

[REDACTED]

From: Richard Cowser [REDACTED]

Sent: 23 September 2019 11:13

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Subject: P/140/16/OUT site - Brent Geese foraging at Pagham Hbr.

Dear James,

Further to your correspondence with Nick Gibb MP in response to points put to him by Giles Binyon, the Sussex Ornithological Society has been recording how Brent Geese have been using the P/140/16/OUT development site, the proposed mitigation site and the surrounding Pagham Hbr area, over the winter of 2018-19.

A paper showing our findings is attached. It re-inforces the significant importance of the development site for foraging Brent Geese, and the total inadequacy of the current mitigation proposals to fully compensate for its loss to proposed development. In particular it is clear that because of the wetness of the proposed mitigation site winter wheat grows much less quickly there than on drier sites such as the P/140/16/OUT site and fields around Church Norton. This means that any mitigation proposals for the proposed mitigation site can not rely on winter wheat planting to contribute much, if anything, towards the full mitigation required.

We also feel that because of the importance of the P/140/16/OUT site for foraging Brent Geese a mitigation site needs to be up and running, and proven to provide the full mitigation required, before any preparatory work or development commences on the P/140/16/OUT site.

I would be happy to answer any queries that you have.

Richard Cowser
(SOS Conservation Officer)

Brent Geese at Pagham Hbr in winter 2018/19

(with particular reference to their use of the P/140/16/OUT Hanbury site and to the suitability of the proposed mitigation fields as an adequate mitigation site)

*Summary: The use of the Hanbury P/140/16/OUT site and the proposed mitigation site was monitored during winter 2018-19. The Hanbury site was planted with winter wheat and had no bird scarers. It was regularly used by large numbers of foraging Brent Geese from late November onwards with an average of 2106 geese using it in the 28 days between 22 Dec 2018 and 18 January 2019, and a peak count of 3070 on 16 January, which was 93% of the peak WeBS count of all the Brent Geese at Pagham Hbr. This backs up records from local residents that in earlier years they regularly saw hundreds and sometimes thousands of Brent Geese using this site, and confirms the crucial importance of the Hanbury site for the Brent Geese in Pagham Hbr. **Clearly no development or preparation work should start on this site until mitigation is put in place which is proven to provide the full mitigation required.***

The proposed mitigation site was also recorded. Most of it was planted with winter wheat and two of the three fields had bird scarers. On only 2 out of 53 visits were Brent Geese recorded on it. Aerial photographs show that the site is wet and that this had inhibited the growth of the winter wheat – the contrast in growth with the crop on the Hanbury site is very marked, as the photographs below show. Consequently into early January the winter wheat crop in much of these fields had insufficient growth to attract anything other than an occasional visit by foraging Brent Geese. In no way was winter wheat growth sufficient to support 2106 foraging Brent Geese a day for 28 days in the way that the Hanbury site did between 22 Dec 2018 and 18 Jan 2019.

Cropping history on the mitigation site also shows that in most years the crops are spring planted, no doubt because of the site's wetness. Moreover the mitigation site is dominated to its east by the 15 to 20 feet high banks of a reservoir, inhibiting the clear sight lines that foraging Brent Geese prefer, and making it likely that they would shun the halves of the mitigation fields near to the reservoir. And unlike the Hanbury site there is no history of Brent Geese ever regularly using this site.

As rainfall in September through December was average, and winter wheat growth was good on the drier Hanbury site and generally poor on the proposed mitigation site, it is clear that the mitigation site will be incapable of providing the full mitigation required if it is to include crops of winter wheat.

We therefore believe that new mitigation proposals are required. *There are many other drier fields close to the harbour that are regularly planted with winter wheat which grows well, (although all, other than the Hanbury site, had bird scarers), so there is no shortage of suitable alternative sites. Alternatively if a much larger area than is currently proposed of the mitigation area was planted with permanent pasture maintained at the correct length, this might prove viable, although that would not overcome the problem of poor sightlines making a significant percentage of these fields unattractive to the Brent Geese.*

Given these serious concerns about the current mitigation proposals whatever mitigation is finally decided upon needs to be implemented and proven to be fully effective before any development starts on the Hanbury site.

1. Introduction

Efforts were made during winter 2018/19 to record where Dark-bellied Brent Geese (hereafter referred to simply as Brent Geese) were foraging in the Medmerry/Pagham Hbr area. Four separate initiatives were organised by the Sussex Ornithological Society (SOS) and by local birder Jim Weston.

- The P/140/16/OUT Hanbury site was monitored on a near-daily basis and sightings of Brent Geese were recorded.

- The proposed three mitigation fields were also monitored on a regular (although not daily) basis.

- 6 Brent Geese surveys were carried out covering the whole Medmerry and Pagham Hbr area. Crops sown, and whether or not bird scaring devices were in use, was mapped.

- It was made known to birders that we were looking for 6-figure grid reference records of foraging Brent Geese across the Pagham Hbr area, and although not all records came with 6-figure grid references, most did and a good number of such “casual” records were obtained.

There were 96 records from the Hanbury site and 53 from the proposed mitigation site. All bar two of the latter records showed no Brent Geese or waders using the mitigation site.

These records, which are additional to the monthly WeBS counts, have all been recorded on the SOS CoBRA2 database and the 2018 records are being uploaded to the Sussex Biodiversity Records Centre this month, and the 2019 records will be uploaded to them in the second half of 2020.

2 WeBS

2.1 The monthly WeBS counts showed that 2018/19 winter was a good year for Brent Geese across the whole of Pagham Hbr, with a maximum of 3405 counted on 19 Jan 2019, versus an average peak of 2666 birds over the last 10 winters. Indeed, 3405 was the second highest count in the last ten winters.

2.2 The 2018/19 monthly counts were as follows:-

<u>2018</u> Sept	Nil	<u>2019</u> Jan	3405
Oct	20	Feb	1744
Nov	435	Mar	108
Dec	2225	Apr	3

2.3 The maximum annual WeBS counts at Pagham Hbr since 2009/10 are:-

2009/10	3015 (Feb 2010)	2014/15	2100 (Feb 2015)
2010/11	2453 (Mar 2011)	2015/16	3701 (Feb 2016)
2011/12	2500 (Feb 2012)	2016/17	2306 (Feb 2017)
2012/13	2351 (Feb 2013)	2017/18	2506 (Dec 2017)
2013/14	2325 (Jan 2014)	2018/19	3405 (Jan 2019)

Average peak count 2009/10 to 2018/19 = 2666 Brent Geese

(source www.bto.org/webs-reporting, extracted 7 Aug 2019, except 2018/19 data which is from the Pagham WeBS organiser).

2.4 From the above figures it can be seen that the Brent Geese population at Pagham Hbr is relatively stable /perhaps even increasing.

3. Records – Hanbury site

3.1 The whole P/140/16/OUT Hanbury site was planted with autumn sown cereal in winter 2018/19. Unlike many other fields planted with this crop close to Pagham Hbr the Hanbury site did not have ropes attached to posts strung across it to deter Brent Geese (by hampering their ability to take off). Some sound and inflatable bird scarers were trialled in the middle of November but were quickly abandoned after adverse public comment.

This site was therefore one of the few sites close to the Harbour that was planted with autumn-sown cereal and was free of bird scarers for virtually the whole winter.

3.2 Eighty-one records of Brent Geese foraging on the P/140/16/OUT site were obtained, and there were a further 15 records of days when no Brent Geese were seen on this site. These 96 records are detailed in Appendix 2, an Excel attachment to this Word document. They are summarised below:

November 2018: The first record of Brent Geese using the P/140/16/OUT site was of 52 on 2 Nov 2019. Geese were recorded on the site every day from 9 November through the end of the month, except on 16 and 22 November. In the last week of the month numbers increased substantially as the main influx of wintering birds arrived, and the highest number recorded was 2380 on the 29th.

December 2018: No recording was carried out between 3 and 12 December, but recording restarted on 13 December when no Brent Geese were present. There was daily recording from 21 December with a peak count of 2800 on 30 December.

January 2019: Recording took place every day except on 24 January. More than 2000 birds were recorded on the Hanbury site every day through 18 January (the peak was 3070 on 16 January, virtually the entire wintering population at Pagham Hbr). On the remaining 14 days of the month between 25 and 2000 Brent were recorded on five days, but on nine days zero Brent were recorded. It is possible that the reason for their making far less use of the site after the 18th is that the Brent had overgrazed the P/140/16/OUT site. The standard assumption is that one ha of autumn-planted wheat will sustain 2200 Brent Geese for a day. As the numbers of geese present in the 28 days from 22 December to 18 January averaged 2106 birds a day this number of birds must have impacted the ability of the 29ha Hanbury site to sustain on-going foraging at this rate.

February 2019: Apart from one record of 50 Brent on 6 February, Brent Geese were absent from the Hanbury site until 14 February when they returned in force, with 2800 recorded. There were records of 1860 to 3000 on a further 8 days that month. One could presume that the crop had grown sufficiently since mid-January to again be able to support these numbers of birds.

March 2019: The last record of Brent Geese on the Hanbury site was on 3rd March when 1080 were present. Shortly after this the majority of Brent Geese left Pagham Hbr on their migration north.

3.3 In summary, it appears that the Pagham Hbr Brent Geese were foraging on the Hanbury site to the maximum possible extent during winter 2018/19. This is consistent with the records from earlier years from residents along Pagham Road that they are used to seeing hundreds, and at times thousands, of Brent Geese foraging on the Hanbury site during the winter.

4 The proposed mitigation site

4.1 The proposed mitigation site consists of three fields known as 9309, 9029 and 1141. Details are as follows:

9309: 7.04ha, mid point SZ879981

9029: 8.45ha, mid point SZ879983

1141: 4.32ha, mid point SZ881984

Records were received for 51 days in November through February showing no Brent Geese using any of the three mitigation fields 9309, 9029 or 1141. Bird scarers (bangers) were set up in 9029 and 1141, but not in 9309. However, there were two records of foraging Brent Geese using these fields – by 1800 birds on 11 Dec 2018 (field 1141) and by 2400 on 15 Feb 2019 (field 9309). The crops in all three fields was autumn-sown cereal, although there was a large section of the centre of field 9309 and the western edge of field 9029 that was unplanted and waterlogged, consisting of rank grass which provided no current grazing opportunity for Brent Geese. Indeed, it is not clear whether the quoted 8.45 ha of field 9029 does or does not include the unplanted western edge of the field (shown in fig 2 below). These 53 records are detailed in Appendix 3, an Excel attachment to this Word document

4.2 A problem with the proposed mitigation site that is that it becomes readily waterlogged, as the following aerial photographs, supplied by Giles Binyon, clearly show. (Rainfall was well above average in November and December 2018 after a very dry September and October; over these four months, however, it was about average – see 5 below).



Fig 1. Pagham mitigation fields looking north and showing extensive waterlogging on 22 Dec 2018. Note the large areas of almost bare soil and how backward the growth of most of the crop is. Only limited parts of these fields can provide grazing for Brent Geese at this stage.

By contrast a ground level photograph of the P/140/16/OUT Hanbury site on 22 December 2018, Figure 3, shows the winter wheat crop has grown well, and that there is no standing water. The difference in the growth of wheat between the Hanbury site and the proposed mitigation fields

(figure 3 compared to figure 1) is dramatic. On 22 December 2018 the Hanbury site is clearly providing good grazing whereas all 3 mitigation fields have hardly any areas with sufficient crop growth to support many Brent Geese.

4.3 Figure 2 shows fields 9309 and 9029 two weeks later, on 5 January, in dry weather. It can be seen that there is little standing water left but that the area of 9029 where there was standing water on 22 December is still damp and devoid of any winter wheat growth. Moreover, much of the rest of the field has very little growth of the winter wheat crop and the bare earth between crop rows is still visible. These fields would still not be able to provide sustained daily grazing by Brent Geese in the way that the Hanbury fields do.



Fig 2. Field 9029 (foreground) and 9309 (background) looking south on 5 Jan2019 during dry weather. Note how thin and undeveloped the winter wheat crop still is in the field in the foreground, with large patches of bare earth still discernible and zero crop on the parts of the field that were covered by standing water on 22 Dec 2018.

The mitigation plan for field 9309 is that the area boxed in red will become permanent pasture. Note also that the eastern margin of field 9029 in the foreground has no crop planted on it. We are unclear if the quoted size of this field, 8.45ha, does or does not include this unplanted (brown) margin along its western side.

The mitigation proposals are to convert the 5ha in red in Fig 2 (field 9309) to permanent pasture. As permanent pasture has denser planting than autumn sown cereals one ha of good permanent pasture is able to support about twice as many Brent Geese as a hectare of good autumn-sown cereal.

4.4 It is also note-worthy that the cropping history of the minority of 9309 that bears crops, and for 9029 (no history of crops on 1141 has been provided) show that since 2011 these two fields were only planted with autumn-sown cereal in two out of the seven years between 2011/12 and 2017/18. In the other years they were planted with spring-sown wheat or barley, or with maize – that is with crops that do not grow during the winter and therefore avoid being affected by winter standing water. This cropping history suggests that the site owners appreciate that the mitigation fields are a wet site that are not ideal for autumn-sown winter wheat, as winter 2018/19 has proved.

4.5 By contrast the cropping history shows that the P/140/16/OUT site was partially planted with autumn-sown winter wheat in six of these seven years. Given the much wetter nature of the mitigation fields it seems reasonable to conclude that the growth of autumn-planted cereals through December/January and February is unlikely to be nearly as good on the mitigation fields as on the drier P/140/16 /OUT site. Indeed a comparison of the winter wheat crops in Figs 1 and 3 show that

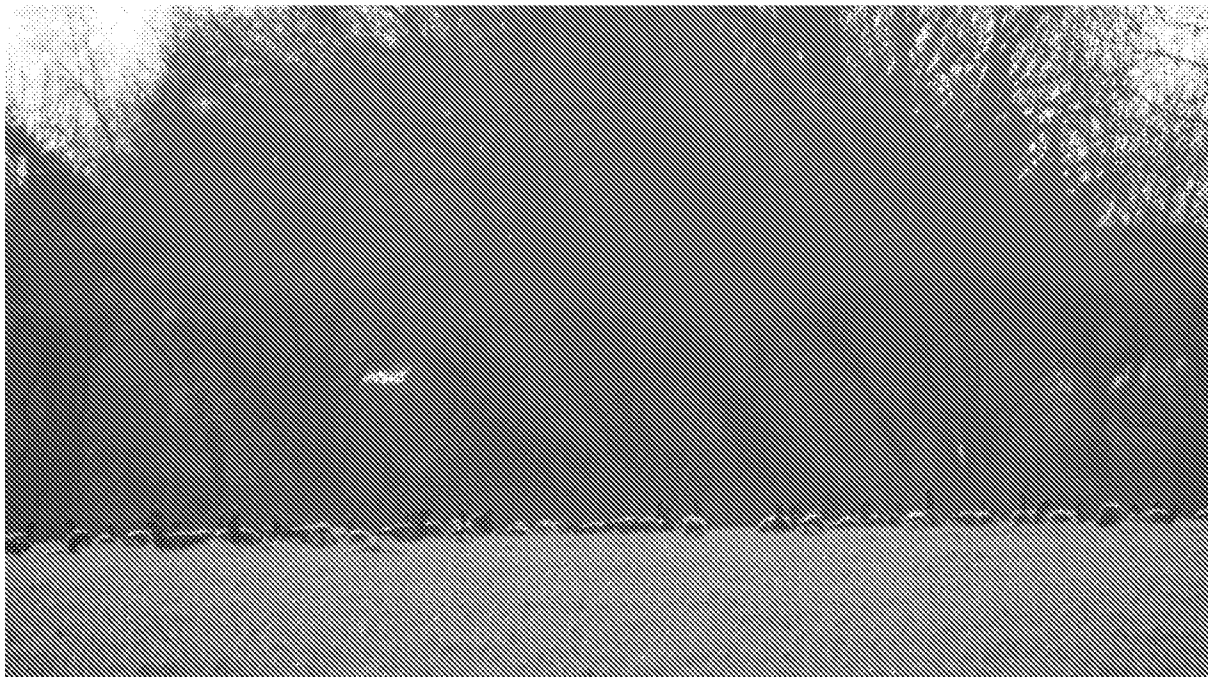


Fig 3. Brent Geese grazing on the P/140/16/OUT site on 22 December 2018. Contrast this with Fig 1 taken on the same day. There is no evidence of any standing water and the winter wheat is clearly growing well and providing good grazing for the geese.

These are only a few of the 1820 geese recorded on this site that day.

the crop on the Hanbury site has grown a lot more than the crops on the three mitigation fields, which look very thin and where lots of bare earth is still showing. On 22 December 2018 it looks as though these mitigation fields were unlikely to be able to support foraging Brent Geese for any period of time. **They certainly have not got anywhere near the carrying capacity of the Hanbury fields.**

4.6 In figure 1 above part of a reservoir can be seen on the right hand side of the picture. This reservoir borders the whole of the eastern side of field 9029 and the whole of the southern side of field 1141. It also borders part of the eastern side of field 9309.

The reservoir is surrounded by an embankment some 15 to 20 feet high. As such it would prevent any geese foraging in these mitigation fields being able to get an uninterrupted view to the east (or on 1141, to the south).

We believe that this would make only the western (for 1141, northern) half of the mitigation fields attractive to foraging geese, as they are wary birds which prefer using fields with uninterrupted views.

This is a further significant reason why we believe that the current mitigation proposals will be unable to deliver the required full mitigation.

5 Weather

5.1 Figure 4 shows the long-term average rainfall for the Southern Water region*, and the actual rainfall in the year July 2018 to June 2019. It can be seen that:

- September and October 2018 were much drier than average,
- November 2018 was very much wetter than average,
- December 2018 was considerably wetter than average,
- January 2019 was unusually dry
- February 2019 was slightly wetter than average.

Over the 4 months September through December (the months when the winter wheat crop was planted and becoming established) actual rainfall was 331.3mm versus the long term average of 315mm - i.e. it was only 5% more than the long-term average during the first 4 months of the winter wheat's growth.

*The Southern Water Region covers Hampshire, Isle of Wight, West and East Sussex, and Kent.



Figure 4. Long term average rainfall and actual rainfall July 2018 through June 2019, in the Southern Water region.

5.2. As rainfall was fairly average in the period September to December the weather clearly did not affect growth rates of the winter wheat crop on the P/140/16/OUT site, whereas it clearly did on the easily water-logged mitigation site. It is, therefore, clear that the proposed mitigation site (fields 9309, 9029 and 1141) are too wet to allow sufficient early growth of winter wheat necessary to support much grazing by Brent Geese in November, December and early January, and certainly not to support the numbers of Brent geese recorded on a near daily basis on the P/140/16/OUT site. **Therefore, the current mitigation proposals cannot fully mitigate for the loss of the P/140/16/OUT site to development.**

6 Survey Results

6.1 Surveys were carried out across the Pagham Hbr/ Medmerry area on six dates over the 2018/19 winter, namely on 18 Dec 2018, and in 2019 on 11 Jan, 17 Jan, 11 Feb, 25 Feb and 5 Mar. Brent Geese, Curlew and Lapwing were recorded as was the habitat they were sighted on, and the whole survey area was divided up into four sectors.

6.2 The results were disappointing as more than a thousand Brent Geese were only recorded on two of the surveys - 1760 on grass by Honer Reservoir to the NW of the Hanbury site on 18 Dec 2018, and 2850 on the Hanbury site on 11 Jan 2019. (Although not recorded during the morning surveys, 2860 Brent were recorded on the Hanbury site in the early afternoon of 17 January and 1860 were recorded there in the afternoon of the 25 February survey).

In addition 95 Brent Geese were recorded at Greenlease near Church Norton on 18 Dec and 250 were recorded on the same field on 25 February. Single numbers of geese were also recorded there on two of the other surveys – this being one of the few fields planted with winter wheat close to the Harbour that did not have bird scaring devices set up.

6.3 So the winter surveys failed to show where the Pagham flock of Brent Geese were when they were not on the Hanbury site. The full survey results are shown in Appendix 1.

6.4 Perhaps the most interesting thing to emerge from the winter surveys was the map of the crop planting across Pagham and Medmerry, which is shown in Fig 5 below. The mapping was carried out between 12 January and 15 February 2019. It can be seen that many of the larger fields planted with winter wheat and close to the Harbour had bird scarers on them, particularly in the southern sector close to Church Norton. By contrast all the fields planted with winter wheat that were further away from the harbour had no bird scarers on them, but had no geese either. The Feb/ March 2019 Brent Goose Survey organised by RSPB also showed that Brent Geese did not forage far from the Harbour.

6.5 Two fields on the east side of Rectory Lane at Church Norton did not have bird scarers, but neither were any Brent Geese recorded on them. As these fields are not flat, much of this area would not give foraging geese the security of uninterrupted views of potential danger that they need. Their absence from these fields reinforces the point made in 4.6 above about how important clear views are for grazing Brent Geese.

6.6 Casual records included two records of Brent Geese foraging on fields having tapes to deter the Brent Geese from using them. They were of 500 on 9 February 2019 at SZ861961 (east of Knight Fencing on Selsey Road) and 600 in a nearby field to the east on 1 March 2019. These two records, and the record of geese on field 1141 in December 2018 (see 4.1 above), show that bird scarers are not always 100% effective in deterring Brent Geese.

Dark-bellied Brent Goose and wader surveys – Winter 2018-19

- | | | |
|--|---|----------------------|
| C Cereal (w/ & w/o T. sps) | P Plough/cultivated bare earth | |
| PP Permanent Pasture | S Stubble, relict cover crop, fallow | CC Cover Crop |
| G Grass (dry or amenity, not permanent pasture) | R Oil seed rape | |



Fig 5 – Crop Plan: winter 2018-19

7. Conclusions

7.1 Brent Geese foraged on the P/140/16/OUT site virtually every day from early November through to mid-January by when they had over-grazed the autumn-sown winter wheat crop. When it had recovered a month later, they grazed it regularly from mid-February until they migrated north in early March.

7.2 The numbers of geese recorded using the Hanbury site, compared to the WeBS counts in 2 above, show that a very high proportion of the whole Pagham Hbr Brent Geese wintering population was regularly using the P/140/16/OUT site for foraging.

7.3 The conclusion is that the Hanbury site, when planted with winter wheat, is of prime importance for Brent Geese foraging. It has been regularly planted with winter wheat for many years, except in winter 2017/18.

7.4 Given its importance for wintering Brent Geese, were the P/140/16/OUT development to go ahead a site capable of providing full mitigation needs to be available and suitably planted **before** any clearance or building work commences on the Hanbury site. Otherwise the wintering Brent Goose population could be severely impacted.

7.5 Given the experience in 2018/19 and the cropping history, it is clear that fields 9309, 9029 and 1141 are not dry enough for a winter wheat crop to grow sufficiently by end November and continue growing during December and January to be able to reliably provide the full mitigation required. Our recommendation is that the developers seek an alternative site which is drier.

7.6 The fact that the embankment of the adjoining reservoir would prevent foraging Brent geese having unobstructed views in all directions also makes these mitigation fields less than ideal – and certainly reduces the percentage of the mitigation fields that Brent Geese are likely to use.

7.7 If the developers wish to persist with these three fields as their mitigation site then we feel that they need to demonstrate that these fields can provide the full mitigation required in a non-dry autumn by making the necessary changes to the fields and planting them up with a greater proportion of permanent pasture than is currently proposed and much less winter wheat. A winter of recording their use by Brent Geese will then be needed, as well as monthly comparisons of the growth of the permanent pastures and winter wheat “crops” on the three mitigation fields, and on designated dry sites known to be used by the wintering Brent Geese flock. All this needs to be completed before any clearance or building commences on the P/140/16/OUT site.

7.8 If full mitigation cannot be demonstrated on the proposed mitigation site then additional/alternative mitigation will need to be provided. There are lots of other fields close to Pagham Hbr, which are planted with autumn-sown winter wheat, which could be attractive to Brent Geese, but unfortunately most of them are roped off to deter Brent Geese. So there is no shortage of alternative potential mitigation fields that would be made suitable by a commitment to make them free of goose deterrents and to continue planting them with their current winter wheat crop.

Appendices

Appendix 1 (below) Brent Goose Survey Pagham/Medmerry 2018-19

Appendices 2 and 3 (Excel Workbooks):

2. Records of Brent Geese at Hanbury (P/140/16/OUT) site winter 2018-19
3. Records of Brent Geese at mitigation site winter 2018-19

Appendix 1: Dark-bellied Brent Goose Survey Pagham/Medmerry 2018-19

The Sussex Ornithological Society organised a survey of Dark-bellied Brent Geese across a large area of the Manhood Peninsula in winter 2018-19. This followed the format of a similar survey organised by the RSPB in January – March 2019. The purpose of this survey was to record where large flocks of Brent Geese were settling and feeding. Volunteers were assigned areas, split geographically into north, south, east and west. They were asked to record date, time, weather, number of birds, species (as we also requested records of large flocks of other species such as Lapwing), field location, what was growing in the field the birds were on, sward height and any other comments.

Surveys were carried out on six dates between the December 2018 and early March 2019. Surveyors drove the roads around their survey area, recording the birds they could see from the road, but they also walked into areas not viewable from the roads. In a separate exercise the crops growing in each field across the majority of the survey area was also mapped.

The results of the survey are shown below. Two maps showing the locations of the fields referred to in these tables, and of the crop plan in the fields in the survey area, follow the tables.

Results

DATE	TIME	WEATHER	SPECIES	COUNT	FIELD ID No	CROP TYPE	SWARD HEIGHT
18/12/18	08.40	Blustery, showers	Lapwing	830	1	Ploughed	-
	09.20		DB Brent	95	2	W. Wheat	6-8cm
	10.05		DB Brent	1760	3	Grass	No info
Also other records of 1 and 4 Curlew in Western sector							

11/01/19	08.20	Mild, cloudy, calm	DB Brent	2850	4	W.Wheat	No info
	09.10		Lapwing	340	3	Grass	No info
	09.45		Lapwing	600	5	Ploughed	-
	10.00		Lapwing	114	6	Ploughed	-
	10.05		Lapwing	100	7	Ploughed	-
	11.10		Lapwing	50	8	Grass	No info
Also records of 2 Curlew in Western sector, and of 4 DB Brent Geese and 6 Lapwing in Southern sector							

17/01/19	08.00	Mild, cloudy, calm	Lapwing	54	9	Perm.pasture	No info
	08.20		Curlew	32	10	W.Wheat	No info
	11.00		Lapwing	24	8	Grass	No info
	11.30		Lapwing	175	8	Grass	No info
	12.00		Lapwing	20	11	Ploughed	-

Also an additional 2 Lapwing and 1 Curlew recorded in Western sector and 5 Lapwing recorded in southern sector

11/02/19	No info	Clear, mild, calm	Curlew	36	9	Grass	No info
	No info		Lapwing	900	9	Grass	No info
	10.10		Lapwing	67	5	Ploughed	-
	11.20		Lapwing	400	8	Grass	No info

Also an additional 2 Lapwing in Western sector plus 5 Lapwing and 17 Curlew in Northern sector.

25/02/19	11.00	Clear, mild, calm	Lapwing	22	8	Grass	No info
	11.15		DB Brent	250	2	W Wheat	No info

1860 DB Brent Geese recorded on field 4 at 14.00hrs after survey completed.

An additional 6 Lapwing recorded in Northern sector during survey.

5/03/19	07.20	Very mild, slight breeze	Curlew	78	13	Perm.pasture	No info
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An additional 7 DB Brent recorded in both the Northern and Southern sectors, 6 and 4 Lapwing in Southern sector and 12 Black-tailed Godwit in Northern sector.

Dark-bellied Brent Goose and wader surveys – Winter 2018-19

- ◆ Dark-bellied Brent Geese
- ◆ Lapwing
- ◆ Curlew

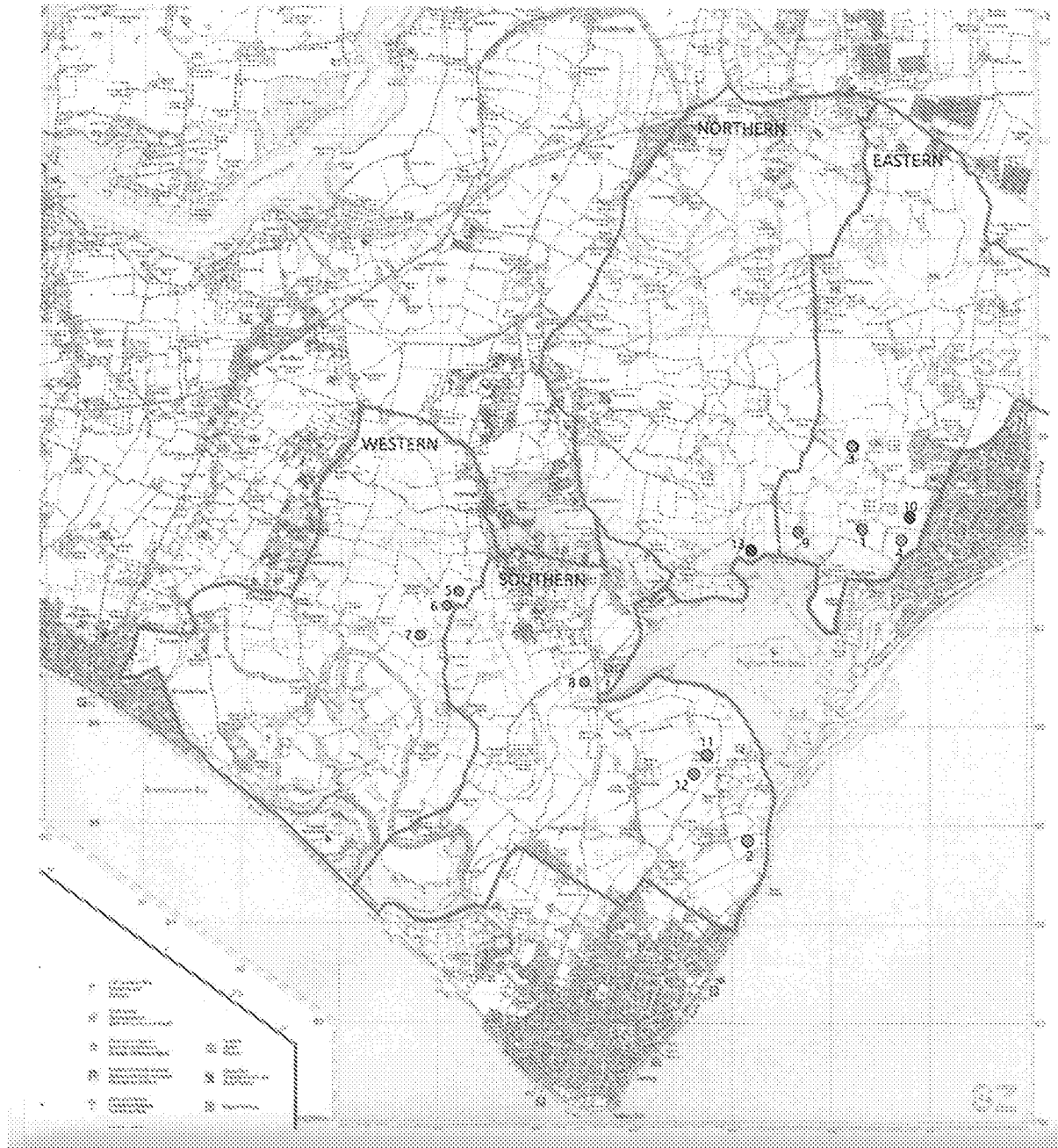


Figure 1: Map showing location of fields referred to in the results tables above

Dark-bellied Brent Goose and wader surveys – Winter 2018-19

- | | | |
|--|---|----------------------|
| C Cereal (>80% arable T. arid) | P Plough/cultivated bare earth | |
| PP Permanent Pasture | S Stubble, relict cover crop, fallow | CC Cover Crop |
| G Grass (dry or amenity, not permanent pasture) | R Oil seed rape | |



Figure 2: Map showing crop plan in winter 2018/19