

## Introduction

- 1.1 I am Bob Gomes (F R Gomes). I hold an honours degree in Zoology from the University of London and I am a local resident living in Graveney.
- 1.2 I have spent my the whole of my working career in conservation, primarily relating to birds and the management of nature reserves. After three years as a contract warden, I joined the RSPB as a permanent staff member in 1976. Prior to working for RSPB I worked as an ornithologist and bird ringer at Ottenby Bird Station on the Isle of Oland, Sweden and for the National Trust in Northumberland, where I spent a summer as warden on the Farne Islands and a winter working on a sand dune restoration project on the Northumberland coast.
- 1.3 I have extensive experience as a field ornithologist and in the conservation of wetland habitats. During a long career with RSPB, I worked on a number of wetland and estuarine sites, including Leighton Moss, Lancashire, Havergate Island, Suffolk, Minsmere, Suffolk, Langstone Harbour, Hampshire, Dee Estuary, Cheshire and Elmley Marshes and Dungeness, Kent.
- 1.4 During my time at RSPB Elmley Nature Reserve from 1983 to 2003 in addition to my reserve duties, I took part in and was the local organiser for the high tide WeBS counts and low tide counts on the Swale. I also took part in and co-ordinated a team of volunteers in an intensive monitoring of Marsh Harriers during the period when they were establishing a breeding population on Sheppey. In 1997 this amounted to 230 + hours of staff and volunteer time.
- 1.5 I retired from the RSPB in 2011 and in my retirement have undertaken bird and invertebrate ecological surveys for RSPB and other organisations. These included bumblebee surveys at Cliffe Marshes, Kent, concentrating on the foraging behaviour of the rare Biodiversity Action Plan species, breeding wader surveys, monitoring ditch invertebrates at Great Bells wetland creation site on the Isle of Sheppey and breeding bird surveys for the Woodland Trust. I also worked under contract to RWE Npower Renewables Ltd. undertaking five year's post construction bird collision monitoring on the Little Cheyne Court Wind Farm on Walland Marsh, Kent.
- 1.6 I have a keen interest in all aspects of natural history and contribute to a number of national recording schemes. During periods of sabbatical leave from RSPB I have spent periods as part of an international expedition to Djibouti, counting raptors crossing the Bab el Mandeb straits between Yemen and Djibouti and counting and mapping the distribution of waders in Deep Bay at WWF Mai Po Reserve on the Hong Kong Chinese border. I have undertaken two sabbaticals under the guidance of Butterfly Conservation – targeting recording to map the

distribution of butterflies at several sites in Eire for the National Butterfly Atlas and surveying Pearl bordered Fritillary and Wood White butterflies on the Burren, Eire.

## **2 SCOPE OF MY SUBMISSION**

- 2.1 I do have serious concerns that the solar park will adversely farmland bird and impact species of conservation concern that occur within the development site. Many of these are features of the adjacent designated sites: the special protection area **SPA**, the Ramsar site **RAMSAR**, site of special scientific interest **SSSI** and I therefore understand that they receive a high level of protection from damaging development which risks adversely affecting them. As others are presenting submissions on these issues, I do not intend to cover them in my submission.
- 2.2 As a local resident I am concerned about the impact on the village from the increase in heavy vehicle traffic on the local road system. Other than mention this here, I will not include my concerns in my submission because others, expert in this subject, will produce detailed evidence.
- 2.3 In my submission I will describe the breeding and winter requirements of Marsh Harriers and the hunting and roosting behaviour of other harrier species in the local area and the likely, adverse effect of the solar park development. In my submission, in addition to my local knowledge I rely heavily on the detailed studies undertaken in East Anglia by my ex RSPB colleague, the late John Underhill-Day.
- 2.4 I will also comment on the management of the mitigation area, specifically in relation to Brent Geese and wintering waders and proposed management options.

## **THE MARSH HARRIER**

### **Historical Review of the local population**

3.1 The Marsh Harrier was formerly identified as a Red List species of high conservation concern due to a historical decline in numbers during the period 1800 – 1995. Its status has now been reviewed and in Birds of Conservation Concern 4 (BOCC4) 2015 it is now Amber listed due to a recent recovery in the breeding population. It is protected under Schedule 1 of the Wildlife and Countryside Act 1991 and listed under Annex 1 of the EC Birds Directive. Reasons for the need for protection/inclusion in annex I: The Marsh Harrier has suffered a steep decline between 1970 and 1990. The main threats for the species are the loss of wetlands and burning of surrounding vegetation as well as hunting and water pollution. It is also listed in Appendix II of the Bern Convention.

3.2 The Marsh harrier became extinct as a breeding species in Britain in 1899. Re-colonisation began in 1927 but numbers fell again until 1971 when there was just a single pair nesting in Suffolk, followed by a dramatic recovery. In Kent the species was recorded historically as a passage migrant and winter visitor, with numbers fluctuating annually until a pair nested on Preston Marshes in 1942. Following this breeding attempt there was a dramatic national decline, thought to be due to organic pesticides, that was not reversed until 1970s (Underhill-Day1994) The next breeding attempt recorded in Kent was on Sheppey in 1983. Pairs nested again in 1984 and 1989. Numbers then increased to five nests in 1991, 14 by 1994 and 21 – 24 by 1997. Marsh Harriers have been recorded as nesting in Kent away from Sheppey since 1998. The national survey in 2005 revealed 41 nests on Sheppey and 21 nests at nine sites elsewhere in Kent<sup>1</sup>. The number nesting on Sheppey has declined slightly since the national survey but has increased elsewhere in the county. The Swale population is estimated to be c 10% of the national population of breeding females.

### **Nesting Habitat**

3.3 On Sheppey, reed is the preferred habitat for nesting, but crops are also utilised. In the 2005 survey, 51% of the nests in Kent were in reed, 28% in rape, 14% in wheat and 8% in other habitats, namely grass and field beans. Nesting has occurred on the proposed solar park site but it is likely that in recent years some nesting attempts have gone unrecorded owing to the lack of intensive watching by local ornithologists. This is especially so in large fields of arable crops where the nests are often difficult to locate. The standard method to establish occupancy is to watch from a vantage point at 300- 500 metres distance during three visits from mid-March to mid-August. Watches should preferably last four hours. Although breeding was observed during the general breeding bird surveys carried out as part of the EIS and from information supplied by the Kent Wildlife Trust, nesting attempts in other years may have been missed, owing to the time constraints in carrying out breeding bird surveys over an extensive area. I know this from personal experience from watching a suspected nest site in sea club rush in Capel Fleet, Sheppey; the nest was not located until the fourth watch, when it contained well grown young.

3.4 The solar park will thus, preclude Marsh Harriers from crop nesting and limit the area available for nesting.

3.5 It is also likely that nesting sites in the borrowdyke<sup>2</sup> reed bed will be subjected to disturbance during construction phase, because the presence of potential nest sites will not have been detected

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<sup>1</sup> Oliver, P.J, The Marsh harrier in Kent and the 2005 breeding survey. Kent Bird report 2005

<sup>2</sup> The wide dyke alongside the seawall from where clay was extracted to build the wall

without intensive watching. Marsh Harriers are vulnerable to disturbance during the early stages of the nesting cycle; nest visits or activity near to the nest can cause desertion during incubation or when the nests contain small young. To avoid illegal disturbance to this protected Schedule 1 species it will be essential to carry out adequate pre-construction and during-construction nesting bird surveys.

### **Ranging Behaviour**

3.6 Marsh Harriers use a variety of wet and dry habitats. They nest in beds of common reed, crops (as identified above) and rough grass. In both summer and winter, they hunt over dry arable farmland, reed beds, flooded grassland and saltmarshes.

3.7 When nesting, Marsh Harriers defend only the immediate area in the vicinity of the nest, the nesting territory which has a radius of about 100 – 300 metres. They do, however, range out extensively over surrounding land and have a home range over which they forage for prey. The extent of this home range varies and is generally larger for males than for females that hunt closer to the nest site. In East Anglia studies by John Underhill-Day recorded males hunting up to 7 km from their nest site. In East Anglia, in one study site, the home range of the males varied with the stage in the breeding cycle from 569 ha during courtship to 1,407 ha during the post fledging period ( Underhill-Day, 1990). Females have smaller home ranges, but these increase in size when they start to feed young (from 100 – 1,300 ha). It is not unusual for the hunting ranges of neighbouring birds to overlap and hunting ranges are not defended.

3.8 R. Clarke, in his book “The Marsh harrier”<sup>3</sup> gives additional information on territorial behaviour and hunting:

*“Once the young have hatched , the males abruptly extend their activities beyond the nesting territory by making long foraging flights into surrounding , often marginal or arable land. The reason for this is very clear. Unless a particularly rich source of waterfowl is available, marshland hunting is not very productive. At Titchwell in one season, Sills (1983) observed that it took a male an average of 27 minutes to catch prey in the marsh, and it was likely to be a small item such as a fledgling passerine: prey was caught on average every 17 minutes on average on farmland and was usually a much heavier young Pheasant, Rabbit or Starling. Sills calculated that farmland was ten times more productive in terms of weight of food per minute of hunting”* The ES recognises the importance of field margins and ditches for foraging harriers and that arable crops are not favoured foraging habitat (Habitat Loss/Change – para 359) but the extent to which prey from arable fields, as opposed to marginal land,

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<sup>3</sup> Clarke, R. (1995). The Marsh harrier. Hamlyn Species Guides

contributes to food provisioning to the young is not known. The obliteration of the arable farmland used by foraging harriers may thus have an adverse impact on the local harrier population.

3.9 Clarke continues:

*“How far might a harrier range from the nest? Maximum hunting distances from nests by male Marsh Harriers were recorded by Schipper et al (1977) In Holland and France at only 1.5 to 3.1 km, females ranging only 1.4 to 1.8 km.: they quoted other researchers as recording 5 – 8 km.*

*The sizes of hunting ranges quoted by Schipper et al vary from 250 – 680 a ha for males and 80 to 370 ha for females. At Titchwell , hunting ranges out over arable farmland , inland of the coastal breeding marsh were measured for individual males in 1982 and 1983 at a much larger 1250 ha and 1000 ha respectively. Elsewhere in East Anglia, Underhill-Day (1989)<sup>4</sup> calculated 217 ha, during the courtship phase, 1112 ha during the nestling period and 310 ha during the fledgling period. It seems clear that so far as range sizes go, it all depends on the habitat, prey density and the stage of the breeding cycle.”*

3.10 A radio tracking study of the ranging behaviour of foraging Marsh Harriers in agricultural landscapes in Spain<sup>5</sup> showed similar large home ranges in both irrigated and non-irrigated landscapes. The authors showed that *“During the nesting period, as with other raptors having large home ranges, radiotagged Marsh Harriers in our study, nesting in the same area or nearby, showed partial or total overlap of their home ranges.”*

3.11 The above studies show that Marsh Harriers hunt extensively over arable farmland and that individuals from different nests will hunt over the same area of arable land. A pair nesting locally in, for example, the adjacent South Swale Nature Reserve may therefore require the whole of the proposed development site to provision its young with food in both the nestling and post fledging period. This is indicated in the flightline studies carried out as part of the EIS and in the accompanying text. Although there is a concentration of records in the sea wall borrowdyke along the northern boundary of the proposed solar park site, the maps also show several flightlines traversing the arable fields. There is, however, no indication from the flightline studies as to where Marsh Harriers captured prey, or if the flightlines referred to locally breeding birds or birds from further afield or how many individuals are involved. There is anecdotal evidence from local birdwatchers that Marsh Harriers cross the Swale regularly between the South Swale Marshes and the Isle of Sheppey; the behaviour is

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<sup>4</sup> Underhill-Day, J. (1989) *Ardea* 77, 47 -55

<sup>5</sup> Cardador, L., Manosa, S., Varea, A. and Butolo, A. (2009) Ranging Behaviour of the marsh harrier *Circus aeruginosus* in agricultural landscapes. *Ibis*

now so commonplace that it hardly receives a mention from local birdwatchers. I, too, have witnessed this on several occasions and have observed birds crossing the Swale from the Isle of Sheppey to hunt on Nagden and Cleve Marshes and returning to Sheppey with prey or to roost in the evening. P.J. Oliver in a study of flight heights of Marsh Harriers in a breeding and wintering area on the Isle of Sheppey states that Marsh Harriers routinely cover distances of 2 – 3 km.

3.12 Flying across the Swale is not confined to Marsh Harriers during the breeding season. In 1986 I was involved in species protection of a pair of Montagu's Harriers that nested in a wheat crop below Harty Hill on Sheppey. The male crossed the Swale regularly to hunt on the south side of the Swale and I witnessed it returning with small prey to the nest site on several occasions.

3.13 Similarly, Hen Harriers move between Sheppey and the south side of the Swale and may be seen returning to roost on Sheppey after spending the day hunting on the marshes on the south side of the Swale. In a series of winter roost counts in the late 1980s/90s at a saltmarsh roost below Mocketts Farm on Sheppey my colleague and I regularly recorded both Hen and Marsh Harriers returning from the south side of the Swale to roost at dusk. In the 2018/19 winter I recorded an adult male Hen Harrier that was hunting on Cleve Marshes flying across the Swale to Shellness at dusk. On two other occasions in 2019 I saw a hen harrier go to roost in the reed bed on the KWT South Swale Nature Reserve.

3.14 The proposed development land is thus functionally linked to the Swale SPA and is integral to the successful ecological functioning of the Swale Marsh Harrier population and probably to other harrier species both in the breeding season and during winter. That Marsh Harriers cross the Swale regularly to hunt on Nagden, Cleve and Graveney Marshes indicates that the proposed solar park development site is necessary for their survival throughout the year. It is highly unlikely that the solar park once constructed and operational will provide an adequate food resource and area for such wide-ranging species as harriers.

3.15 Harriers are generalist predators and fly low to drop on any prey that can be surprised on the ground. They rarely pursue flying prey. A wide range of prey is cited in the literature, including small mammals, waterfowl, wader chicks, frogs and small passerines, notably skylark and other farmland birds.

3.16 Skylarks are present throughout the proposed development site and one of the species that will be greatly reduced in numbers by the construction of the solar farm. This is acknowledged by the applicant. Studies of the distribution of Skylark territories is influenced not only by habitat but also by the distribution of tall vertical structures such as electricity pylons and other structures that can be

used by potential predators<sup>6</sup>. Because of this, Skylarks show a strong preference for larger fields or fields with lower boundaries, because this gives them the opportunity to avoid nesting near tall hedgerows or woodland. They generally avoid nesting near to tall vertical structures. They also avoid nesting close to roads. Skylarks will nest in smaller fields where boundaries are low, Although the skylark population on the proposed development site is of local significance only and thus not functionally linked to the SPA, any reduction in skylark and other farmland bird numbers will reduce a potential food resource and could adversely impact on internationally protected Marsh Harriers and other raptors that depredate Skylarks and other passerines.

3.17 Marsh Harriers while hunting, typically fly over the ground at a height of 2 – 6 metres, i.e within the height range of the solar panels. P.J.Oliver<sup>7</sup> studied flight heights of Marsh Harriers in a breeding and wintering area on the Isle of Sheppey. He recorded percentage time spent in three height bands: < 20 metres, 20 – 60 m and >60; his data showed that 51.8% of flights in the period March to July were in the height range below 20 metres. This increased to 85% of flights in the period September to February. Proposed mitigation mentions leaving corridors, bordered by grass along some of the ditches. Flightline studies carried out as part of the environmental assessment also show that the majority of marsh harrier flights is in the 0 – 10 metre range. I note that the corridors have been extended from the original width of five metres either side of the ditches to 15 metres, but such corridors will be very narrow in the context of the large scale development proposed. In my opinion, the Marsh Harriers, foraging within the above height ranges will find these narrow corridors too confining, especially if they have to cross large boundary fences and fly over a vast array of panels to reach hunting grounds that post construction, will be much reduced and confined to ditches bordered on either side by solar panels and other structures. Sightlines will be severely limited and fragmented by the array of panels, supporting stilts and other structures. In Chapter 9 of the Environmental Statement, 9.5.3..25 Habitat Loss/Change - Paragraph 360 the author mentions that he has “witnessed a marsh harrier foraging along the edge of Old Rides Solar Farm on Sheppey on one occasion, where there is a narrow strip of grassland between the panels and the adjacent arable field” . The Sheppey solar farm is a development within an extensive arable and marshland landscape, quite unlike the industrial landscape that will result from the proposed Cleve Hill proposal. In fact, such an alien industrial landscape with narrow corridors along ditches bordered by a vast array of solar panels and supporting pillars and other structures may even cause birds to abandon the site.

3.18 The applicant has shown no willingness to mitigate the loss of vast open fields by providing large blocks of land within the developed area that are free of panels or to provide a substantial 100

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<sup>6</sup> Donald, P.F. (2004). The Skylark. T & A D Poyser

<sup>7</sup> Oliver, P.J., (2013). Flight heights of marsh harrier in a breeding and wintering area. British Birds 106

– 200 metre buffer zone alongside the borrowdyke at the northern boundary of the site. Such habitats could provide habitat for ground nesting birds and have other biodiversity benefits. The only concession is to increase the corridor width alongside ditches from 5 to 15 metres either side of the ditch. The whole area will be extremely fragmented. The applicant implies in its responses to the subject of breeding Marsh Harriers that there are alternative feeding areas elsewhere locally. I disagree and in my opinion the whole of the proposed development area is necessary for the ecological functioning of the Swale harrier population

3.18 I ask that the examining authority take not of my concerns outlined above and my objection to this development.



## 4. Management of the Arable Reversion

### 4.1 Brent Geese

Dark-bellied Brent Geese, Brent Geese, Lapwing and Golden Plover will be displaced from the arable fields by the construction of solar panels. The primary aim of management of the arable reversion fields is to provide a sward suitable for grazing Brent geese during the winter months and for foraging Lapwing and Golden Plover. The carrying capacity of these fields has been subject to debate and is currently under discussion within the Habitat Management Group. I note that 50.1 ha of the 56 ha arable reversion to grassland is identified as functionally available grassland after taking account a 50 metre avoidance zone near the solar panel arrays in which there may be a reduced density of birds.

The calculations on usage of the 50.1 ha of functionally available grassland assumes that birds will use the entire area of the arable reversion. My experience from observations in recent winters, of Brent Geese using both the arable fields and SSSI grassland to the east of the proposed development is that the Brent Geese flock generally feeds within 300 m of the seawall and occasionally just beyond to 500 metres. I have not seen Brent Geese venture inland to the innermost portions of these fields. Thus, contrary to what is written in Chapter 9 para 204, 50.1 ha may be insufficient to mitigate for the average loss of resources provided by the arable baseline.

The calculations used to determine the capacity of the AR HMA to support Brent Geese in the future used data from established grass swards. It is likely that the carrying capacity of these fields, sown with a grass seed mix will be reduced in the first or second season or until a dense sward develops. This will result in a net loss for this species in the first years, post construction.

## 5. Grazing Marsh Grassland Management Plan

5.1 In the technical appendices, In the aims and objectives of the Grazing Marsh Management Plan 6.1 Para 22 it states that the aim of the GMGMP is to establish a grassland sward with greater ecological value than the existing arable land. It is also designed to be maintainable in perpetuity...

5.2 6.4 Seed mix states that it is envisaged that *Emorsgate EM3 – Special General Purpose Meadow mixture* will be suitable as detailed in Table 5.1

5.3 Whilst the above floristically rich seed mix may be suitable for meadow creation on the Wealden Clays of mid Kent, in my opinion it is not a suitable mix for establishment on the heavy, slightly brackish clays and silts characteristic of the North Kent Marshes. It is unlikely to persist and meet the aim of being maintained in perpetuity. Its value to wildlife, especially foraging insects is likely to diminish within a couple of years after the initial establishment. The grazing marsh grassland in

north Kent is generally floristically poor and the dominant community is a variation of the MG6 Perennial Rye grass *Lolium perenne* -Crested Dogstail *Cynosurus cristatus* grassland community. Meadow Barley *Hordeum secalinum* is an important component of this community. In damper ground this is replaced by the MG11 community Red Fescue *Festuca rubra* -Creeping Bent *Agrostis stolonifera* - Silver Weed *Potentilla anserina* community<sup>8</sup>. The creation of flower rich meadows in this landscape is unlikely to succeed other than on drier banks and sea walls.

#### 5.4 15.5 Par 296 Seed Mix.

I am surprised to see both *Agrostis capillaris* Common Bent and *Puccinellia maritima* Saltmarsh Grass included as species that need to be included in the mix. *A. capillaris* is a grass of acid ground in Kent and *P. maritima* is a dominant grass of saltmarshes in the intertidal area. It is seldom a component of grass swards landward of the seawall other than on the berm between the seawall and borrowdyke and even here it is rarely encountered.

#### 5.5 13.5 Riparian Plant Mix. Para 255

Although given as options, the lists of Emergent Plants (options) and Margin Wildflowers (Options) appear to be sloppily put together and show little regard for the natural distribution or the ecology of species in Kent<sup>9</sup>.

I have the following comments:

#### **Emergent Plants**

Reed Sweet-grass *Glyceria maxima*: can be invasive and generally more common in watercourses away from coastal marshes.

Arrowhead: *Sagittaria aquatilis*. Specific name should be *sagittifolia*. A plant of rivers, canals and edges of lakes. Only found in SW & S Kent and the Stour Valley.

Water Crowfoot: Not known in the north Kent Marshes west of Thanet. The common water crowfoot in the local area is *R. baudotii* Brackish Water-crowfoot.

Flowering Rush *Butomus umbellatus*: not known from the north Kent Marshes in this area.

Stinking Iris *Iris foetidissima*: This must be an error. Stinking Iris is a plant of hedgerows, woodland and scrub. Not an aquatic plant.

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<sup>8</sup> Rodwell, J.S., (1992) British Plant Communities Volume 3. Grassland and montane communities. Cambridge University Press.

<sup>9</sup> Philp, E.G., (2010) A New Atlas of the Kent Flora. Kent Field Club

Marsh Cinqufoil *Potentilla palustris* (*Comarum palustre*) Only known from dykes and damp places in the Dungeness area.

### **Margin Wildflowers (Options)**

Sneezewort *Achillea ptarmica*. Known in this area in just one tetrad on Sheppey. Otherwise recorded in 12 tetrads in west Kent and one tetrad in east Kent.

Wild Angelica *Angelica sylvestris*. Not a plant of coastal grazing marsh

Meadowsweet *Filipendula ulmaria*. Not a plant of the north Kent Marshes.

Water Avens *Geum rivale*. Native. Extinct in Kent.

Purple-loosestrife *Lythrum salicaria*. Only recorded in one tetrad in this area.

5.6 In terms of future management of the ditches it would be preferable to encourage natural regeneration of the typical ditch flora of the area that is confined to sites on or near the coast of south-eastern England rather than introduce the above species that are alien to the North Kent Marshes. This would include plants in the *Ceratophyllum submersum* community such as *C. submersum*, *Potamogeton pectinatus* and *Ranunculus baudotii*. Emergent vegetation often includes *Phragmites australis* and *Bulboschoenus maritimus* as dominant species.

