDING WADER SURVEY RESULTS - BWS4

## 1. Summary

**1.1.1** RPS Plc commissioned Thomson Ecology to undertake breeding bird and breeding wader surveys within the corridor of the proposed new section of motorway to the south of Newport as part of the M4 corridor around Newport project during May and June 2015.

### 1.2 Breeding Bird Survey

**1.2.1** Three separate breeding bird survey visits were carried out during May and June 2015 to each of three survey areas defined by RPS Plc within the proposed corridor.

**1.2.2** Access restrictions limited most surveys to transects along public roads and footpaths. Much of each survey area could not therefore be viewed and surveyed by the standard methods originally proposed.

**1.2.3** As a result of these access restrictions a modified version of the methodology for breeding bird survey as set out in Gilbert *et al.* (1998) was utilised. This methodology has been the standard technique used for monitoring the United Kingdom's common breeding birds since 1994 (Harris *et al.*, 2015).

**1.2.4** The breeding bird survey recorded a total of 46 species, of which 43 were considered to be breeding based on their behaviour.

### 1.3 Breeding Wader Survey

**1.3.1** Three separate breeding wader survey visits were carried out during May and June 2015 to each of four survey areas defined by RPS Plc within the proposed corridor.

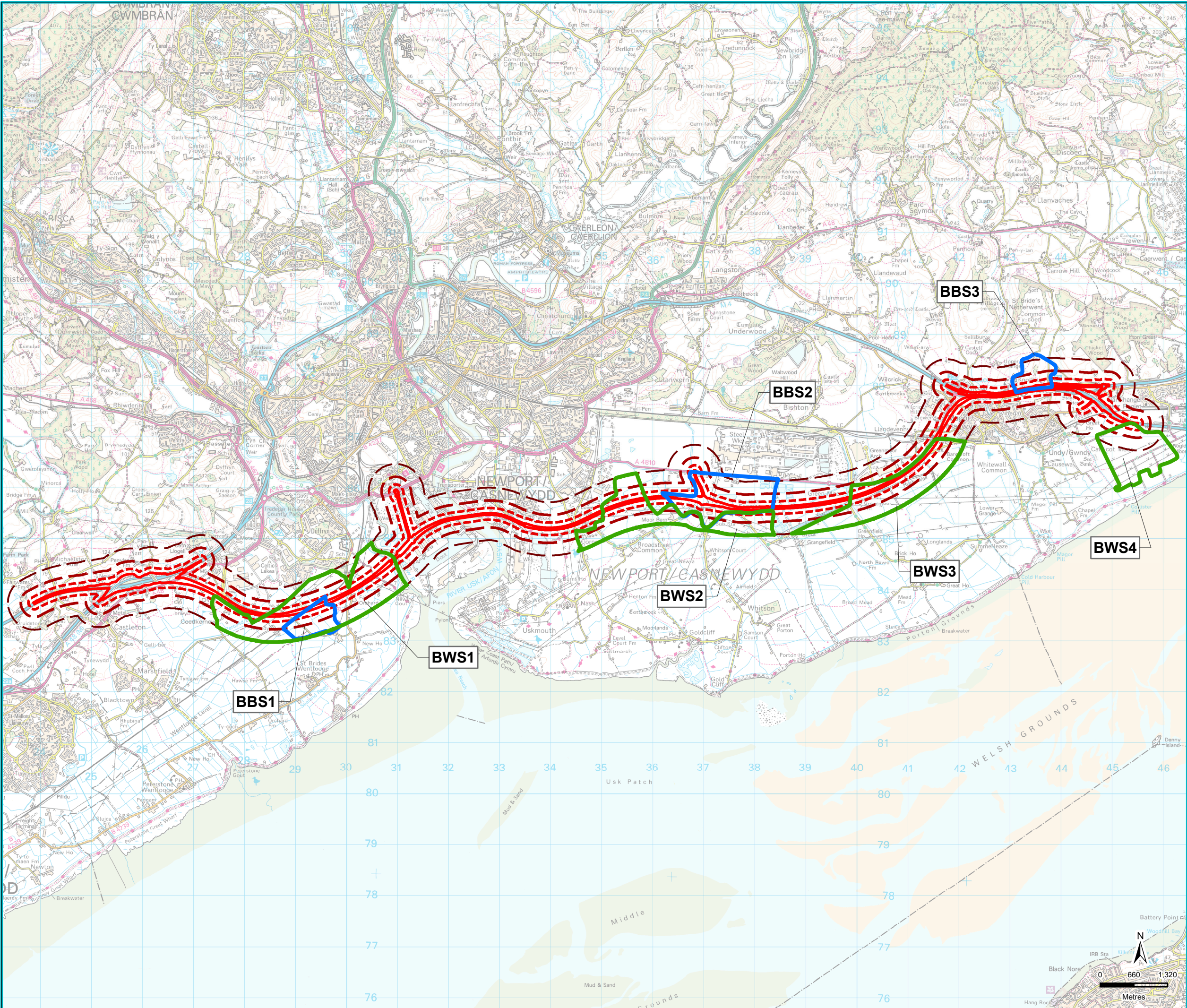
**1.3.2** Access restrictions largely limited the surveys to public roads and footpaths. More fields were accessible on the second visit compared to the first and third visits.

**1.3.3** The surveys were carried out in accordance with the O'Brien and Smith (1992) method for censusing lowland breeding wader populations.

**1.3.4** Two wader species were recorded during the surveys: lapwing and curlew (the latter only on the first visit in the easternmost survey area, BWS4 on Figure 1). Lapwing were recorded breeding in the westernmost (BWS1 on Figure 1) and easternmost survey areas (BWS4 on Figure 1), but not in the two central survey areas (BWS2 and BWS3 on Figure 1).



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Legend

- Ground Nesting Wader Survey Areas
- Breeding Bird Survey Areas
- Scheme Outline
- Scheme Outline 100m Buffer
- Scheme Outline 250m Buffer
- Scheme Outline 500m Buffer

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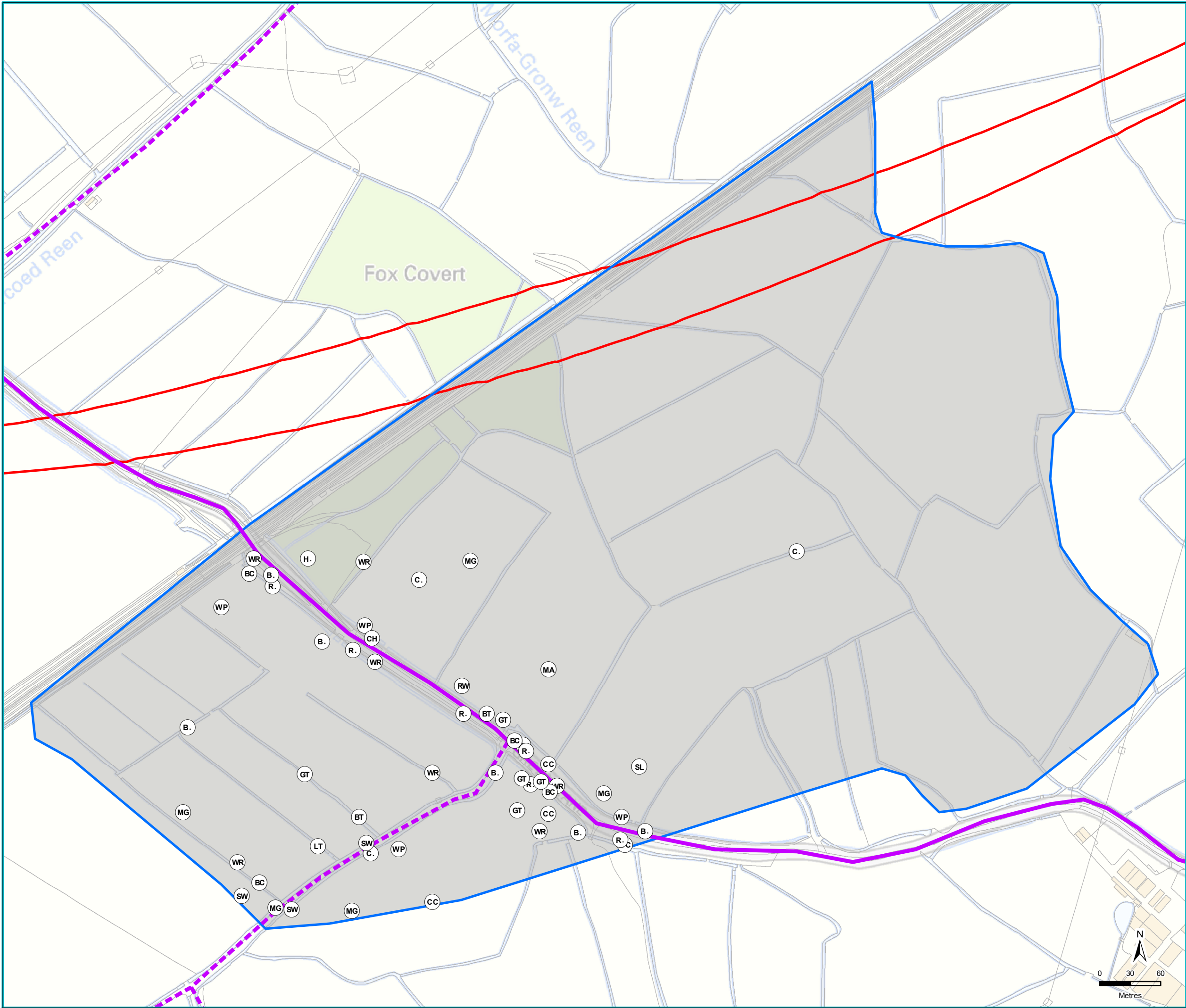
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Figure Title Site Location			





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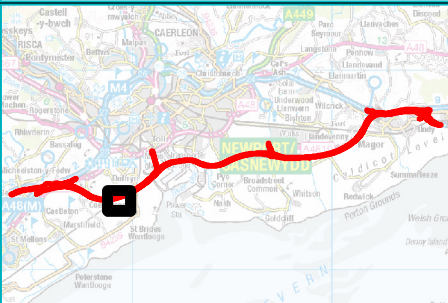
Legend

Bird Species

- (B.) Blackbird
- (BC) Blackcap
- (BT) Blue Tit
- (C.) Carrion Crow
- (CC) Chiffchaff
- (CH) Chaffinch
- (GT) Great Tit
- (H.) Grey Heron
- (LT) Long Tailed Tit
- (MA) Mallard
- (MG) Magpie
- (R.) Robin
- (RW) Reed Warbler
- (SL) Swallow
- (SW) Sedge Warbler
- (WP) Wood Pigeon
- (WR) Wren

- Driven Access
- Footpath Access

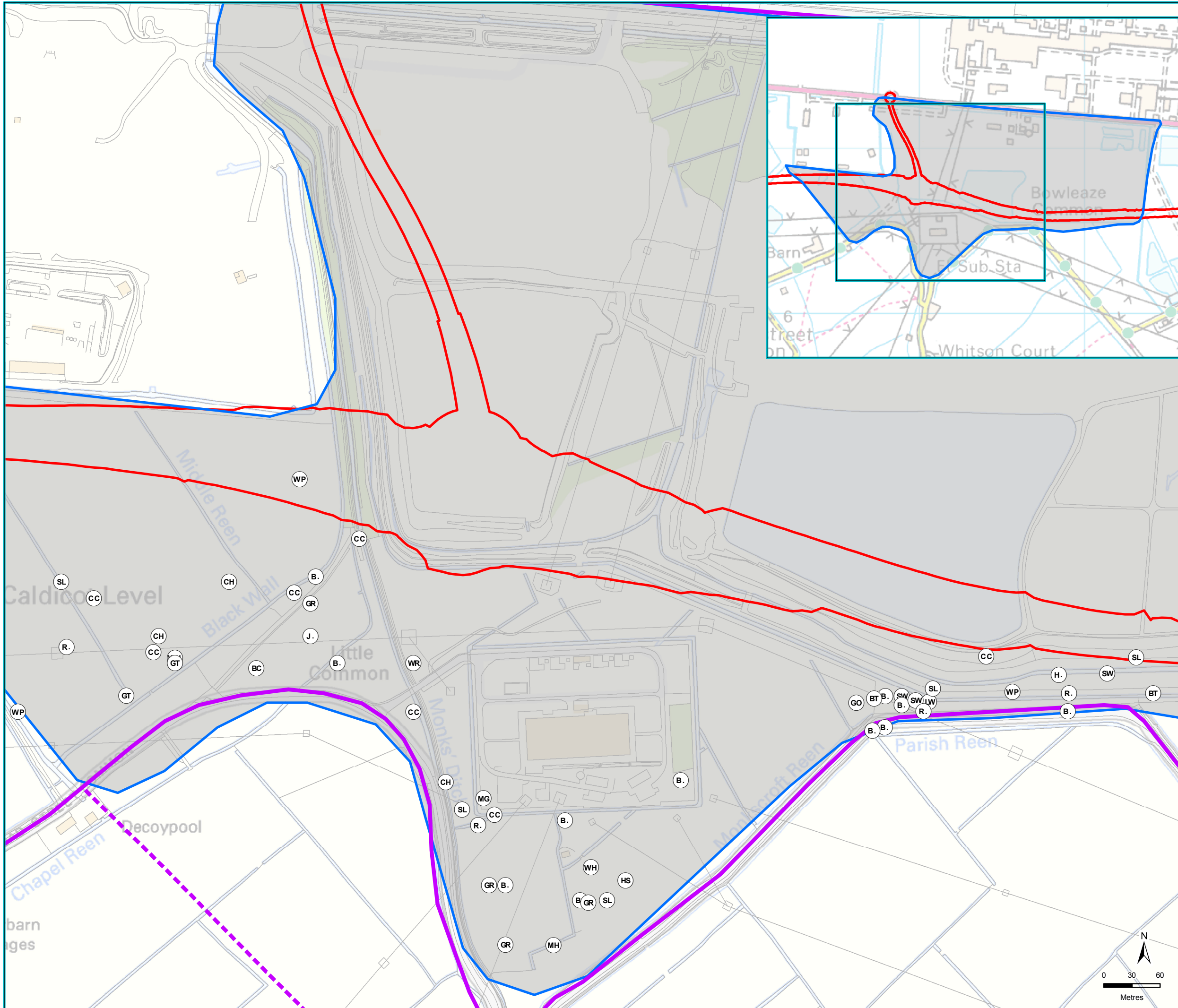
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- Breeding Bird Survey Area
- No Access



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Figure Title Breeding Bird Survey Results - BBS1 Visit 1			



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Legend

**Bird Species**

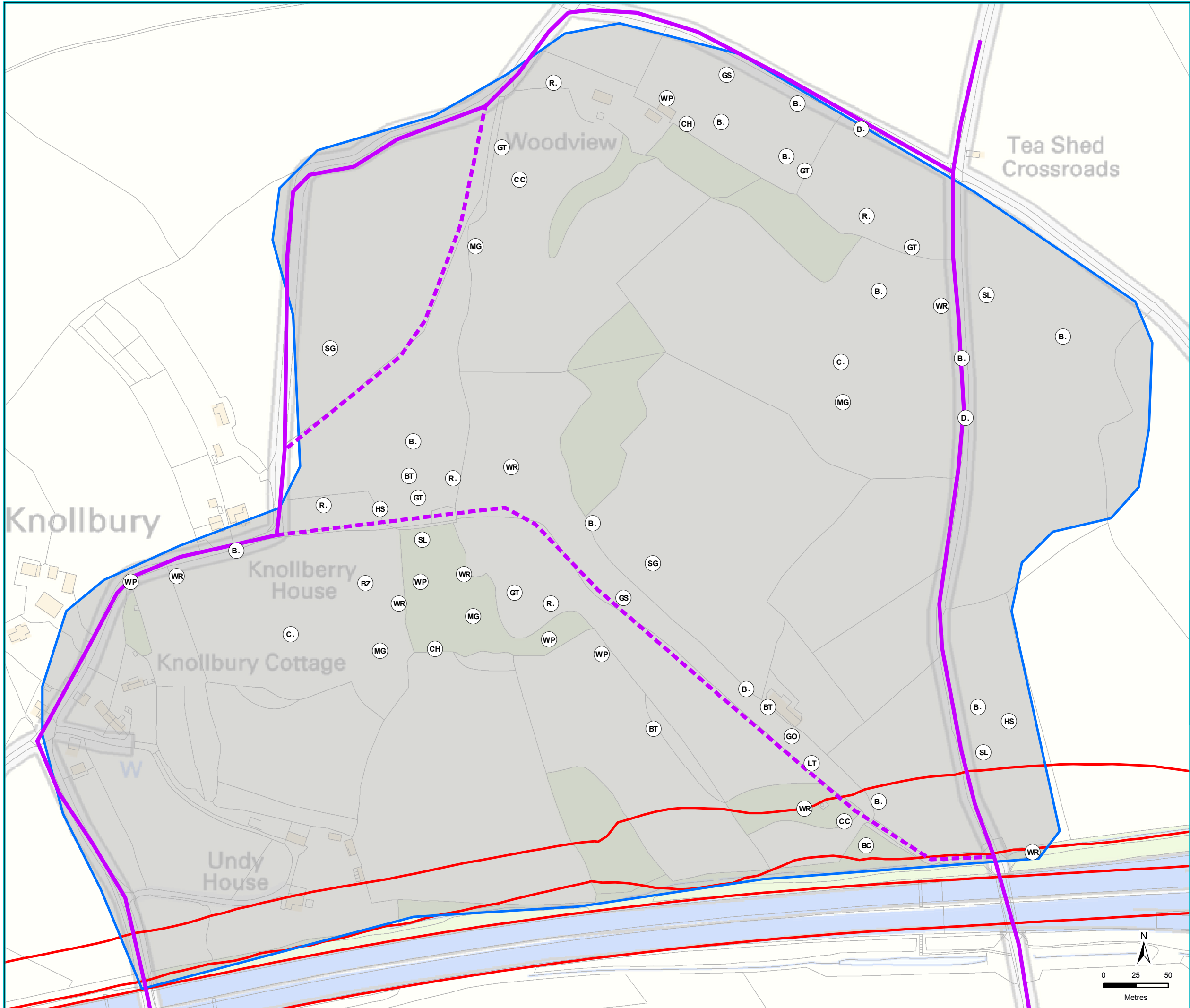
(B.)	Blackbird	Driven Access
(BC)	Blackcap	Footpath Access
(BT)	Blue Tit	
(CC)	Chiffchaff	
(CH)	Chaffinch	
(GO)	Goldfinch	
(GR)	Greenfinch	
(GT)	Great Tit	
(H.)	Grey Heron	
(HS)	House Sparrow	
(J.)	Jay	
(LW)	Lesser Whitethroat	
(MG)	Maggie	
(MH)	Moorhen	
(R.)	Robin	
(SL)	Swallow	
(SW)	Sedge Warbler	
(WH)	Whitethroat	
(WP)	Wood Pigeon	
(WR)	Wren	

( ) Scheme Outline  
( ) Breeding Bird Survey Area  
( ) No Access

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Figure Title	
Breeding Bird Survey Results - BBS2 Visit 1	

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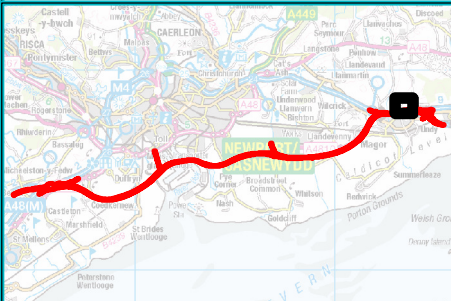
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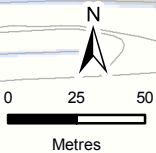
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Bird Species

- (B.) Blackbird
- (BC) Blackcap
- (BT) Blue Tit
- (BZ) Buzzard
- (C.) Carrion Crow
- (CC) Chiffchaff
- (CH) Chaffinch
- (D.) Dunnock
- (GO) Goldfinch
- (GS) Great Spotted Woodpecker
- (GT) Great Tit
- (HS) House Sparrow
- (LT) Long Tailed Tit
- (MG) Magpie
- (R.) Robin
- (SG) Starling
- (SL) Swallow
- (WP) Wood Pigeon
- (WR) Wren
- [Red Outline] Scheme Outline
- [Blue Outline] Breeding Bird Survey Area
- [Grey Area] No Access
- [Solid Purple Line] Driven Access
- [Dashed Purple Line] Footpath Access

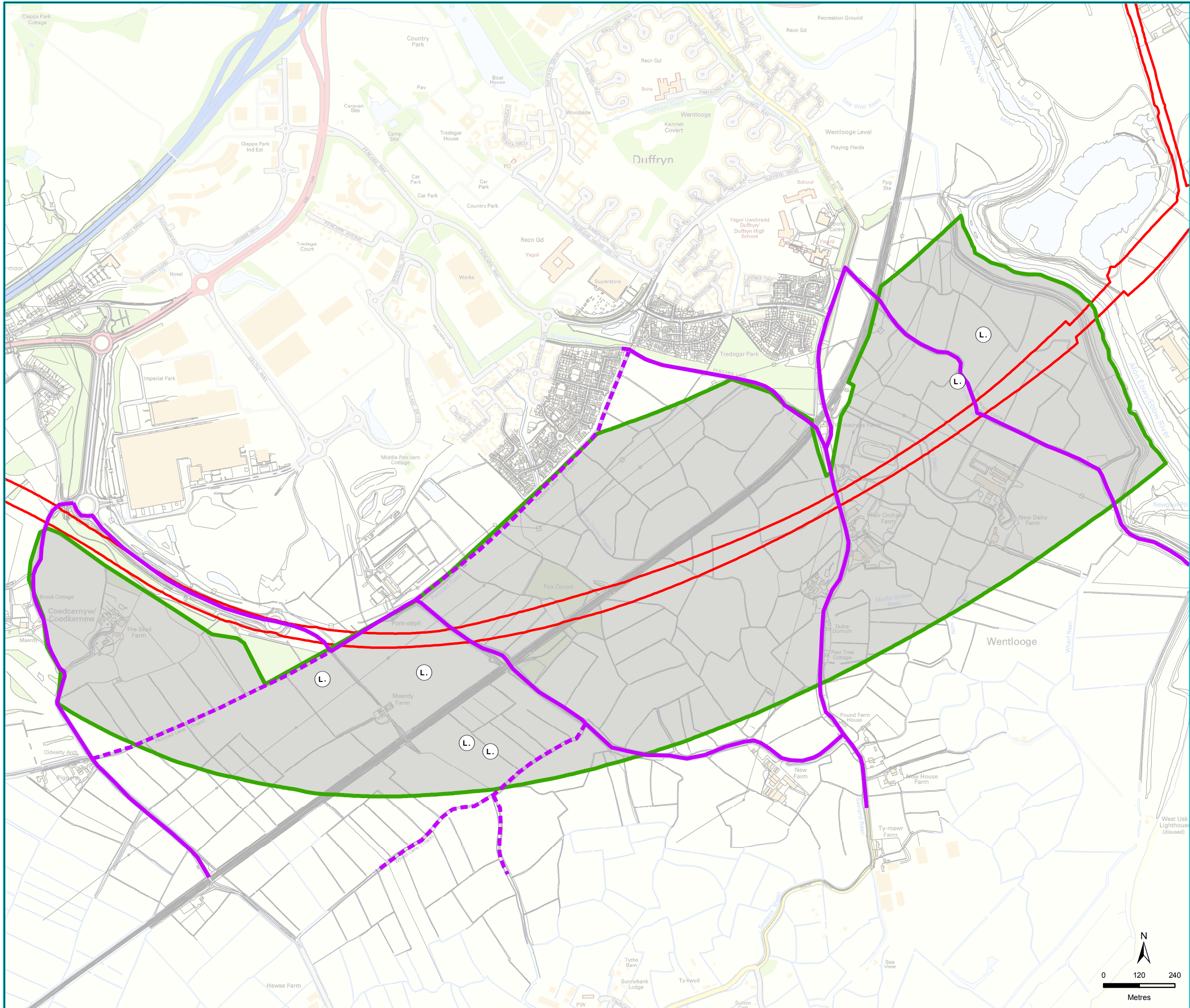


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Figure Title			
Breeding Bird Survey Results - BBS3 Visit 1			

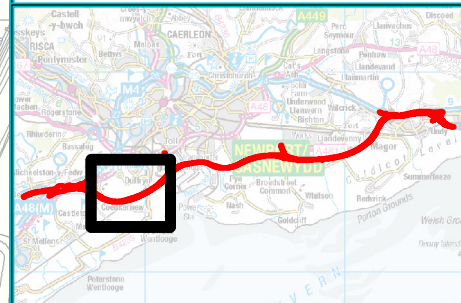




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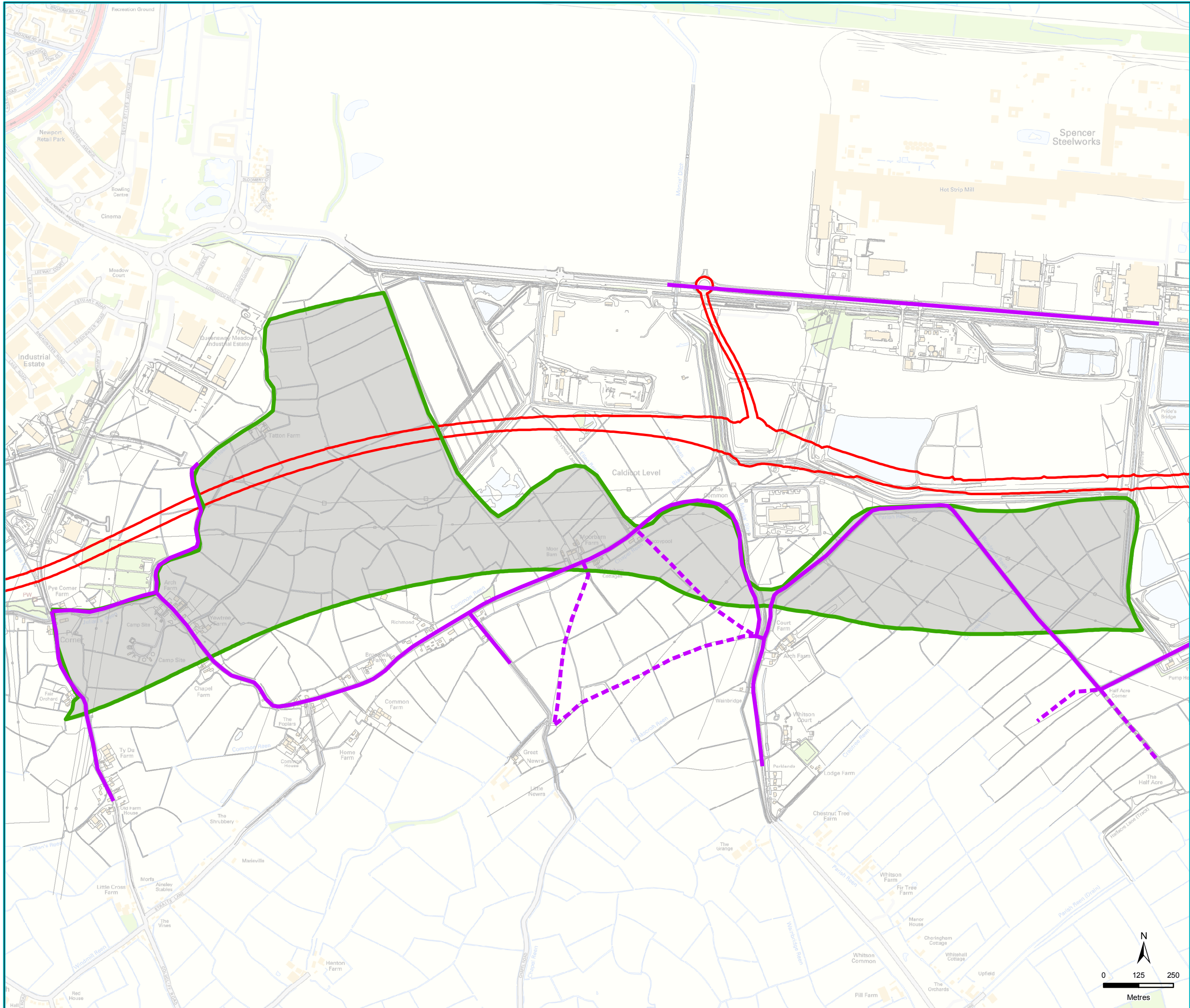
- Legend
- Bird Species**
- L. Lapwing
- Access**
- Driven Access
  - - Footpath Access
- Other Features**
- Scheme Outline
  - ▭ Ground Nesting Wader Survey Areas
  - No Access




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Figure Title		Breeding Wader Survey Results - BWS1 Visit 1	



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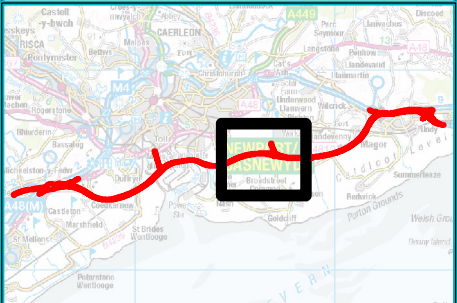




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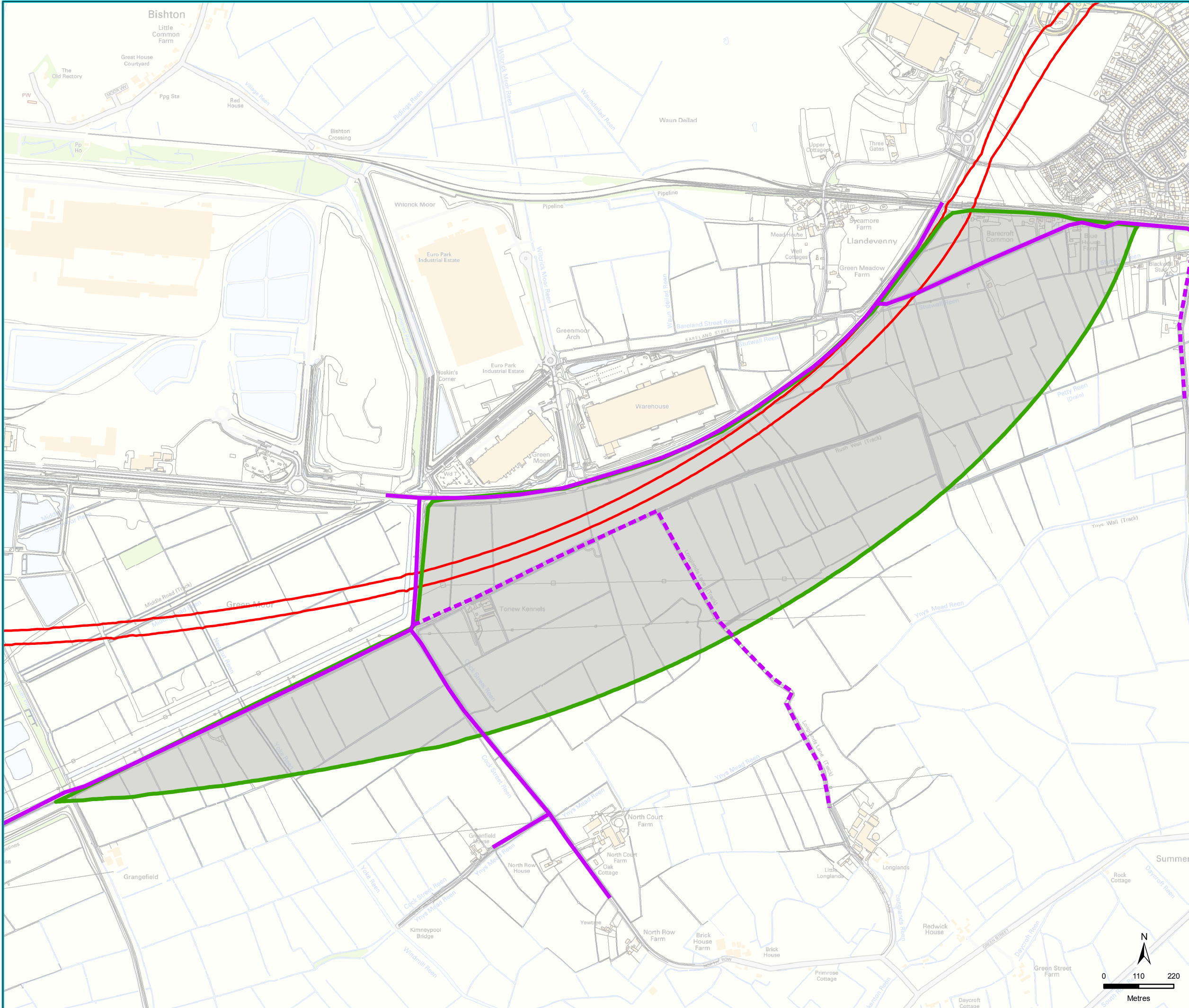
Legend

- Driven Access
- Footpath Access
- Scheme Outline
- Ground Nesting Wader Survey Areas
- No Access



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Client			
RPS Group PLC			
Figure Number		2e	
Figure Title			
Breeding Wader Survey Results - BWS2 Visit 1			






Legend

Driven Access

■ ■ ■ Footpath Access

 Scheme Outline

 Ground Nesting Wader Survey Areas

 No Access



Drawing Ref MRPS108/19315/1

Scale at A3

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Drawn	Checked
KM	AC

Date	09/09/2015	Date	09/09/2015
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Client	RPS Group PLC
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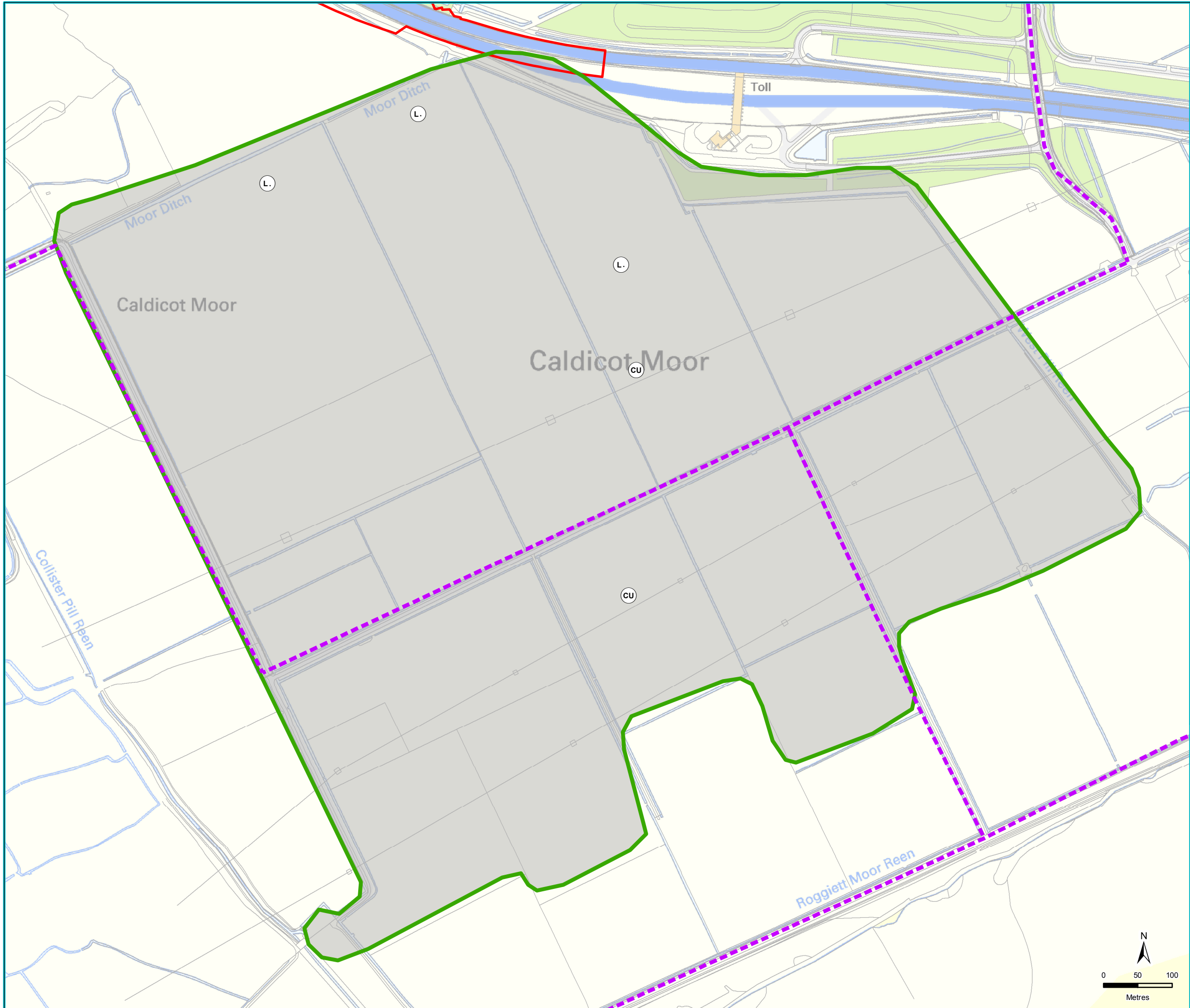
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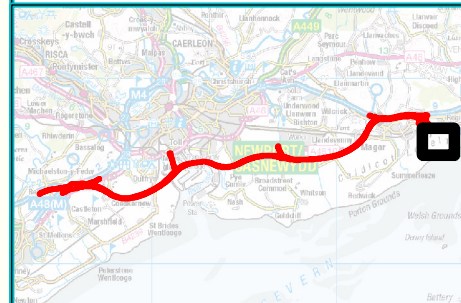
Breeding Wader Survey  
Results - BWS3 Visit 1



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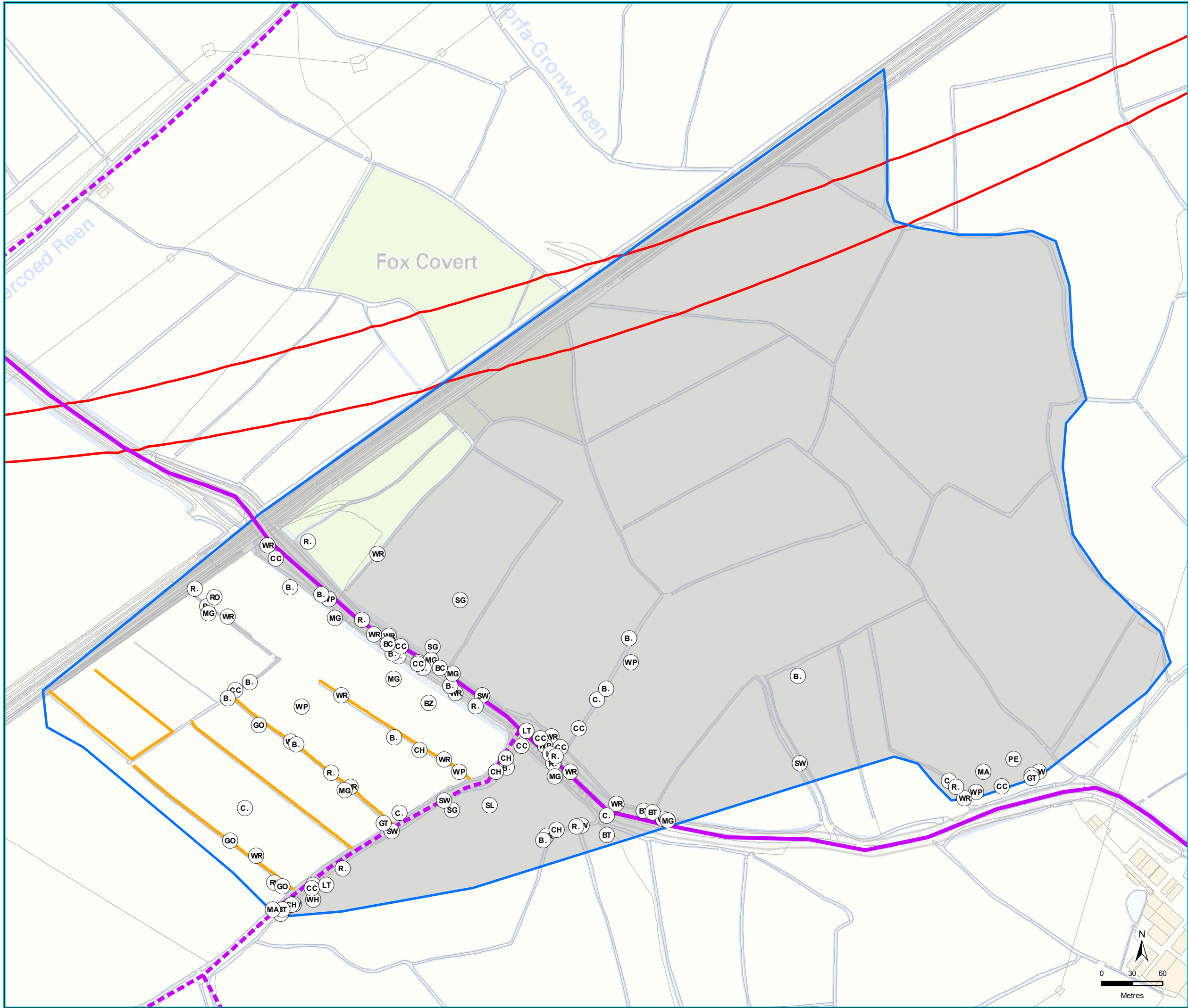
- Legend
- Bird Species**
- CU Curlew
  - L. Lapwing
- Driven Access
- - Footpath Access
- Scheme Outline
- Ground Nesting Wader Survey Areas
- No Access



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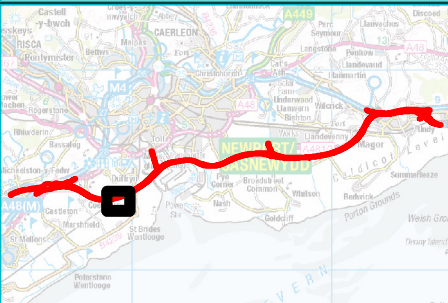
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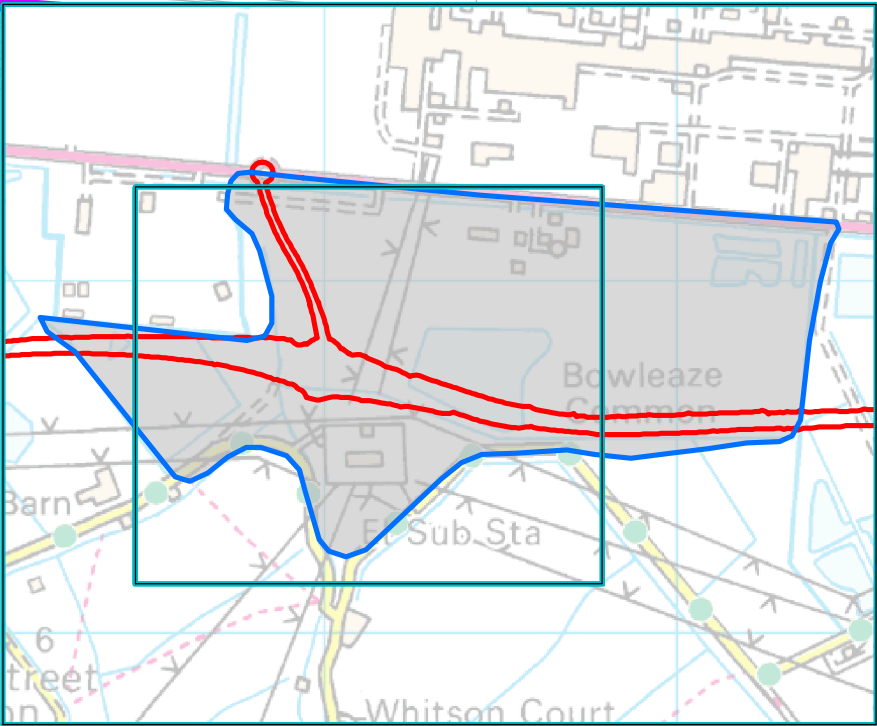
Bird Species

- |                      |                           |
|----------------------|---------------------------|
| (B.) Blackbird       | (RW) Reed Warbler         |
| (BC) Blackcap        | (SG) Starling             |
| (BT) Blue Tit        | (SL) Swallow              |
| (BZ) Buzzard         | (SW) Sedge Warbler        |
| (C.) Carrion Crow    | (WH) Whitethroat          |
| (CC) Chiffchaff      | (WP) Wood Pigeon          |
| (CH) Chaffinch       | (WR) Wren                 |
| (GO) Goldfinch       | Field Transect            |
| (GT) Great Tit       | Driven Access             |
| (LT) Long Tailed Tit | Footpath Access           |
| (MA) Mallard         | Breeding Bird Survey Area |
| (MG) Magpie          | Scheme Outline            |
| (PE) Peregrine       | No Access                 |
| (R.) Robin           |                           |
| (RO) Rook            |                           |


































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Client			
RPS Group PLC			
Figure Number		3a	
Figure Title			
Breeding Bird Survey Results - BBS1 Visit 2			





Legend

### Bird Species

- |  |                    |  |                           |
|--|--------------------|--|---------------------------|
|  B.   | Blackbird          |  MG | Magpie                    |
|  BC   | Blackcap           |  R. | Robin                     |
|  BF   | Bullfinch          |  SL | Swallow                   |
|  BT   | Blue Tit           |  SW | Sedge Warbler             |
|  BZ   | Buzzard            |  WH | Whitethroat               |
|  C.   | Carrion Crow       |  WP | Wood Pigeon               |
|  CC   | Chiffchaff         |  WR | Wren                      |
|  CH   | Chaffinch          |  WW | Willow Warbler            |
|  CK   | Cuckoo             |     | Driven Access             |
|  CW   | Cetti's Warbler    |     | Footpath Access           |
|  D.   | Dunnoek            |     | Scheme Outline            |
|  GO   | Goldfinch          |     | Breeding Bird Survey Area |
|  GT   | Great Tit          |     | No Access                 |
|  HS   | House Sparrow      |  |                           |
|  J.   | Jay                |  |                           |
|  LT   | Long Tailed Tit    |  |                           |
|  LW  | Lesser Whitethroat |  |                           |
|  MA | Mallard            |  |                           |



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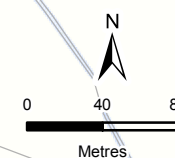
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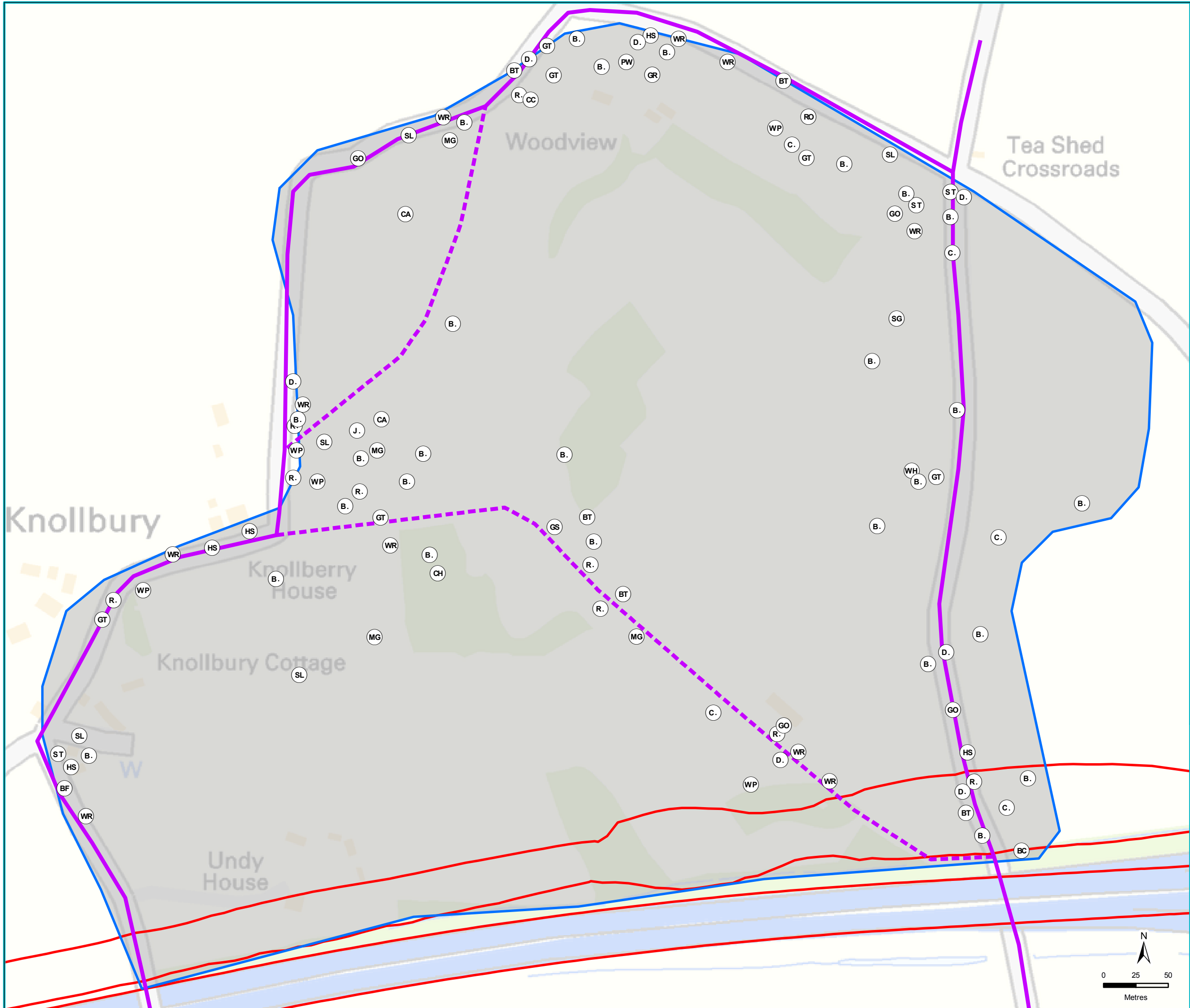
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Figure Title

Breeding Bird Survey  
Results - BBS2 Visit 2



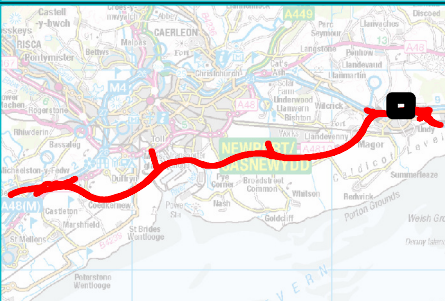
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Legend

Bird Species

- |                               |                  |
|-------------------------------|------------------|
| (B.) Blackbird                | (SL) Swallow     |
| (BC) Blackcap                 | (ST) Song Thrush |
| (BF) BF                       | (WH) Whitethroat |
| (BT) Blue Tit                 | (WP) Wood Pigeon |
| (C.) Carrion Crow             | (WR) Wren        |
| (CA) Cormorant                | Driven Access    |
| (CC) Chiffchaff               | Footpath Access  |
| (CH) Chaffinch                | Scheme Outline   |
| (D.) Dunnock                  | Breeding Area    |
| (GO) Goldfinch                | No Access        |
| (GR) Greenfinch               |                  |
| (GS) Great Spotted Woodpecker |                  |
| (GT) Great Tit                |                  |
| (HS) House Sparrow            |                  |
| (J.) Jay                      |                  |
| (MG) Magpie                   |                  |
| (PW) Pied Wagtail             |                  |
| (R.) Robin                    |                  |
| (RO) Rook                     |                  |
| (SG) Starling                 |                  |

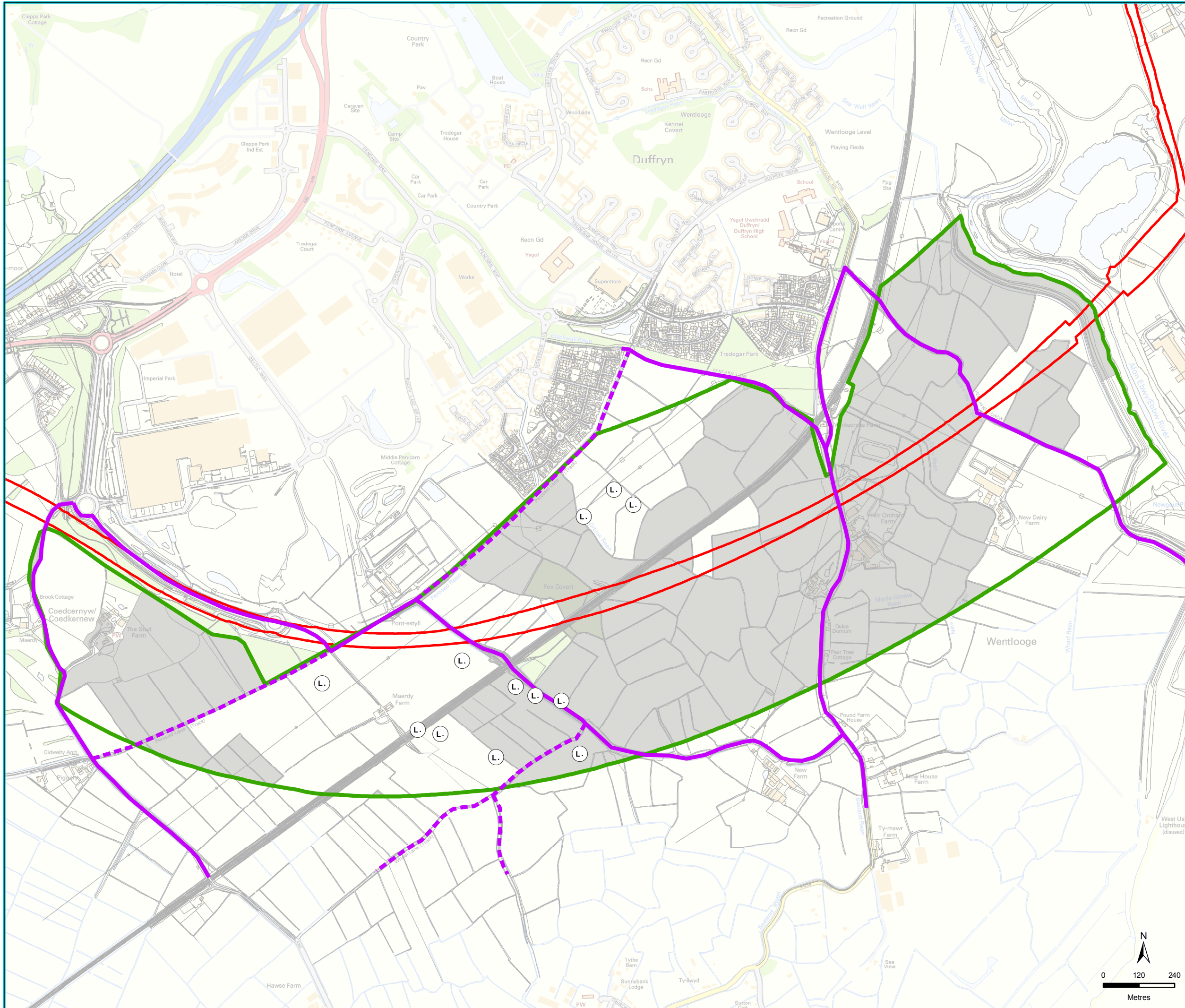


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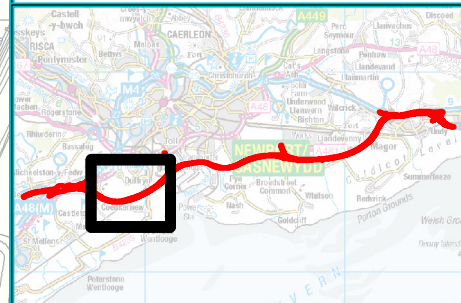
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Results - BBS3 Visit 2



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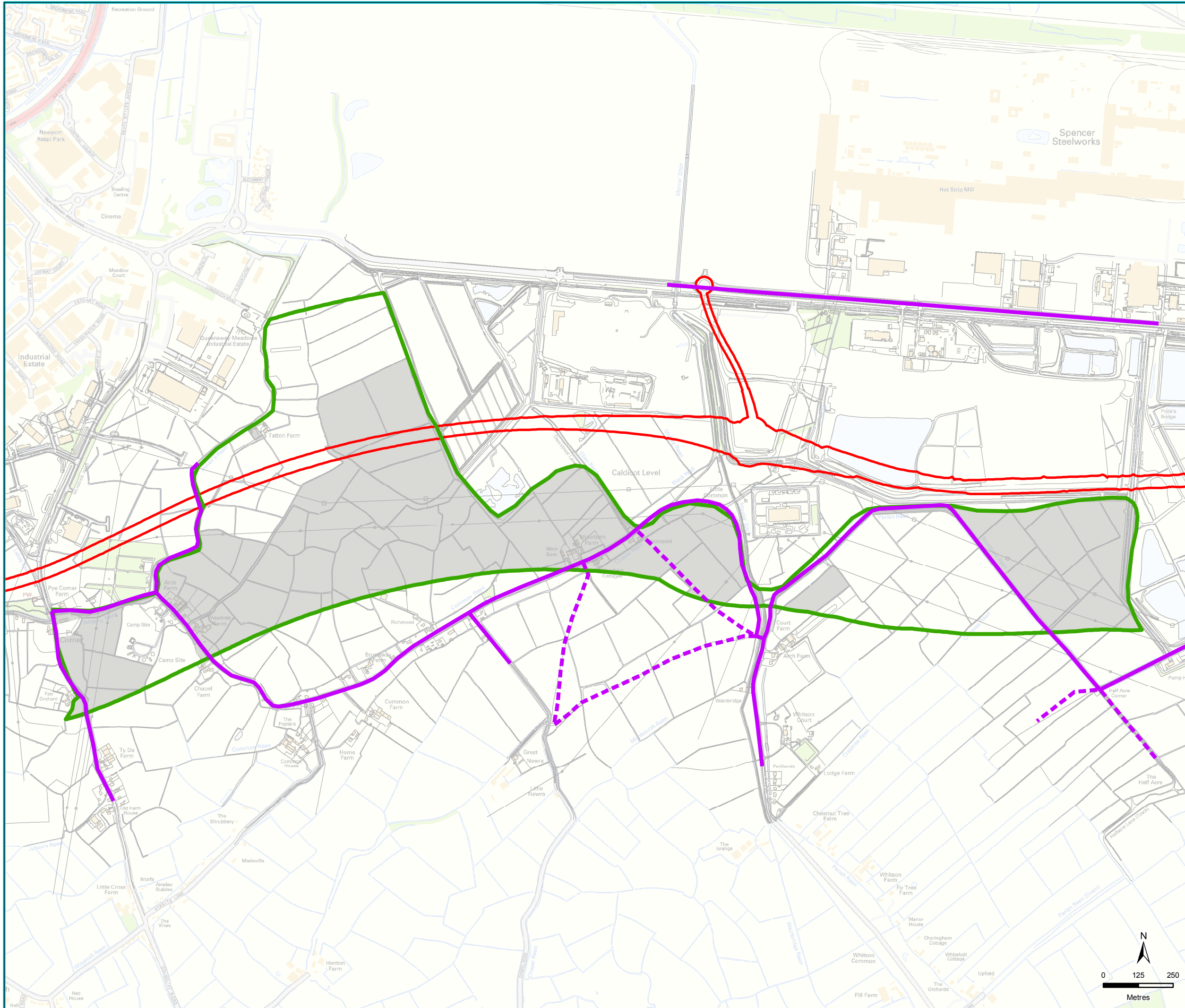
- Legend
- Bird Species**
- (L.) Lapwing
- Access**
- Driven Access
  - Footpath Access
- Other Features**
- Scheme Outline
  - Ground Nesting Wader Survey Areas
  - No Access



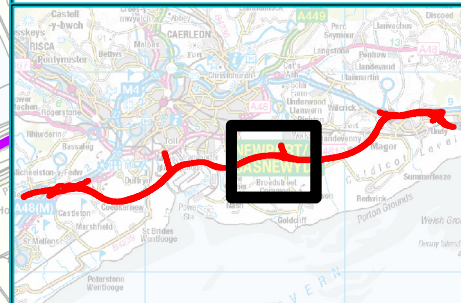
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Client		RPS Group PLC	
Figure Number		3d	
Figure Title		Breeding Wader Survey Results - BWS1 Visit 2	



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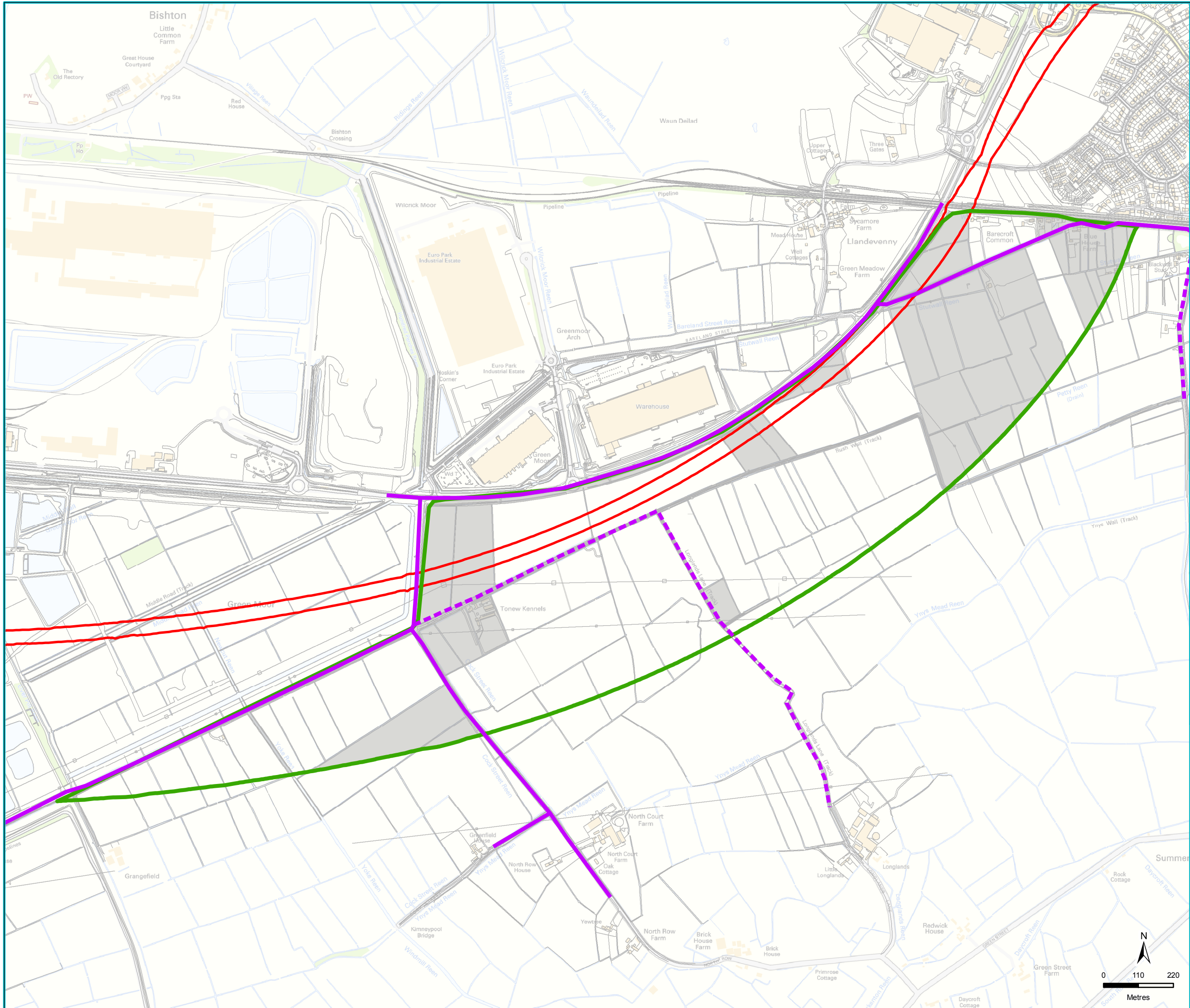
- Legend
- Driven Access
  - Footpath Access
  - Scheme Outline
  - Ground Nesting Wader Survey Areas
  - No Access



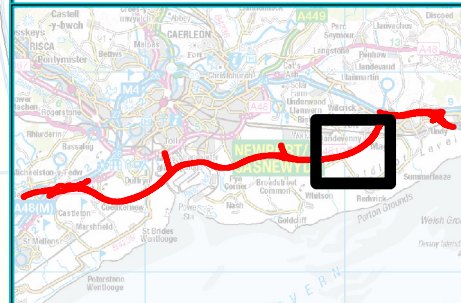
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Client			
RPS Group PLC			
Figure Number		3e	
Figure Title			
Breeding Wader Survey Results - BWS2 Visit 2			



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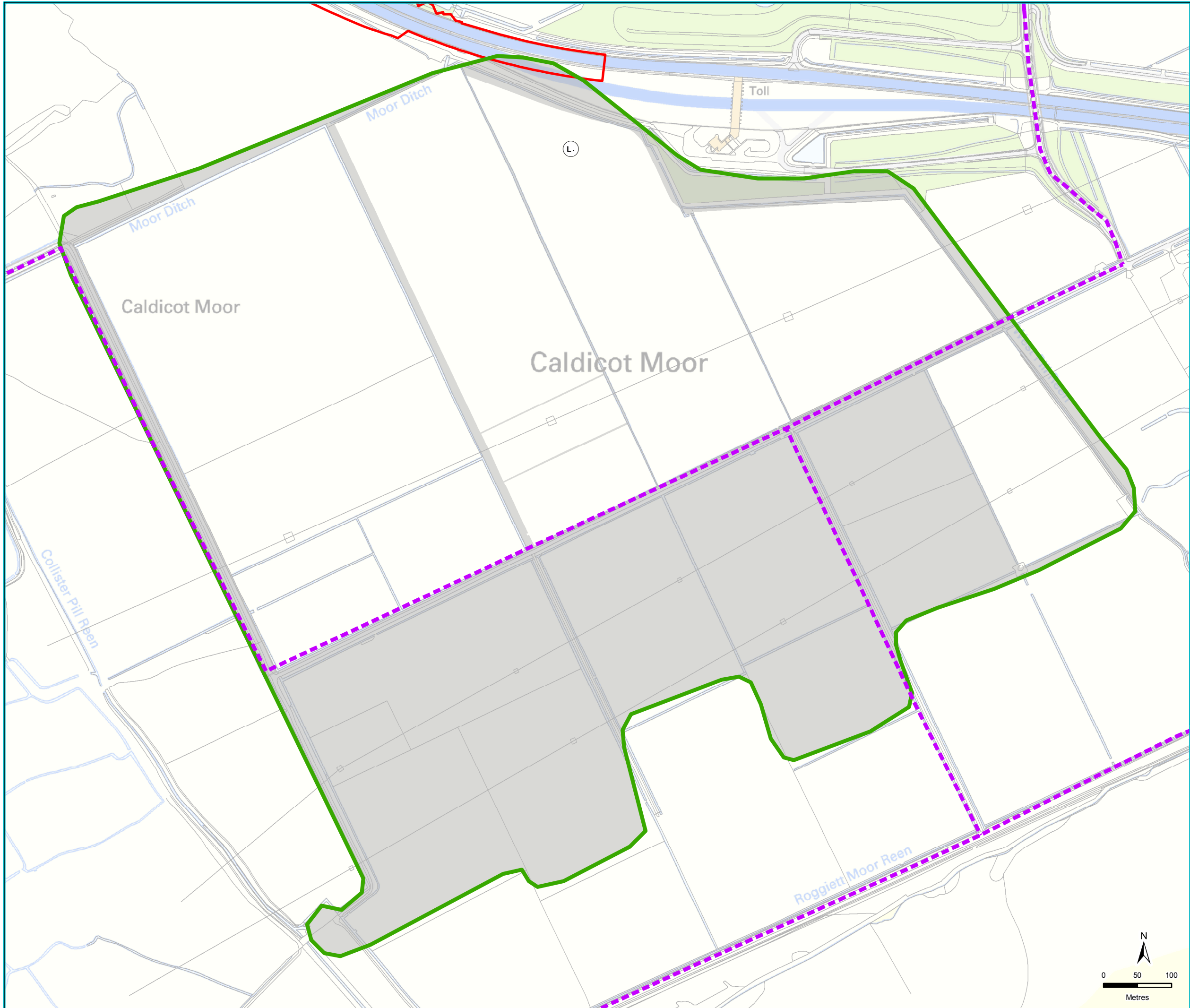
- Legend
- Driven Access
  - Footpath Access
  - Scheme Outline
  - Ground Nesting Wader Survey Areas
  - No Access



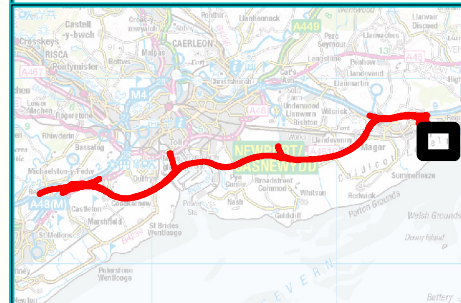
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Date	09/09/2015	Date	09/09/2015
Client		RPS Group PLC	
Figure Number		3f	
Figure Title		Breeding Wader Survey Results - BWS3 Visit 2	



Filepath: S:\Cardiff\Projects\MRPS108 M4 Widening\Reports\Mapping\Working\Breeding Bird Survey\MRPS108\_Fig3g\_WadingBirdSurveyResults\_Stage2\_KM\_100915.mxd  
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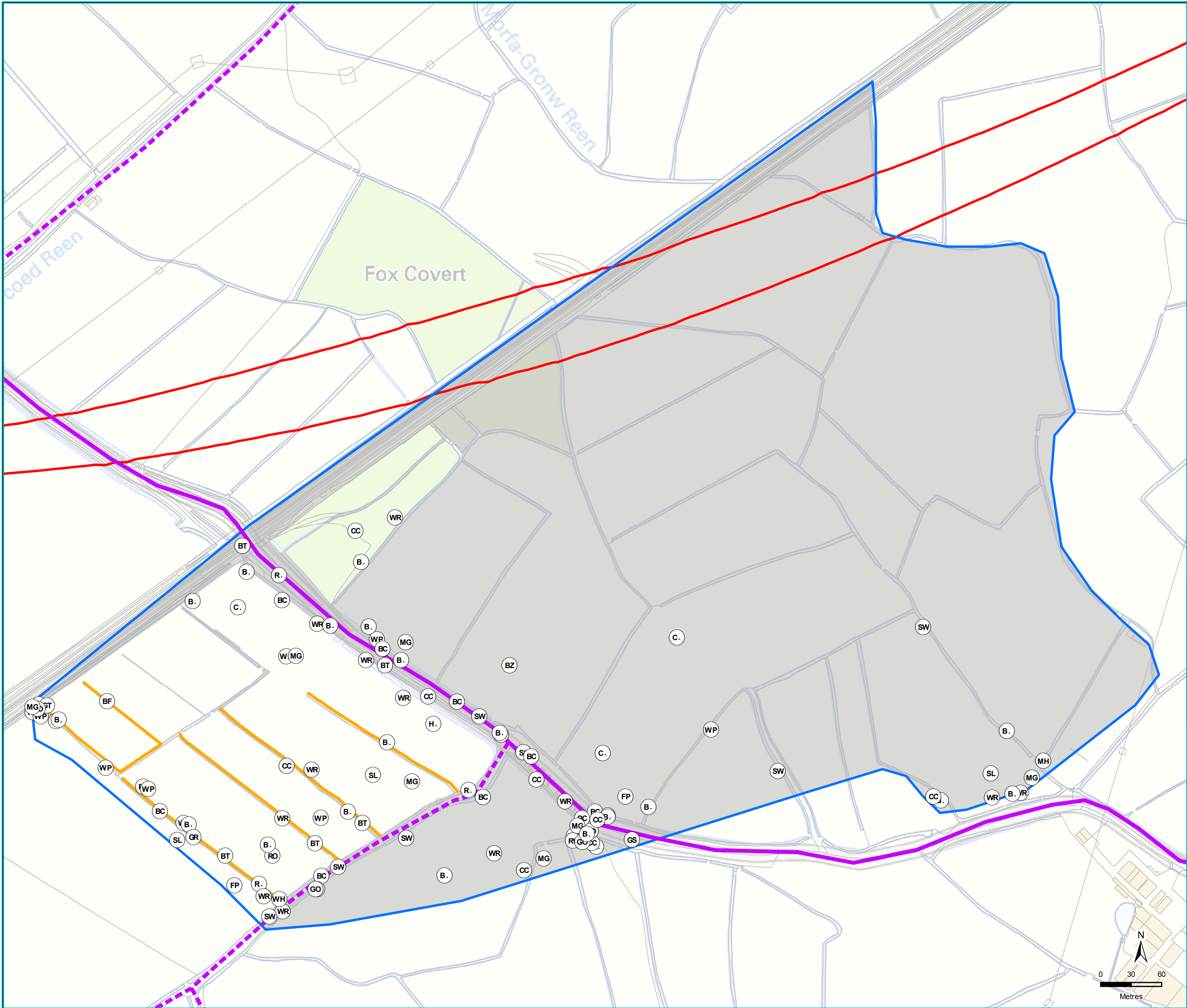
- Legend
- Bird Species**
- Ⓛ. Lapwing
  - Driven Access
  - - Footpath Access
  - ▭ Scheme Outline
  - ▭ Ground Nesting Wader Survey Areas
  - ▭ No Access



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Date	25/06/2015	Date	25/06/2015
Client			
RPS Group PLC			
Figure Number		3g	
Figure Title			
Breeding Wader Survey Results - BWS4 Visit 2			



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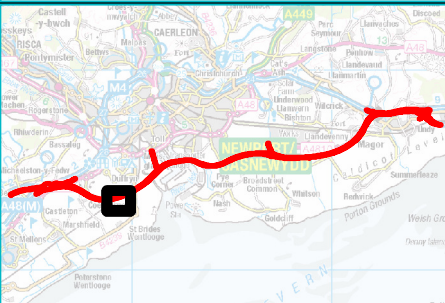
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Legend

Bird Species

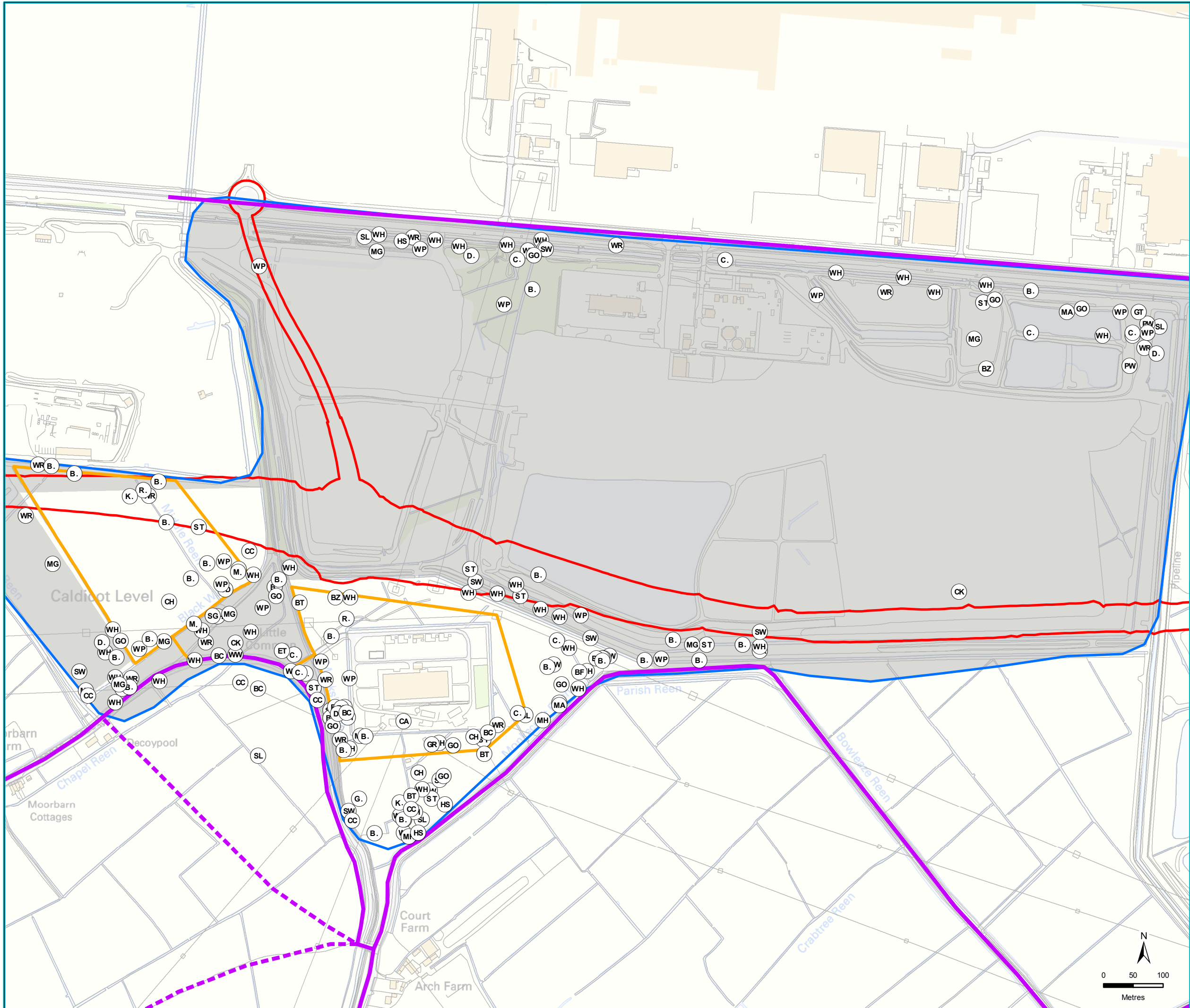
- |                               |                           |
|-------------------------------|---------------------------|
| (B.) Blackbird                | (MH) Moorhen              |
| (BC) Blackcap                 | (R.) Robin                |
| (BF) BF                       | (RO) Rook                 |
| (BT) Blue Tit                 | (RW) Reed Warbler         |
| (BZ) Buzzard                  | (SL) Swallow              |
| (C.) Carrion Crow             | (SW) Sedge Warbler        |
| (CC) Chiffchaff               | (WH) Whitethroat          |
| (CP) Feral Pigeon             | (WP) Wood Pigeon          |
| (GO) Goldfinch                | (WR) Wren                 |
| (GR) Greenfinch               | Field Transect            |
| (GS) Great Spotted Woodpecker | Driven Access             |
| (GT) Great Tit                | Footpath Access           |
| (H.) Grey Heron               | Breeding Bird Survey Area |
| (MG) Magpie                   | Scheme Outline            |
|                               | No Access                 |



Drawing Ref		MRPS108/18857/1	
Scale at A3		1:3,500	
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Date	25/06/2015	Date	25/06/2015
Client			
RPS Group PLC			
Figure Number		4a	
Figure Title			
Breeding Bird Survey Results - BBS1 Visit 3			



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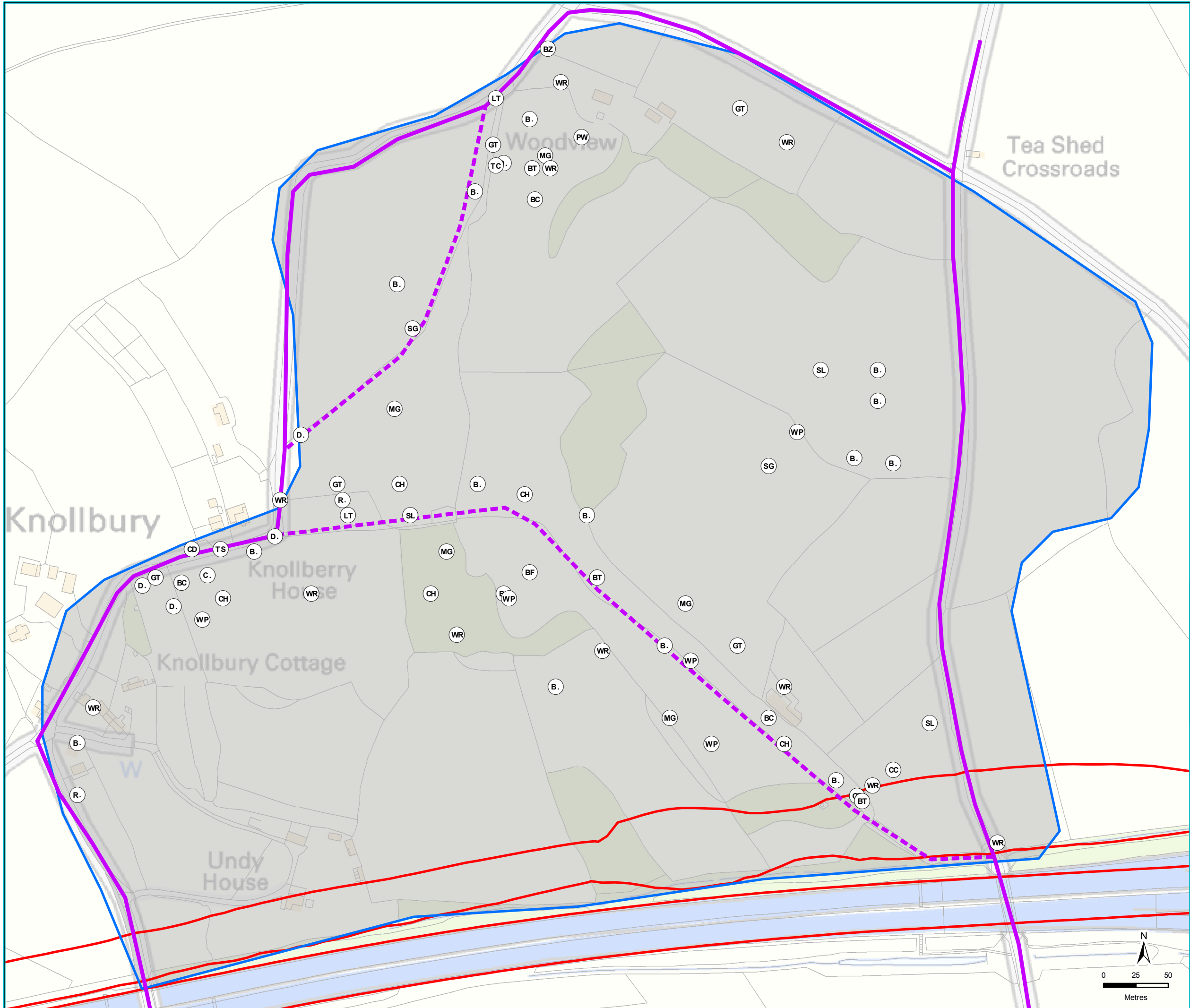
Legend

**Bird Species**

(B.) Blackbird	(MH) Moorhen
(BC) Blackcap	(PW) Pied Wagtail
(BF) BF	(R.) Robin
(BT) Blue Tit	(RW) Reed Warbler
(BZ) Buzzard	(SD) Stock Dove
(C.) Carrion Crow	(SG) Starling
(CA) Cormorant	(SL) Swallow
(CC) Chiffchaff	(ST) Song Thrush
(CH) Chaffinch	(SW) Sedge Warbler
(CK) Cuckoo	(WH) Whitethroat
(D.) Dunnock	(WP) Wood Pigeon
(ET) Little Egret	(WR) Wren
(G.) Green Woodpecker	(WW) Willow Warbler
(GO) Goldfinch	Field Transect
(GR) Greenfinch	Driven Access
(GT) Great Tit	Footpath Access
(HS) House Sparrow	Scheme Outline
(K.) Kestrel	Breeding Bird Survey Area
(M.) Mistle Thrush	No Access
(MA) Mallard	
(MG) Magpie	

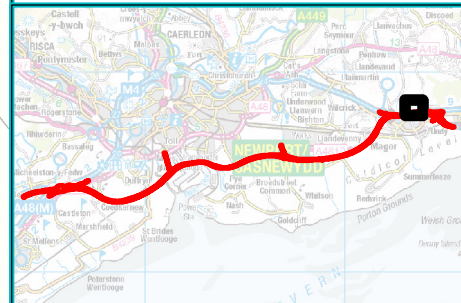
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Date	25/06/2015	Date	25/06/2015
Client	RPS Group PLC		
Figure Number	4b		
Figure Title	Breeding Bird Survey Results - BBS2 Visit 3		

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Legend

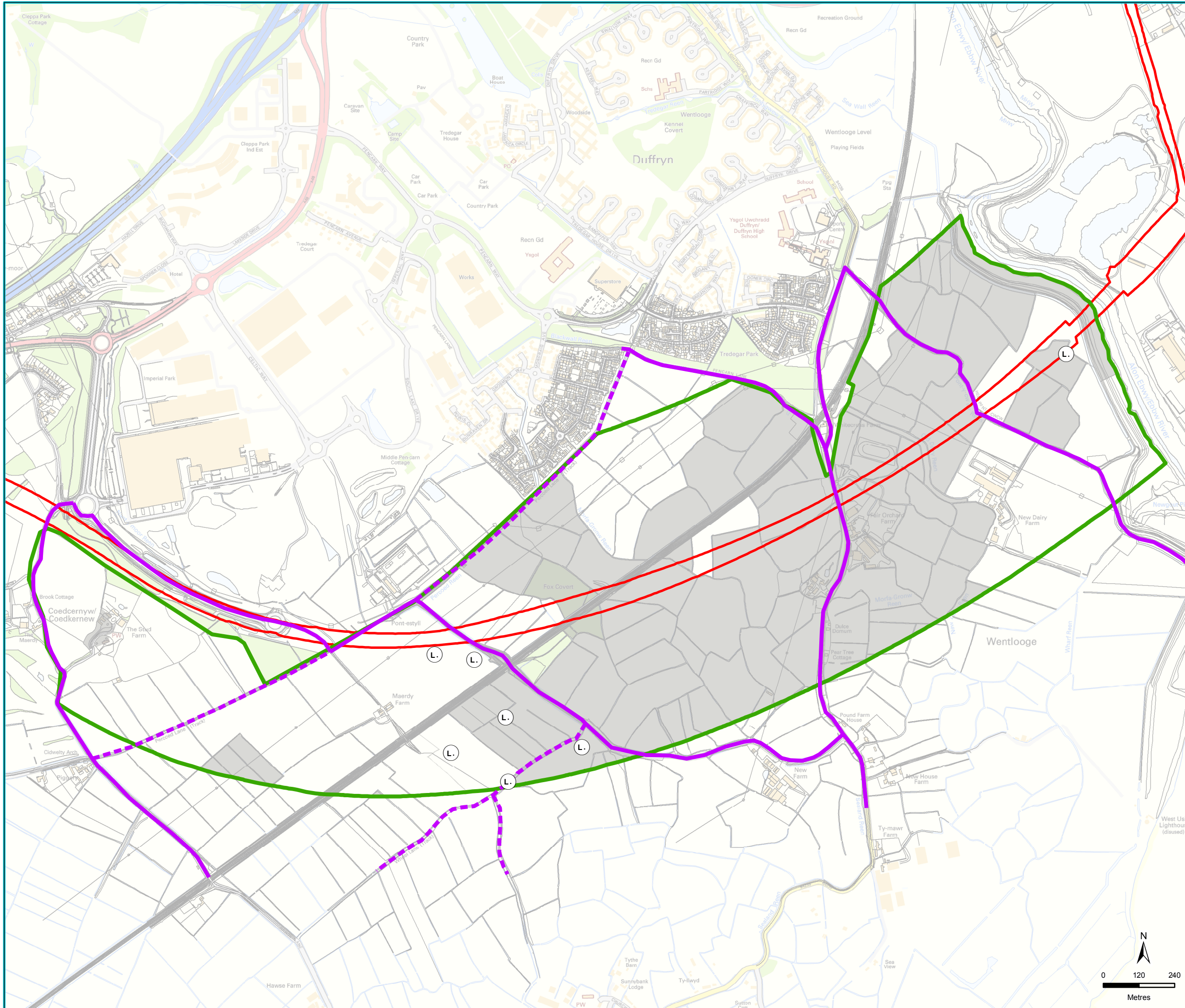
(B.)	Blackbird	—	Driven Access
(BC)	Blackcap	- - -	Footpath Access
(BF)	BF	□	Scheme Outline
(BT)	Blue Tit	□	Breeding Bird Survey Area
(BZ)	Buzzard	■	No Access
(C.)	Carrion Crow		
(CC)	Chiffchaff		
(CD)	Collared Dove		
(CH)	Chaffinch		
(D.)	Dunnock		
(GT)	Great Tit		
(LT)	Long-tailed Tit		
(MG)	Magpie		
(PW)	Pied Wagtail		
(R.)	Robin		
(SG)	Starling		
(SL)	Swallow		
(TC)	Treecreeper		
(TS)	Tree Sparrow		
(WP)	Wood Pigeon		
(WR)	Wren		



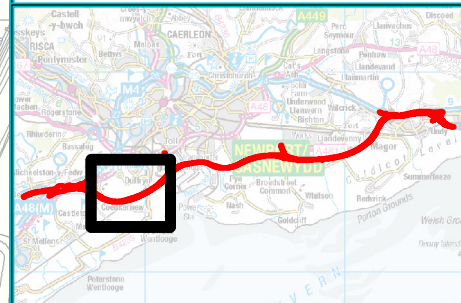
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RPS Group PLC			
Figure Number		4c	
Figure Title			
Breeding Bird Survey Results - BBS3 Visit 3			



Filepath: S:\Cardiff\Projects\MRPS108 M4 Widening\Reports\Mapping\Working\Breeding Bird Survey\MRPS108\_Fig4d\_WadingBirdSurveyResults\_Stage3\_AC\_120615.mxd  
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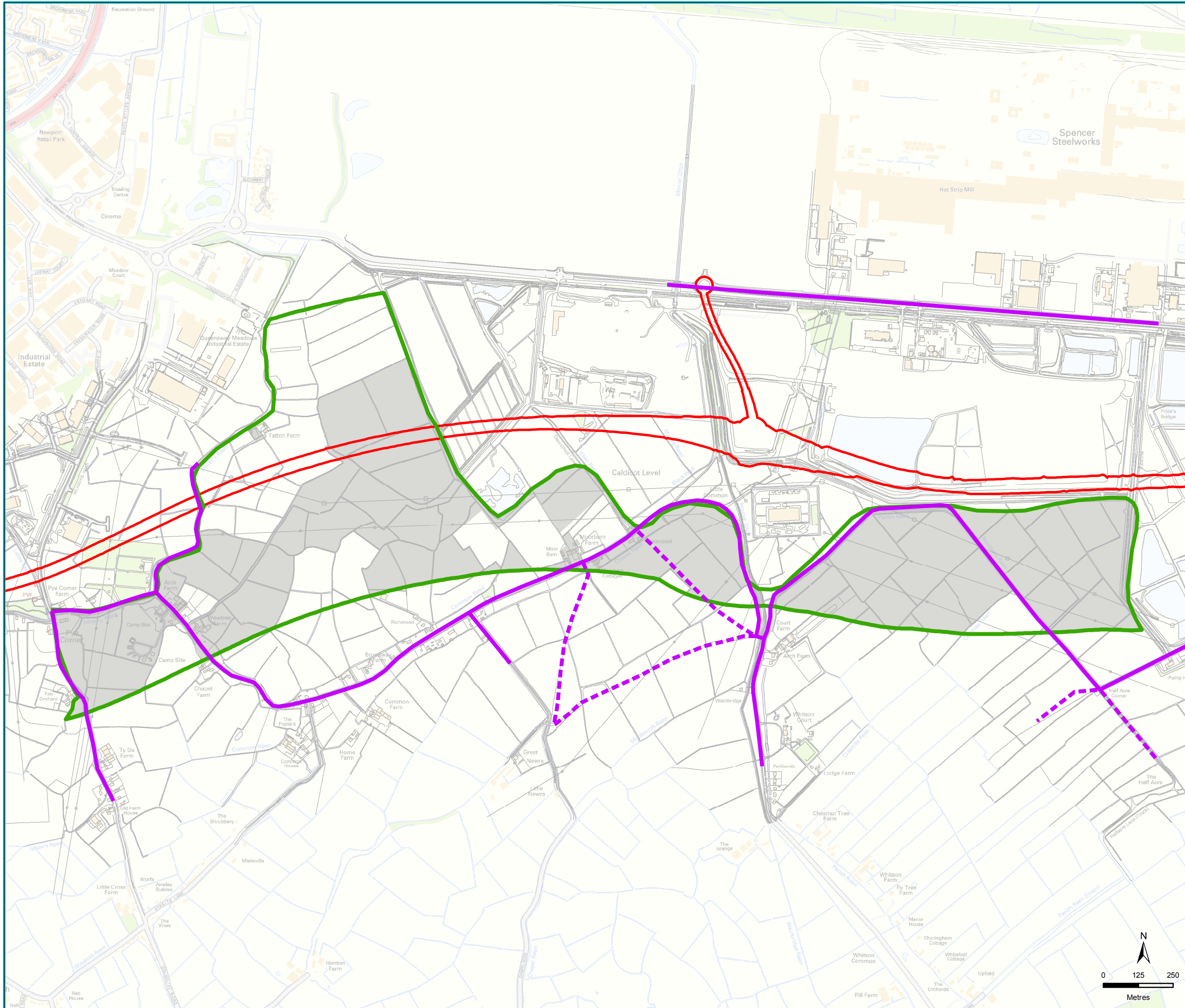
- Legend
- Bird Species**
- (L.) Lapwing
- Access**
- Driven Access
  - Footpath Access
- Ground Nesting Wader Survey Areas**
- Scheme Outline
  - No Access




Drawing Ref		MRPS108/18860/1	
Scale at A3		1:12,000	
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Client		RPS Group PLC	
Figure Number		4d	
Figure Title		Breeding Wader Survey Results - BWS1 Visit 3	



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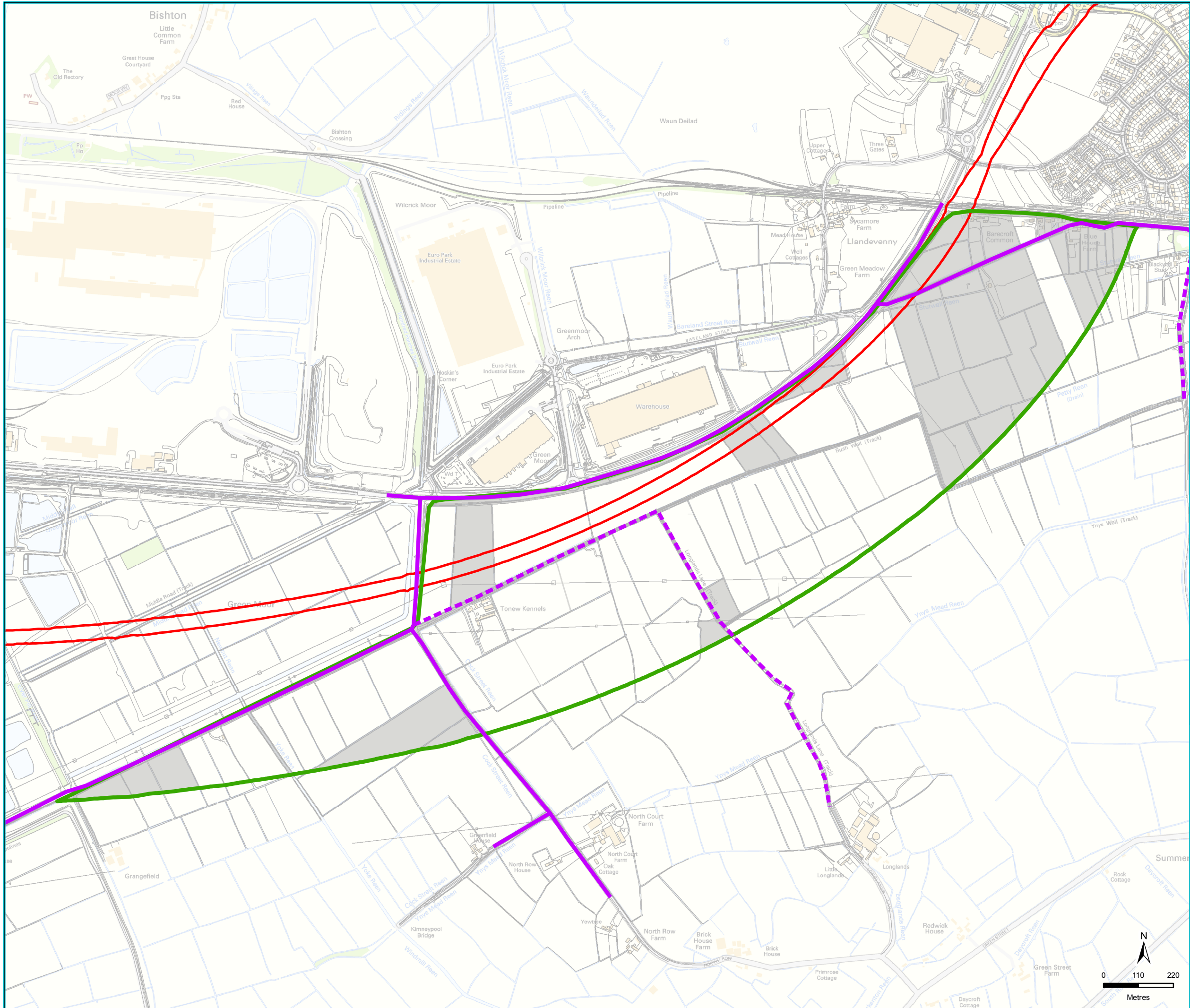
- Driven Access
- Footpath Access
- Scheme Outline
- Ground Nesting Wader Survey Areas
- No Access



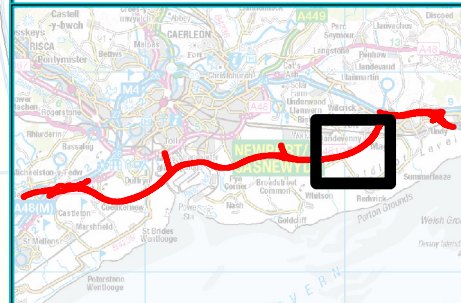
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Date	09/09/2015	Date	09/09/2015
Client			
RPS Group PLC			
Figure Number		4e	
Figure Title			
Breeding Wader Survey Results - BWS2 Visit 3			



Filepath: S:\Cardiff\Projects\MRPS108 M4 Widening\Reports\Mapping\Working\Breeding Bird Survey\MRPS108\_Fig4f\_WadingBirdSurveyResults\_Stage3\_KM\_100915.mxd  
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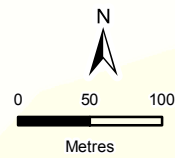
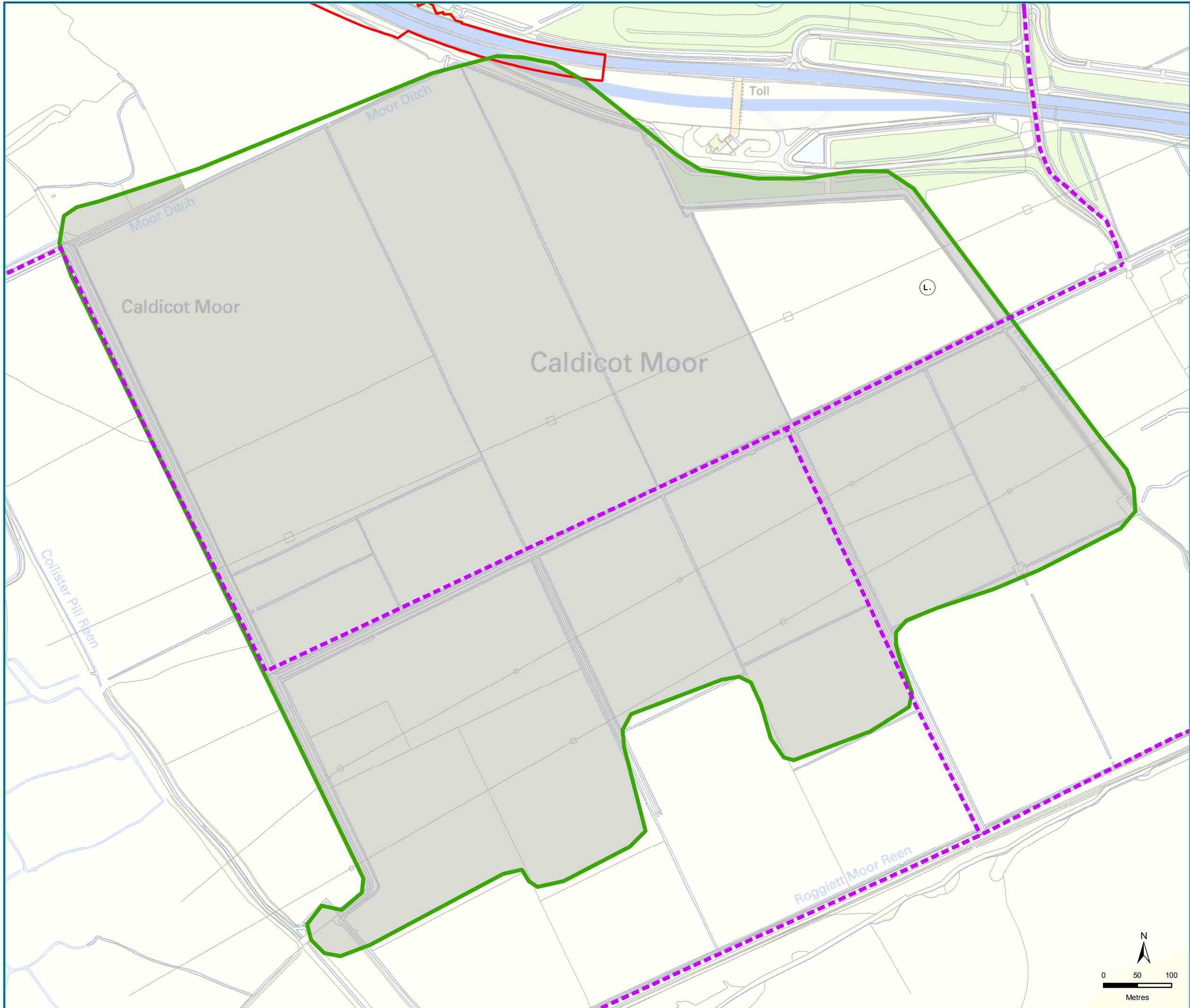
- Legend
- Driven Access
  - Footpath Access
  - Scheme Outline
  - Ground Nesting Wader Survey Areas
  - No Access



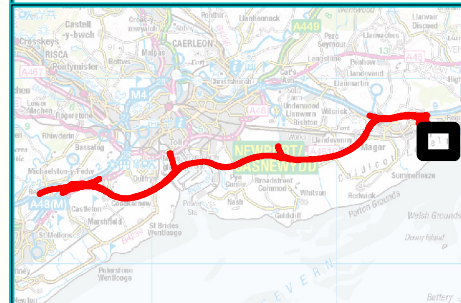
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Client		RPS Group PLC	
Figure Number		4f	
Figure Title		Breeding Wader Survey Results - BWS3 Visit 3	



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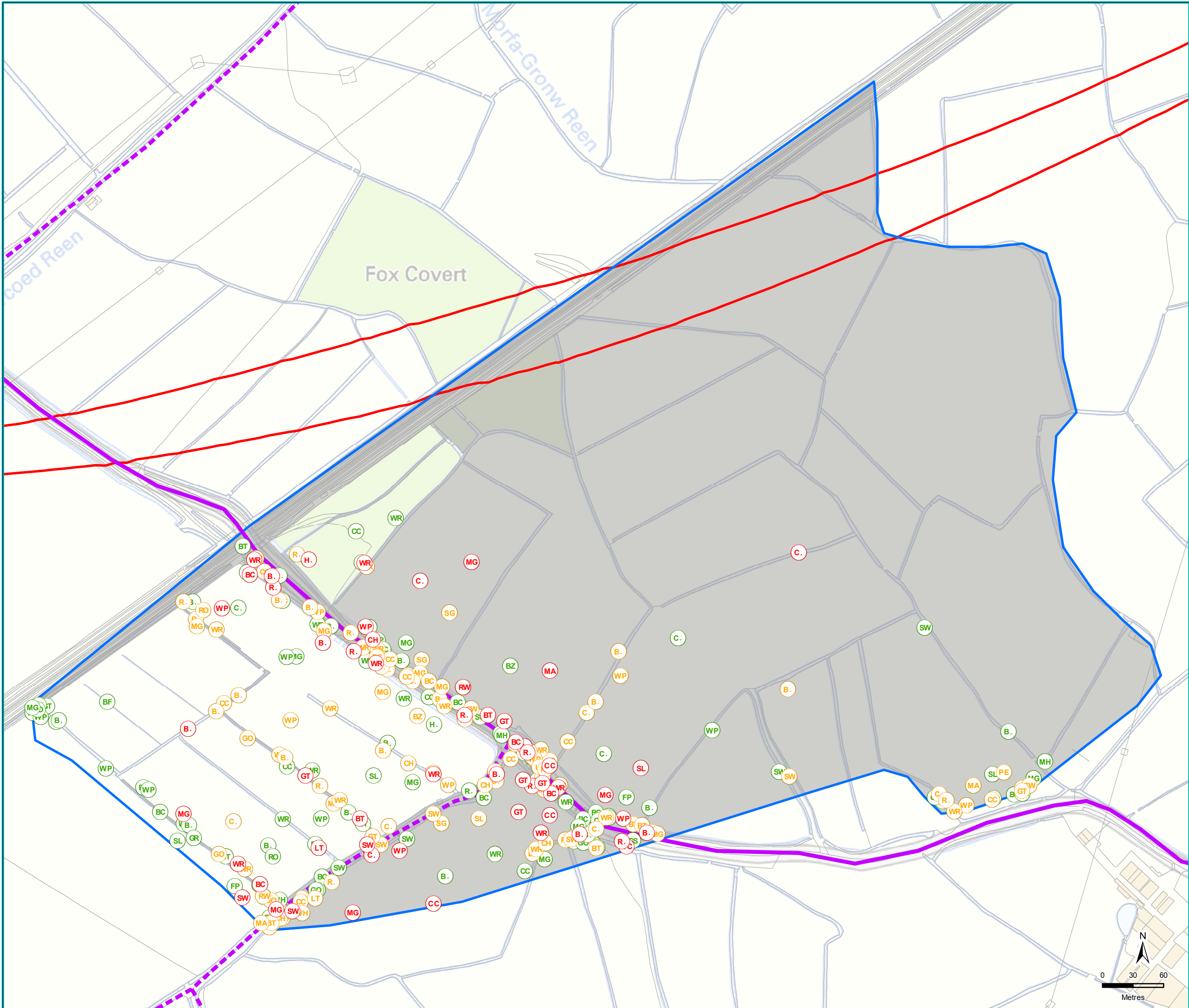
- Legend
- Bird Species**
- (L) Lapwing
  - Driven Access
  - - - Footpath Access
  - ▭ Scheme Outline
  - ▭ Ground Nesting Wader Survey Areas
  - ▭ No Access



Drawing Ref		MRPS108/18861/1	
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Figure Number		4g	
Figure Title		Breeding Wader Survey Results - BWS4 Visit 3	



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Legend

Bird Species

- (B.) Blackbird
- (BC) Blackcap
- (BF) Bullfinch
- (BT) Blue Tit
- (BZ) Buzzard
- (C.) Carrion Crow
- (CC) Chiffchaff
- (CH) Chaffinch
- (FP) Feral Pigeon
- (GO) Goldfinch
- (GR) Greenfinch
- (GS) Great Spotted Woodpecker
- (GT) Great Tit
- (H.) Grey Heron
- (LT) Long-tailed Tit
- (MA) Mallard
- (MG) Magpie
- (MH) Moorhen
- (PE) Peregrine
- (R.) Robin
- (RO) Rook
- (RW) Reed Warbler
- (SG) Starling
- (SL) Swallow

- (SW) Sedge Warbler
- (WH) Whitethroat
- (WP) Wood Pigeon
- (WR) Wren

Visit Number

- 1
- 2
- 3

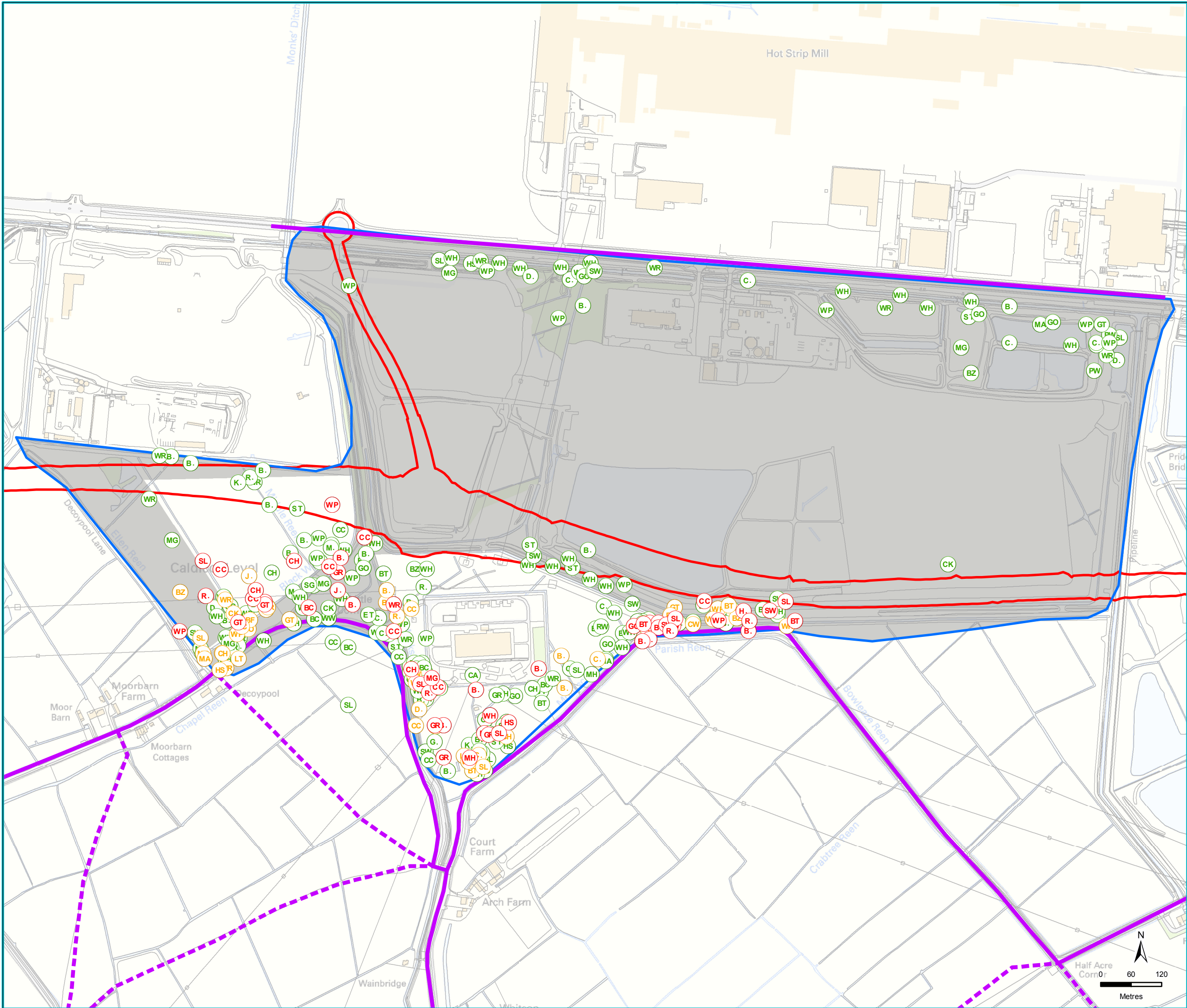
- Driven Access
- Footpath Access
- Breeding Bird Survey Area
- Scheme Outline
- No Access

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Date	08/07/2015	Date	08/07/2015
Client			
RPS Group PLC			
Figure Number			
5a			
Figure Title			
Summary of Breeding Bird Survey Results - BBS1			



Filepath: S:\Cardiff\Projects\MRPS108 M4 Widening\Reports\Mapping\Working\Breeding Bird Survey\BBS2 AC\_080715.mxd



Legend

Bird Species

- |                         |                     |
|-------------------------|---------------------|
| (B.) Blackbird          | (PW) Pied Wagtail   |
| (BC) Blackcap           | (R.) Robin          |
| (BF) Bullfinch          | (RW) Reed Warbler   |
| (BT) Blue Tit           | (SD) Stock Dove     |
| (BZ) Buzzard            | (SG) Starling       |
| (C.) Carrion Crow       | (SL) Swallow        |
| (CA) Cormorant          | (ST) Song Thrush    |
| (CC) Chiffchaff         | (SW) Sedge Warbler  |
| (CH) Chaffinch          | (WH) Whitethroat    |
| (CK) Cuckoo             | (WP) Wood Pigeon    |
| (CW) Cetti's Warbler    | (WR) Wren           |
| (D.) Dunnock            | (WW) Willow Warbler |
| (ET) Little Egret       |                     |
| (G.) Green Woodpecker   |                     |
| (GO) Goldfinch          |                     |
| (GR) Greenfinch         |                     |
| (GT) Great Tit          |                     |
| (H.) Grey Heron         |                     |
| (HS) House Sparrow      |                     |
| (J.) Jay                |                     |
| (K.) Kestrel            |                     |
| (LT) Long-tailed Tit    |                     |
| (LW) Lesser Whitethroat |                     |
| (M.) Mistle Thrush      |                     |
| (MA) Mallard            |                     |
| (MG) Magpie             |                     |
| (MH) Moorhen            |                     |

Visit Number

- |       |
|-------|
| (1) 1 |
| (2) 2 |
| (3) 3 |

- |                                       |
|---------------------------------------|
| (Purple line) Driven Access           |
| (Dashed purple line) Footpath Access  |
| (Blue line) Breeding Bird Survey Area |
| (Red line) Scheme Outline             |
| (Grey area) No Access                 |

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Drawing Ref  
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Scale at A3  
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Drawn AC	Checked NS
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Date 08/07/2015	Date 08/07/2015
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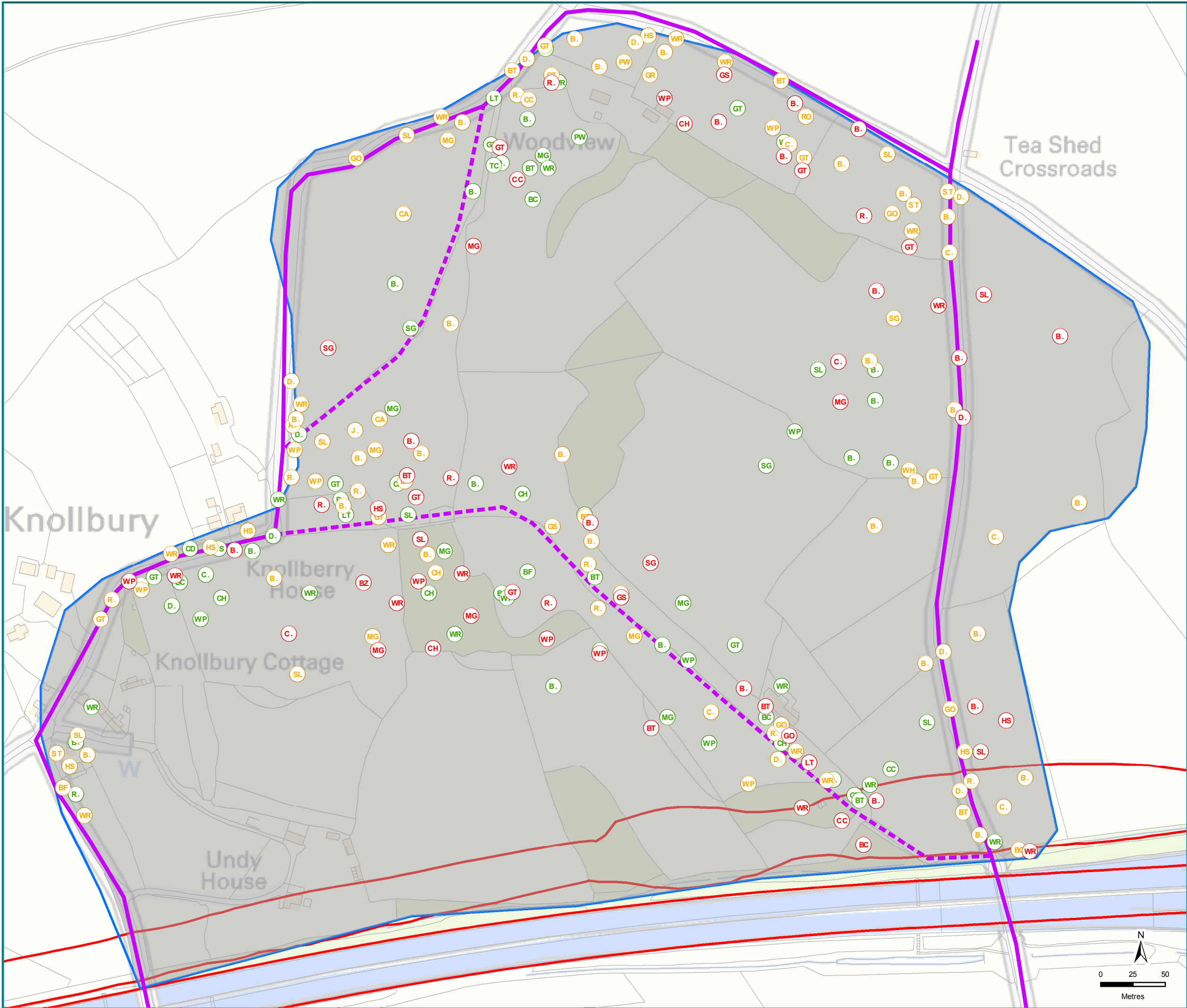
Client  
RPS Group PLC

Figure Number  
5b

Figure Title  
Summary of Breeding  
Bird Survey Results  
- BBS2



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Legend

Bird Species

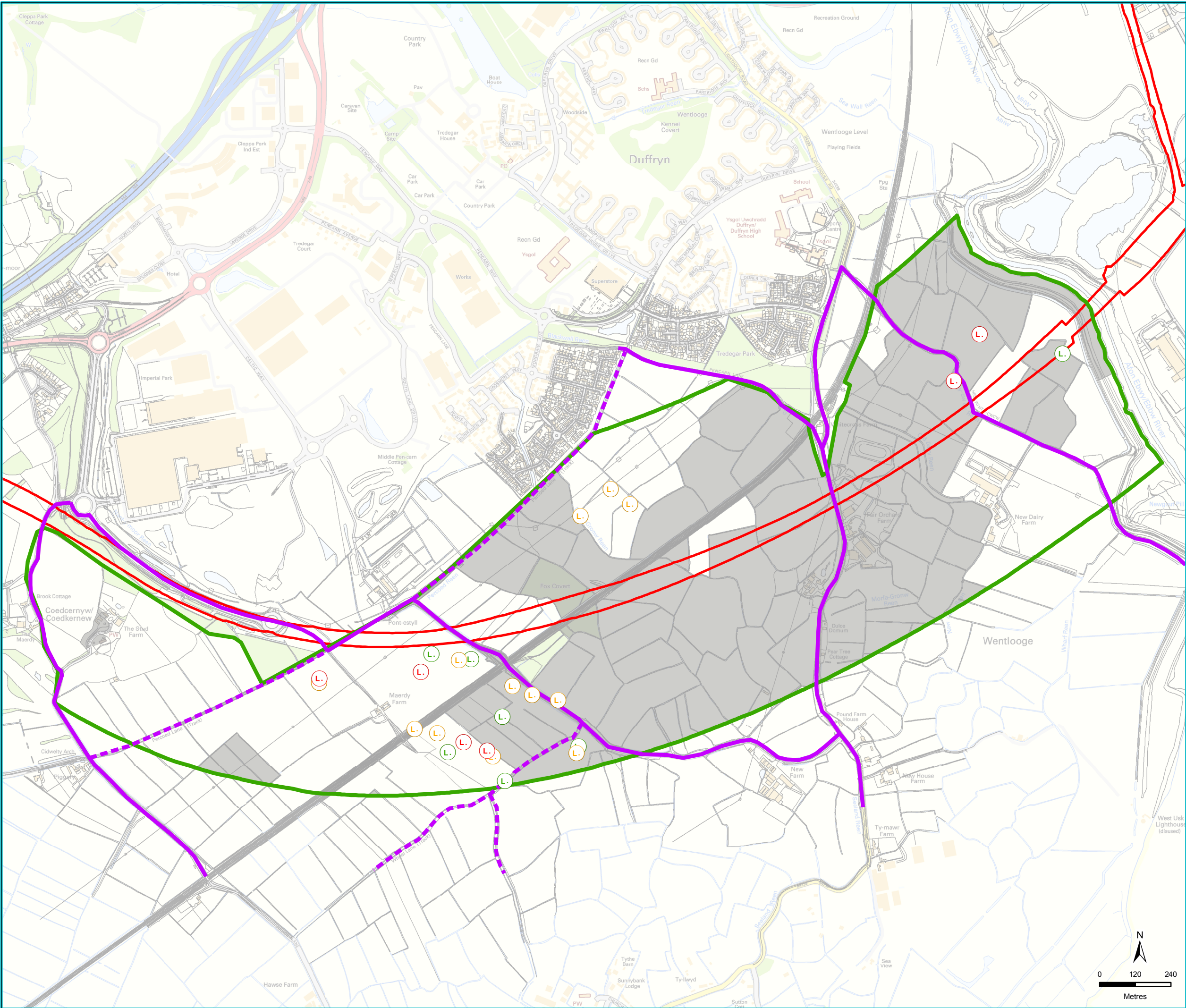
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|-------------------------------|---------------------------|
| (B.) Blackbird                | (TS) Tree Sparrow         |
| (BC) Blackcap                 | (WH) Whitethroat          |
| (BF) Bullfinch                | (WP) Wood Pigeon          |
| (BT) Blue Tit                 | (WR) Wren                 |
| (BZ) Buzzard                  |                           |
| (C.) Carrion Crow             | <b>Visit Number</b>       |
| (CA) Cormorant                | 1                         |
| (CC) Chiffchaff               | 2                         |
| (CD) Collared Dove            | 3                         |
| (CH) Chaffinch                | Driven Access             |
| (D.) Dunnock                  | Footpath Access           |
| (GO) Goldfinch                | Breeding Bird Survey Area |
| (GR) Greenfinch               | Scheme Outline            |
| (GS) Great Spotted Woodpecker | No Access                 |
| (GT) Great Tit                |                           |
| (HS) House Sparrow            |                           |
| (J.) Jay                      |                           |
| (LT) Long-tailed Tit          |                           |
| (MG) Magpie                   |                           |
| (PW) Pied Wagtail             |                           |
| (R.) Robin                    |                           |
| (RO) Rook                     |                           |
| (SG) Starling                 |                           |
| (SL) Swallow                  |                           |
| (ST) Song Thrush              |                           |
| (TC) Treecreeper              |                           |

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Drawing Ref		MRPS108/18977/1	
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Date	08/07/2015	Date	08/07/2015
Client			
RPS Group PLC			
Figure Number			
5c			
Figure Title			
Summary of Breeding Bird Survey Results - BBS3			



Filepath: S:\Cardiff\Projects\MRPS108 M4 Widening\Reports\Mapping\Working\Breeding Bird Survey\MRPS108\_Fig5d\_SummaryFigureWBS1\_AC\_080715.mxd



Legend

Bird Species

(L.) Lapwing

Visit Number

(Red circle) 1

(Orange circle) 2

(Green circle) 3

(Purple line) Driven Access

(Dashed purple line) Footpath Access

(Green outline) Ground Nesting Wader Survey Areas

(Red outline) Scheme Outline

(Grey area) No Access

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Drawing Ref  
MRPS108/18978/1

Scale at A3  
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Drawn AC	Checked NS
Date 08/07/2015	Date 08/07/2015

Client  
RPS Group PLC

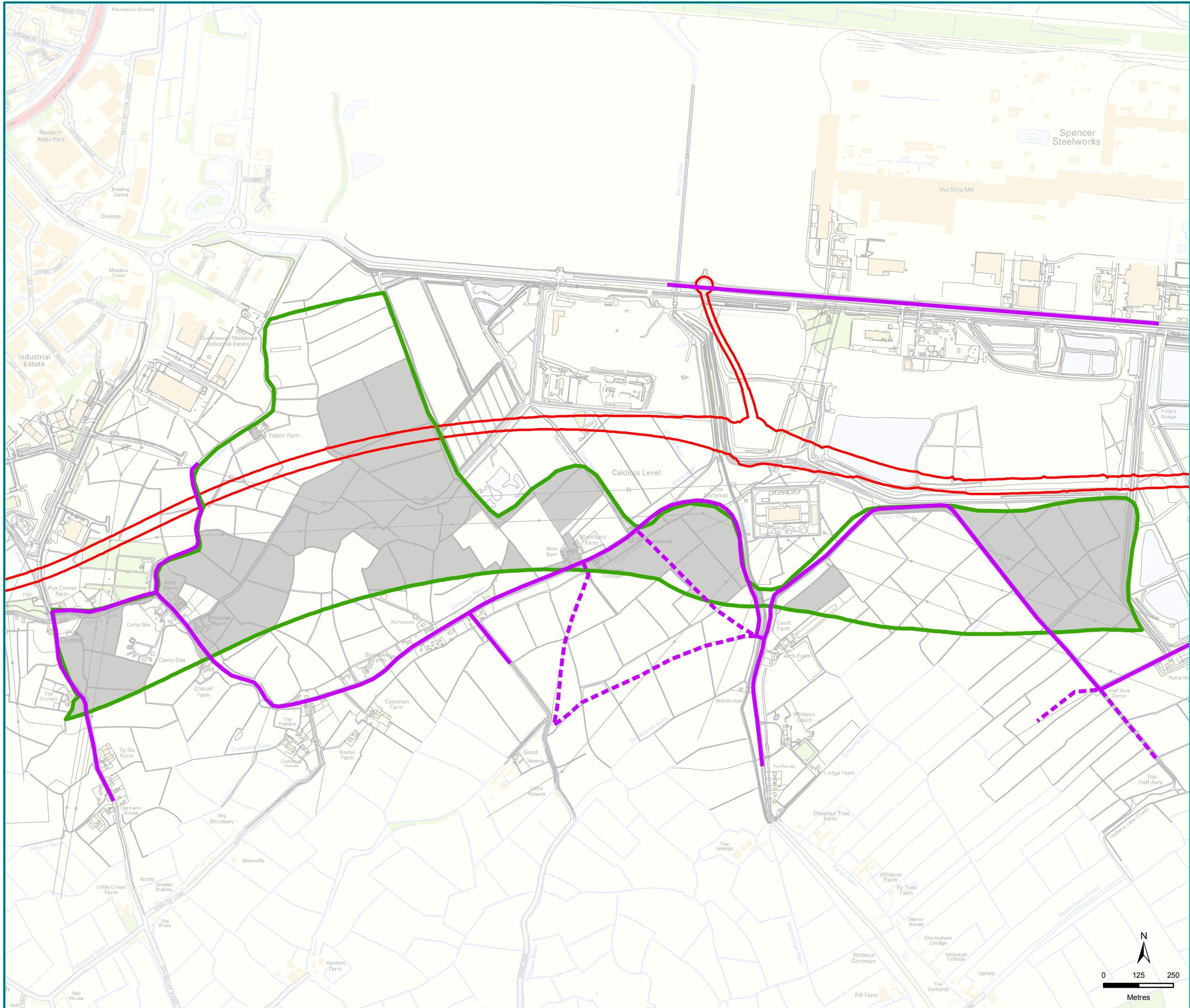
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Figure Title  
Summary of Breeding  
Wader Survey Results  
- BWS1

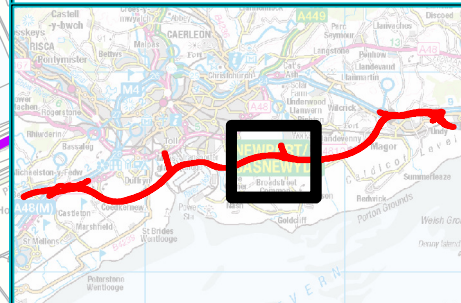




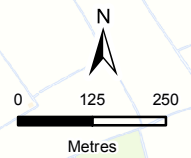
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- Legend
- Driven Access
  - Footpath Access
  - Scheme Outline
  - Ground Nesting Wader Survey Areas
  - No Access

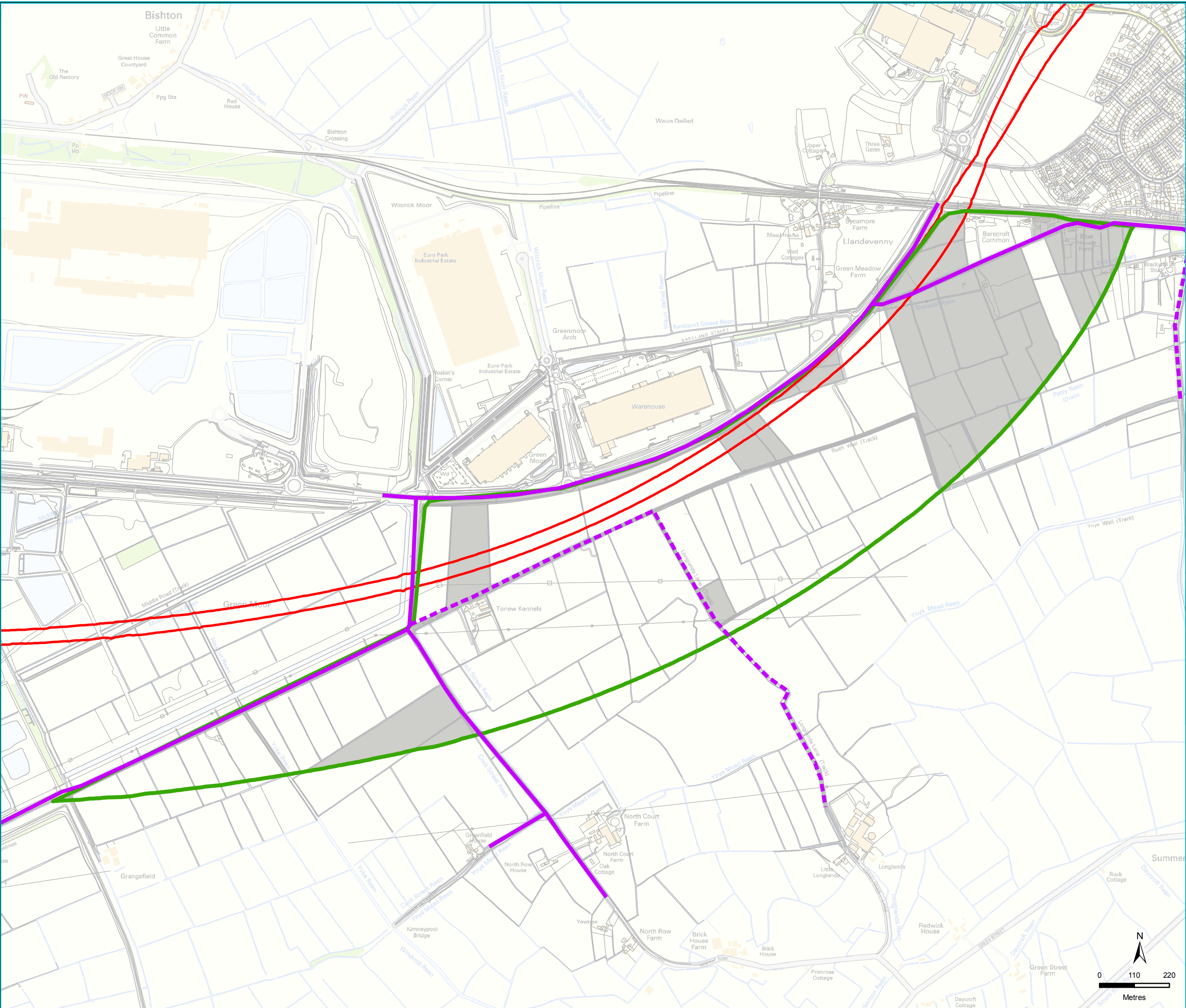



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RPS Group PLC			
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Figure Title			
Summary of Breeding Wader Survey Results - BWS2			





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Site Grid Reference: 340,427 186,024 Contains Ordnance Survey data. © Crown copyright and database rights 2015. Licence Number 100030994. This map must not be copied or reproduced by any means without prior written permission from Thomson Ecology Ltd.

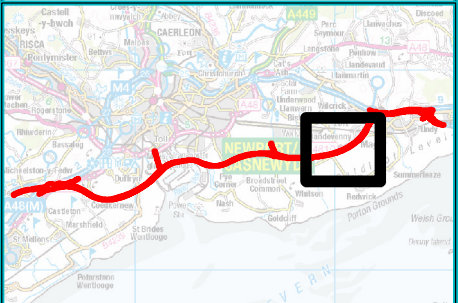




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Legend

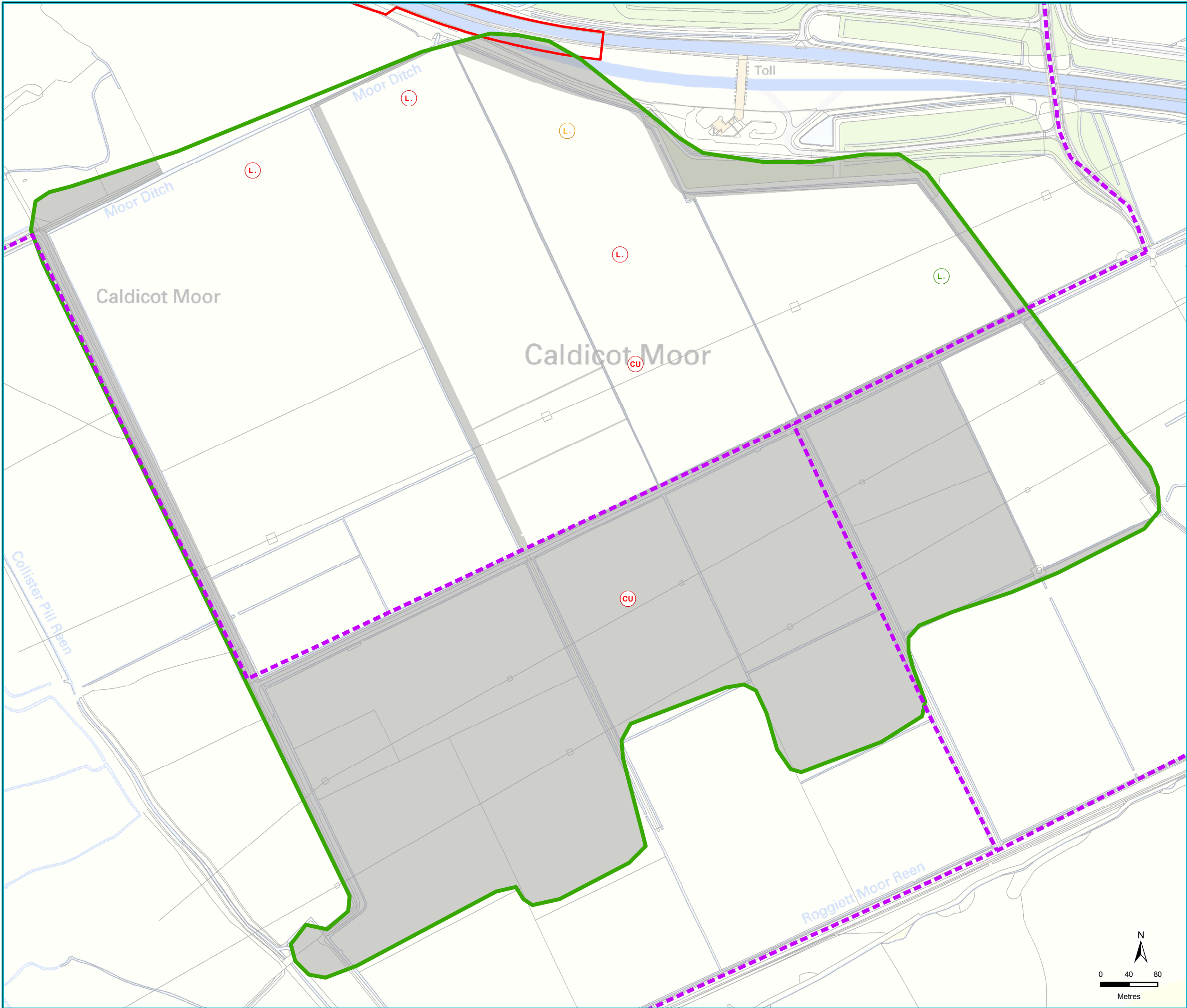
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- Footpath Access
- Scheme Outline
- Ground Nesting Wader Survey Areas
- No Access



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11/09/2015	11/09/2015
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RPS Group PLC	
Figure Number	
5f	
Figure Title	
Summary of Breeding Wader Survey Results - BWS3	



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Legend

Bird Species

- (CU) Curlew
- (L.) Lapwing

Visit Number

- 1
- 2
- 3

Footpath Access

Ground Nesting Wader Survey Areas

Scheme Outline

No Access

Site Grid Reference: 345,494 186,598  
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08/07/2015

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RPS Group PLC

Figure Number  
5g

Figure Title  
Summary of Breeding  
Wader Survey Results  
- BWS4



## 2. Introduction

### 2.1 Development Background

- 2.1.1 The Welsh Government proposes to build a new section of motorway to the south of Newport, Gwent. The development will be located between Castleton to the west (Grid Reference ST250840) and Llanfihangel, Rogiet to the east (Grid Reference ST450880) extending approximately 20km west to east (see Figure 1).

### 2.2 The Brief and Objectives

- 2.2.1 RPS Plc commissioned Thomson Ecology on 1<sup>st</sup> May 2015 to undertake breeding bird surveys and breeding wader surveys in the proposed corridor of the new section of motorway. The survey areas within the proposed corridor were defined by RPS Plc. The brief was to:

### 2.3 Breeding Bird Survey

- Survey of breeding birds based on walked transects within the three areas defined by RPS on the plan attached at Schedule 4 (email attachment 9<sup>th</sup> April 2015; Fig. 8235-0010-05 Figure 8 breeding birds);
- Survey to be carried out on three occasions during the period between April and June inclusive;
- Survey to be carried out in accordance with the method for Breeding Bird Survey (BBS) as set out in Bird Monitoring Methods (Gilbert *et al.*, 1998);
- A monthly report of data to be provided following completion of field survey; and
- A factual report of survey including plans of bird records for each survey for each transect, (including transect route, and species and behaviours recorded) and overall summary plan for each transect to be completed by the end of July 2015.

### 2.4 Breeding Wader Survey

- Survey of breeding waders to be carried out to cover the areas defined on the plan at Schedule 4 (email attachment 9<sup>th</sup> April 2015; Fig. 8235-0010-05 Figure 8 breeding birds);
- Survey to be carried out on three occasions during the period between April and June inclusive (final visit to be completed before 18 June);
- Survey to be carried out in accordance with the O'Brien and Smith (1992) method for censusing lowland breeding wader populations as set out in Bird Monitoring Methods (Gilbert *et al.*, 1998);
- A monthly report of data to be provided following completion of field survey; and
- A factual report of survey including plans of bird records for each survey for each transect (including transect route, and species and behaviours recorded), and overall summary plan for each transect to be completed by the end of July 2015.

### 2.5 Limitations

- 2.5.1 Due to access restrictions, both the breeding bird surveys and breeding wader surveys were mostly restricted to transect routes along public roads and footpaths, the parts of the survey



area where access was not permitted are shaded in grey, see Figures 2a-g, 3a-g, 4a-g and 5a-g. These limitations meant that much of the survey areas could not be surveyed. The standard breeding bird survey methodology could not therefore be followed, as this method requires two parallel transects spaced 500m apart to be walked in each 1-km square surveyed (Gilbert *et al.*, 1998).

**2.5.2** The surveys were carried out during May and June 2015 once the contract was signed with RPS Plc on 1<sup>st</sup> May 2015. No surveys were carried out during April as detailed in the brief in Section 2.2 as the contract had not yet been signed. Breeding birds vary in detectability over short time periods, so some species may have finished singing by May. Resident species especially sing early in the spring (Bibby *et al.*, 2000) and so may have been under-recorded. Warblers also have brief song periods and then become quieter after mating. Some of these species may also be under-recorded.

**2.5.3** Weather conditions were generally good for surveying. Rain on 29<sup>th</sup> May 2015 was not considered to affect the results of the breeding wader survey on this day.

## **2.6** Surveyors

**2.6.1** The surveys were conducted by George Watola BSc MSc MCIEEM, Jennifer Care BSc MSc Grad CIEEM, Crona McMonagle BSc MSc Grad CIEEM, Emily Wallace BSc MSc Grad CIEEM and Chris Wildblood BSc MSc Grad CIEEM.



### 3. Methodology

3.1.1 The vernacular names, scientific names and taxonomic order of birds mentioned in this report follows the British List (BOU, 2015).

#### 3.2 Breeding Bird Survey

3.2.1 Three breeding bird survey visits were undertaken during May and June 2015 within each of the three survey areas as defined by RPS Plc. The three breeding bird survey areas are numbered from west to east as BBS1, BBS2 and BBS3 (see Figure 1).

3.2.2 As access to the areas varied from visit to visit, it was not possible to adhere to the methodology for Breeding Bird Survey (BBS) as set out in Bird Monitoring Methods (Gilbert *et al.*, 1998). Bird surveys were instead carried out on the permissible public access roads and paths (considered to be transect routes for the purposes of these surveys) in each survey area, and also transect routes in any fields (field transects on the figures) where access permission was granted on a particular visit. The transect routes followed on each visit and the areas where access was permitted are indicated on the figures (see Figures 2a-c; 3a-c; 4a-c).

3.2.3 All surveys began an hour after dawn (Bibby *et al.*, 2000) and finished at 12:00. All accessible field perimeters, paths, hedgerows and woodland were surveyed on the transect routes. The surveyor walked at a slow pace recording all bird activity. They also stopped approximately every 100 - 200m to scan for and count the birds present, following the guidelines in Bibby *et al.* (2000). All birds were recorded, with the exception of flying large gulls.

3.2.4 During each breeding bird survey the location and species of all birds encountered (including both those seen and those heard) were recorded on a mobile mapper using standard British Trust for Ornithology (BTO) symbols. A single record could include either an individual, a pair, a family group or a flock of birds. Additional information was recorded on bird behaviour which would further inform their breeding status, such as singing males, adults carrying food or nests with eggs.

3.2.5 The dates and the weather conditions recorded during the breeding bird surveys are shown in Table 1. On Visit 3 further access became available during a three-day period at BBS2.

Table 1: Breeding Bird Survey Dates and General Weather Conditions for the three survey visits in May and June 2015.

Visit Number	Date	Weather Conditions
Visit 1	12 <sup>th</sup> May	Light rain at first, later overcast
Visit 2	27 <sup>th</sup> May	Sunny, light winds
Visit 3	8 <sup>th</sup> - 10 <sup>th</sup> June	Sunny on 8 <sup>th</sup> ; cloudy on 9 <sup>th</sup> and 10 <sup>th</sup>



### 3.3 Breeding Wader Survey

**3.3.1** The four breeding wader survey areas as defined by RPS Plc were numbered from west to east as BWS1, BWS2, BWS3 and BWS4 (Figure 1). Three survey visits were undertaken to each of the four survey areas during May and June 2015 on the dates shown in Table 2.

**3.3.2** The survey methodology followed that of O'Brien and Smith (1992) method for censusing lowland breeding wader populations as set out in Bird Monitoring Methods (Gilbert *et al.*, 1998) as much as access restrictions allowed. The first recommended visit was not carried out within the specified period of 15<sup>th</sup> April to 30<sup>th</sup> April as the contract was not signed until the 1<sup>st</sup> May.

**3.3.3** Access to the four survey areas varied from visit to visit. Breeding wader surveys were therefore carried out on the permissible public access roads and paths in each survey area, and also in any fields where access permission was granted on a particular visit. The routes followed on each visit and the areas where access was permitted are indicated on the figures (see Figures 2d-g; 3d-g; 4d-g).

**3.3.4** During each breeding wader survey the location and species of the five wader species being surveyed for were recorded on a mobile mapper using standard British Trust for Ornithology (BTO) symbols. Additional information was recorded on bird activity and considered breeding status, such as confirmed breeding or possible breeding. The five waders surveyed for were lapwing *Vanellus vanellus*, curlew *Numerius arquatus*, redshank *Tringa totanus*, oystercatcher *Haematopus ostralegus* and common snipe *Gallinago gallinago*. The species selected were those included in the O'Brien and Smith (1992) methodology.

**3.3.5** The dates and the weather conditions recorded during the breeding wader surveys are shown in Table 2.

Table 2: Breeding Wader Survey Dates and General Weather Conditions for the three survey visits in May and June 2015.

Visit Number	Date	Weather Conditions
Visit 1	7 <sup>th</sup> & 8 <sup>th</sup> May	Sunny
Visit 2	28 <sup>th</sup> & 29 <sup>th</sup> May	Sunny on 28 <sup>th</sup> ; Rain on 29 <sup>th</sup>
Visit 3	9 <sup>th</sup> & 10 <sup>th</sup> June	Cloudy on 9 <sup>th</sup> and 10 <sup>th</sup>



## 4. Results

### 4.1 Breeding Bird Survey

- 4.1.1** For each bird seen or heard, their species, behaviour and the number of occurrences of each behaviour were recorded. The breeding status of each bird species as assessed from their behaviour is shown in Tables 3-5 for each of the three breeding bird survey areas.
- 4.1.2** The location of all records for all birds on each survey visit and at each survey area; the transect routes which were followed on each visit and the areas where access was permitted are shown on Figures 2a-c, 3a-c, and 4a-c. The proportions of the areas surveyed varied between visits dependent on the level of access that was permitted. The additional routes (field transects) are shown on their respective figures. The total records for all three survey visits for each survey area are provided in Figures 5a-c.
- 4.1.3** A total of forty-six species were recorded across the site over the three survey visits. Forty-three of these species were considered to be breeding or possibly breeding. The other three species were recorded flying over (cormorant, *Phalacrocorax carbo*; little egret, *Egretta garzetta*; grey heron, *Ardea cinerea*). A total of 819 individual bird records were registered: 258 records within survey area BBS1, 320 records within survey area BBS2 and 241 records within survey area BBS3. On the visits, 166 records were registered on the first visit, 266 records on the second, and 387 records on the third visit.
- 4.1.4** Twenty-seven breeding or possibly breeding species were recorded in survey area BBS1 (see Table 3). Thirty-seven breeding or possibly breeding species were recorded in survey area BBS2 (see Table 4). Twenty-nine breeding or possibly breeding species were recorded in survey area BBS3 (see Table 5).

Table 3: Bird Species Recorded, Breeding Status, Behaviours and Number of Records of each Behaviour in Survey Area BBS1 during the three survey visits in May and June 2015.

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit1	Number of Records Visit 2	Number of Records Visit 3
Mallard	<i>Anas platyrhynchos</i>	Possible breeder	Species observed in suitable habitat	1	2	
Grey heron	<i>Ardea cinerea</i>	Flying over	Flying over	1		1
Buzzard	<i>Buteo buteo</i>	Breeding	Species observed in suitable habitat		1	
			Fledged young			1
Moorhen	<i>Gallinula chloropus</i>	Breeding	Species observed in suitable habitat			2
Feral pigeon	<i>Columba livia</i>	Possible breeding	Species observed in suitable habitat			2
Woodpigeon	<i>Columba palumbus</i>	Breeding	Species observed in suitable habitat	4	4	7
			Singing male		1	
Great spotted woodpecker	<i>Dendrocopos major</i>	Breeding	Singing male			1
Peregrine	<i>Falco peregrinus</i>	Possible breeding (probably away from survey areas)	Adult carrying food for young		1	



Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit1	Number of Records Visit 2	Number of Records Visit 3
Magpie	<i>Pica pica</i>	Breeding	Species observed in suitable habitat	4	3	8
			Flying over	1		
			Agitated behaviour		2	
			Visiting probable nest site		1	
Rook	<i>Corvus frugilegus</i>	Breeding	Fledged young			1
Carrion crow	<i>Corvus corone</i>	Breeding	Species observed in suitable habitat	2	5	3
			Adult carrying food for young	1		
Blue tit	<i>Cyanistes caeruleus</i>	Breeding	Species observed in suitable habitat	2	2	3
			Fledged young			2
			Occupied nest		1	
			Adult carrying food		1	
Great tit	<i>Parus major</i>	Breeding	Species observed in suitable habitat	4	1	1

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit1	Number of Records Visit 2	Number of Records Visit 3
			Adult carrying food for young	1	1	
			Pair observed in suitable habitat		1	
Swallow	<i>Hirundo rustica</i>	Breeding	Species observed in suitable habitat	1	1	4
Long-tailed tit	<i>Aegithalos caudatus</i>	Breeding	Species observed in suitable habitat	1	3	
Chiffchaff	<i>Phylloscopus collybita</i>	Breeding	Singing male	4	7	5
			Fledged young		1	
			Visiting probable nest site		1	
			Species observed in suitable habitat			3
Blackcap	<i>Sylvia atricapilla</i>	Breeding	Singing male	4	1	2
			Species observed in suitable habitat			4
			Pair observed in suitable habitat		1	



Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit1	Number of Records Visit 2	Number of Records Visit 3
			Visiting probable nest site			4
Whitethroat	<i>Sylvia communis</i>	Breeding	Singing male		1	
			Species observed in suitable habitat			1
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	Breeding	Singing male	3	6	2
			Species observed in suitable habitat			4
Reed warbler	<i>Acrocephalus scirpaceus</i>	Breeding	Species observed in suitable habitat	1		
			Pair observed in suitable habitat			1
			Singing male		2	
Wren	<i>Troglodytes troglodytes</i>	Breeding	Singing male	7	8	8
			Species observed in suitable habitat		7	7
Starling	<i>Sturnus vulgaris</i>	Breeding	Species observed in suitable habitat		3	

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit1	Number of Records Visit 2	Number of Records Visit 3
Blackbird	<i>Turdus merula</i>	Breeding	Species observed in suitable habitat	6	5	4
			Agitated behaviour indicating nest nearby			1
			Occupied nest			1
			Adult carrying food			1
			Singing male	1	6	11
Robin	<i>Erithacus rubecula</i>	Breeding	Singing male	5	9	3
			Species observed in suitable habitat	1	1	2
			Visiting probable nest site			1
Chaffinch	<i>Fringilla coelebs</i>	Breeding	Singing male	1	2	
			Pair observed in suitable habitat		1	
Bullfinch	<i>Pyrrhula pyrrhula</i>	Breeding	Species observed in suitable habitat			1



Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit1	Number of Records Visit 2	Number of Records Visit 3
Greenfinch	<i>Chloris chloris</i>	Breeding	Species observed in suitable habitat			1
Goldfinch	<i>Carduelis carduelis</i>	Breeding	Species observed in suitable habitat		2	2
			Singing male			1
			Fledged young			1

Table 4: Bird Species Recorded, Breeding Status, Behaviours and Number of Records of each Behaviour in BBS2 in May and June 2015.

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Mallard	<i>Anas platyrhynchos</i>	Possible breeder	Species observed in suitable habitat		1	2
Cormorant	<i>Phalacrocorax carbo</i>	Flying over only	Flying over			1
Little egret	<i>Egretta garzetta</i>	Flying over only	Flying over			1
Grey heron	<i>Ardea cinerea</i>	Flying over only	Flying over	1		
Buzzard	<i>Buteo buteo</i>	Possible breeder	Species observed in suitable habitat		1	2

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Moorhen	<i>Gallinula chloropus</i>	Breeding	Species observed in suitable habitat	1		2
			Fledged young			1
Stock dove	<i>Columba oenas</i>	Breeding	Species observed in suitable habitat			2
Woodpigeon	<i>Columba palumbus</i>	Breeding	Species observed in suitable habitat	3	1	13
			Occupied nest		1	
			Pair observed in suitable habitat		1	
			Building nest			1
Cuckoo	<i>Cuculus canorus</i>	Breeding	Species observed in suitable habitat			1
			Singing male		1	1
Green woodpecker	<i>Picus viridis</i>	Breeding	Species observed in suitable habitat			1
Kestrel	<i>Falco tinnunculus</i>	Breeding	Species observed in suitable habitat			2



Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Magpie	<i>Pica pica</i>	Breeding	Species observed in suitable habitat	1	1	9
			Nest with young		1	
			Nest-building		1	
Jay	<i>Garrulus glandarius</i>	Breeding	Species observed in suitable habitat	1	1	
Rook	<i>Corvus frugilegus</i>	Possibly breeding	Species observed in suitable habitat		1	
Carrion crow	<i>Corvus corone</i>	Breeding	Species observed in suitable habitat		3	7
			Fledged young			1
Blue tit	<i>Cyanistes caeruleus</i>	Breeding	Species observed in suitable habitat	2	1	4
			Adult carrying food		1	
			Fledged young			2
Great tit	<i>Parus major</i>	Breeding	Species observed in suitable habitat	2	1	1
			Occupied nest		1	

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Swallow	<i>Hirundo rustica</i>	Breeding	Species observed in suitable habitat	3	2	5
			Flying over	1		
			Courtship and display	1		
Cetti's warbler	<i>Cettia cetti</i>	Breeding	Species observed in suitable habitat		1	
Long-tailed tit	<i>Aegithalos caudatus</i>	Breeding	Species observed in suitable habitat		1	
Chiffchaff	<i>Phylloscopus collybita</i>	Breeding	Species observed in suitable habitat	1	1	3
			Singing male	5	3	4
Willow warbler	<i>Phylloscopus trochilus</i>	Breeding	Singing male		1	1
Blackcap	<i>Sylvia atricapilla</i>	Breeding	Species observed in suitable habitat		1	2
			Singing male			2
			Pair observed in suitable habitat	1		



Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Lesser whitethroat	<i>Sylvia curruca</i>	Breeding	Species observed in suitable habitat	1		
			Singing male		1	
Whitethroat	<i>Sylvia communis</i>	Breeding	Species observed in suitable habitat	2	1	28
			Adult carrying food		1	5
			Singing male			2
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	Breeding	Species observed in suitable habitat	3	1	8
			Adult carrying food			1
Reed warbler	<i>Acrocephalus scirpaceus</i>	Breeding	Species observed in suitable habitat			1
Wren	<i>Troglodytes troglodytes</i>	Breeding	Species observed in suitable habitat	1		5
			Singing male		7	14
Starling	<i>Sturnus vulgaris</i>	Breeding	Flying over			1

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Blackbird	<i>Turdus merula</i>	Breeding	Species observed in suitable habitat	8	4	22
			Pair observed in suitable habitat		1	
			Singing male	1	3	4
			Visiting probable nest site		1	
			Agitated Behaviour	1		
			Adult carrying food			2
Song thrush	<i>Turdus philomelos</i>	Breeding	Species observed in suitable habitat			5
			Adult carrying food			4
Mistle thrush	<i>Turdus viscivorus</i>	Breeding	Species observed in suitable habitat			2
Robin	<i>Erithacus rubecula</i>	Breeding	Species observed in suitable habitat	1		
			Fledged young			1
			Singing male	3	4	2



Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Dunnock	<i>Prunella modularis</i>	Breeding	Species observed in suitable habitat		1	4
House sparrow	<i>Passer domesticus</i>	Breeding	Species observed in suitable habitat	1	1	3
Pied wagtail	<i>Motacilla alba</i>	Breeding	Species observed in suitable habitat			1
			Fledged young			1
Chaffinch	<i>Fringilla coelebs</i>	Breeding	Species observed in suitable habitat	3	4	2
			Occupied nest		1	
			Pair observed in suitable habitat		1	
			Singing male			3
Bullfinch	<i>Pyrrhula pyrrhula</i>	Breeding	Species observed in suitable habitat		1	2
Greenfinch	<i>Chloris chloris</i>	Breeding	Species observed in suitable habitat	4		1
Goldfinch	<i>Carduelis carduelis</i>	Breeding	Species observed in suitable habitat	1	2	9

Table 5: Bird Species Recorded, Breeding Status, Behaviours and Number of Records of each Behaviour in BBS3 in May and June 2015

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Cormorant	<i>Phalacrocorax carbo</i>	Flying over only	Flying over		2	
Buzzard	<i>Buteo buteo</i>	Possible breeder	Species observed in suitable habitat	1		1
Woodpigeon	<i>Columba palumbus</i>	Breeding	Species observed in suitable habitat	5	3	5
			Singing male		2	
Collared dove	<i>Streptopelia decaocto</i>	Possible breeding	Species observed in suitable habitat			1
Great spotted woodpecker	<i>Dendrocopos major</i>	Breeding	Species observed in suitable habitat	1	1	
			Adult carrying food	1		
Magpie	<i>Pica pica</i>	Breeding	Species observed in suitable habitat	2	4	5
Jay	<i>Garrulus glandarius</i>	Breeding	Species observed in suitable habitat		1	
Rook	<i>Corvus frugilegus</i>	Possible breeding	Species observed in suitable habitat		1	



Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Carrion crow	<i>Corvus corone</i>	Breeding	Species observed in suitable habitat	2	5	1
			Pair observed in suitable habitat			1
Blue tit	<i>Cyanistes caeruleus</i>	Breeding	Species observed in suitable habitat	3	3	2
			Occupied nest		1	
			Pair observed in suitable habitat		1	
			Singing male			1
Great tit	<i>Parus major</i>	Breeding	Species observed in suitable habitat	3	4	3
			Nest with young			1
			Fledged young		1	
			Adult carrying food	1	1	
			Singing male			2
Swallow	<i>Hirundo rustica</i>	Breeding	Species observed in suitable habitat	3	4	3

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
			Pair observed in suitable habitat		1	
Long-tailed tit	<i>Aegithalos caudatus</i>	Breeding	Species observed in suitable habitat	1		2
Chiffchaff	<i>Phylloscopus collybita</i>	Breeding	Singing male	1	1	1
Blackcap	<i>Sylvia atricapilla</i>	Breeding	Species observed in suitable habitat		1	2
			Singing male	1		1
Whitethroat	<i>Sylvia communis</i>	Breeding	Species observed in suitable habitat		1	
Treecreeper	<i>Certhia familiaris</i>	Breeding	Species observed in suitable habitat			1
Wren	<i>Troglodytes troglodytes</i>	Breeding	Species observed in suitable habitat	2	2	1
			Singing male	5	8	10
Starling	<i>Sturnus vulgaris</i>	Breeding	Species observed in suitable habitat	1	1	2
Blackbird	<i>Turdus merula</i>	Breeding	Species observed in suitable habitat	11	19	13
			Singing male	1	1	2



Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
			Occupied nest		1	
			Nest with eggs	1		
			Adult carrying food		5	
			Pair observed in suitable habitat		1	
Song thrush	<i>Turdus philomelos</i>	Breeding	Species observed in suitable habitat		2	
			Adult carrying food		1	
Robin	<i>Erithacus rubecula</i>	Breeding	Species observed in suitable habitat	4	6	1
			Singing male	1		1
			Fledged young		1	
			Adult carrying food		2	
Dunnock	<i>Prunella modularis</i>	Breeding	Species observed in suitable habitat	1	6	5
			Singing male		1	
House sparrow	<i>Passer domesticus</i>	Breeding	Species observed in suitable habitat	2	4	

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
			Fledged young		1	
Tree sparrow	<i>Passer montanus</i>	Breeding	Species observed in suitable habitat			1
Pied wagtail	<i>Motacilla alba</i>	Breeding	Species observed in suitable habitat		1	1
Chaffinch	<i>Fringilla coelebs</i>	Breeding	Species observed in suitable habitat	1		
			Singing male	1		5
			Pair observed in suitable habitat		1	
Bullfinch	<i>Pyrrhula pyrrhula</i>	Breeding	Species observed in suitable habitat			1
		Nest building			1	
Greenfinch	<i>Chloris chloris</i>	Breeding	Species observed in suitable habitat		1	
Goldfinch	<i>Carduelis carduelis</i>	Breeding	Species observed in suitable habitat	1	4	



## 4.2 Breeding Wader Survey

**4.2.1** Access restrictions largely limited the surveys to public roads and footpaths. although on the second visit more fields were accessible compared to the first and third visits. The location of all records for all birds on each survey visit within each survey area and the areas where access was permitted are shown on Figures 2d-g, 3d-g, and 4d-g. The total records for all three survey visits for each survey area are provided in Figures 5d-g.

**4.2.2** Two wading bird species were recorded: lapwing and curlew (see Tables 6 and 7; Figures 2d, 2g; 3d, 3g, 4d and 4g). No waders were recorded in survey areas BWS2 and BWS3, see Figures 2e, 2f, 3e, 3f, 4e and 4f. Lapwing were recorded in survey areas BWS1 and BWS4 (see Tables 6 and 7). A post-breeding flock of 20 lapwing were seen flying over on the second visit in BWS1. Curlew were only recorded on visit 1 in survey area BWS4 (see Table 7 and Figure 2g).

Table 6: Breeding Waders Recorded, Breeding Status, Behaviours and Number of Records of each Behaviour in BWS1 in May and June 2015.

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records	Number of Records	Number of Records
				Visit 1	Visit 2	Visit 3
Lapwing	<i>Vanellus vanellus</i>	Breeding	Pair observed in suitable habitat	3	3	1
			Species observed in suitable habitat		8	1
			Visiting Probable nest site	1		
			Flying over	2	1	
			Fledged young			1
			Distraction Display			3

Table 7: Breeding Waders Recorded, Breeding Status, Behaviours and Number of Records of each Behaviour in BWS4 in May and June 2015.

Common Name	Species Name	Status in Survey Areas	Behaviour	Number of Records Visit 1	Number of Records Visit 2	Number of Records Visit 3
Lapwing	<i>Vanellus vanellus</i>	Breeding	Species observed in suitable habitat	1	1	1
			Pair observed in suitable habitat	2		
Curlew	<i>Numenius arquatus</i>	Possible breeding	Flying over	2	0	0



## 5. Conclusion

### 5.1 Breeding Bird Survey

**5.1.1** Forty-six bird species were recorded during the breeding bird survey. Forty-three species were considered to be breeding, based on observed behaviour. Access restrictions resulted in large parts of the survey areas not being accessible, and so the survey results only provide an indication of the extent of the breeding bird populations in the survey areas.

**5.1.2** Most bird species encountered are common and widespread in Gwent and in Wales.

### 5.2 Breeding Wader Survey

**5.2.1** Access restrictions resulted in much of the breeding wader survey areas not being surveyed. A survey visit in April as recommended in Gilbert *et al.*, (1998) was not implemented as the surveys did not begin until May.

**5.2.2** Lapwing were found breeding in the westernmost and easternmost survey areas, BWS1 and BWS4 respectively. There were only two records of curlew, on Visit 1 in survey area BWS4.

## 6. References

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