

The Review and Comments

of

A Bird Assessment Report
South Moor Farm, Langdale End,
Scarborough

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SUMMARY

A planning application for the development of two grass runways for a light aircraft and a pilot/restroom in Dalby Forest, North Yorkshire in November 2015 was refused by the North York Moors National Park Authority. An appeal followed and was dismissed on 16th September 2016. In making her conclusions the Planning Inspector stated that based on the information before her she could not conclude that the proposal would not harm protected species of wildlife. Considered in this matter were two species of bird the Goshawk and Nightjar that may breed locally.

In December 2016, the appellant made a further amended planning application for a single runway and pilot/restroom. The application was supported by a bird assessment report from an environmental consultant aiming to address the previous concerns of the Planning Inspector. A field survey and desktop research of the area around the proposed development site showed neither presence nor absence of the birds. A literature review failed to show there was any evidence of aircraft not disturbing or affecting the two species. However, the bird assessment report concluded that should permission be granted there may be mitigating factors that if implemented may prevent both bird species from being disturbed by the day to day running of the airfield.

A critical review of the report showed that there was no evidence to suggest the two species of bird would not be affected. If granted the proposed development could cause disturbance and interfere with the breeding and conservation of the two-protected species of birds and potentially other protected species for that matter. As such the applicant, failed to provide the planning authority with certainty that protected species would not be harmed by the proposed development.

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1. INTRODUCTION AND BACKGROUND

Introduction

This is a critical review of a bird assessment undertaken at South Moor Farm, Langdale End, Scarborough, YO13 0LW in relation to the proposed development at the above residence for a single grass runway for a light aircraft and small control room (Appendix 1). The proposed site was centred at approximate grid reference SE907902 approximately 10 km north-east of Pickering town centre and approximately 13 km west of Scarborough town centre.

The aims of the Bird Assessment were 'to determine the potential for Nightjar *Caprimulgus europaeus* and Goshawk *Accipiter gentilis* to be affected by the proposed development'. The assessment was made and report compiled in November 2016 by Quants Environmental Ltd, of Carlshead Business Centre, Paddock House Lane, Sicklinghall, Wetherby LS22 4BJ.

An ecological field survey was carried out on 25th October 2016 and a desk-based study undertaken in October 2016 to obtain previous records of birds for the site and surrounding area.

A grass runway is currently in situ at the site and under its current agricultural land use it can be used for up to 28 days per year. It should be noted that the current planning application relates to a proposed change of use to enable the runway to be used on an unlimited number of days. All flights from the runway would be during daylight hours only.

The previous planning application and subsequent appeal related to two grass runways and construction of pilot/restroom building; whereas the current proposal is for a single runway and a small control building measuring approximately 2 x 3 metres.

This report outlines the findings from the Bird Assessment report and subsequently advises whether the two species of bird or indeed any other protected species of bird would be adversely affected by the proposed development.

Background

A planning application (Ref: NYM/2015/0781/FL) dated 2 November 2015 for the 'change of use land to form 2 no. grass runways and construction of pilot/restroom building' at South Moor Farm, Langdale End, Scarborough YO13 0LW was refused by the North York Moors National Park Authority (NYMNPA) on 15th January 2016.

A subsequent appeal (Ref: APP/W9500/W/16/3144478) was made by the applicant against the refusal to grant planning permission. On 16th September 2016, the appeal was dismissed by the Planning Inspector.

With regard to the effect of the proposal on wildlife the Appeal Decision stated:

23. The North York Moors Special Protection Area (SPA) lies around 6km to the north-west of the site. The Troutdale and Rosekirk Dale Fens Site of Special Scientific interest (SSSI) lies around 2.5km to the south and the Bride Stones SSSI is a similar distance to the west. Advice from the Royal Society for the Protection of Birds (RSPB) indicates that the site also lies close to areas of forest identified as a breeding site for Nightjar and Goshawk, the latter of which is a species protected under Schedule 1 of the Wildlife and Countryside Act. Natural England have advised that if representations are received during the planning process which indicate that protected or priority species may be present on the site, further survey work should be carried out to determine their presence prior to determination.

24. In the first previous appeal the Inspector noted that he had limited information on which to determine the risk to protected species. Nevertheless, based on the case put to him, he considered that other than in the immediate surroundings of the proposed airstrip, the noise from take-offs and landings would be unlikely to cause any significant disturbance. This together with the small number of movements, suggested to him that there would be unlikely to be any disturbance to Goshawks or Nightjars. In the second appeal the ecology of the site does not appear to have been a matter that was put before the Inspector.

25. At the hearing I was provided with evidence from a Mr Gary Marchant, a consultant ecologist and local ornithologist who stated that a number of species were present in the area around the site, including Goshawks, a species which I was advised are very sensitive to noise. Although I was provided with no firm evidence that these species nest close to the appeal site, I take into account that as a protected species Goshawk breeding sites are kept confidential. I also take into account that he has extensive professional experience which includes work in and around Dalby Forest. This evidence, along with the written comments of the National Park Ecologist leads me to the view that there is a reasonable prospect of both species being present.

26. The application is not accompanied by a wildlife survey, but rather a desk-top assessment which indicates that given the distance to designated sites and the species within them, the proposal is unlikely to be a habitat for SPA species. I do not consider that the pattern of use proposed would result in intensive use of the site, and note that aircraft noise can be compatible with birdlife in the case of a number of other airfields which have been drawn to my attention. Based on the information before me I am nonetheless conscious that there is a reasonable prospect of protected species being present and that the development proposed has the potential to adversely affect them. However, in the absence of any detailed habitat survey for the presence and likely effect on protected species in and around the site, I cannot be sure of the extent of likely harm, if any.

27. As this is the only matter in which I have identified potential harm, I have carefully considered whether a condition requiring that a survey be undertaken could mitigate any potential impact. However, Circular 06/052 advises in paragraph 99 that it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances. Based on the information before me I am not aware of any circumstances which would negate the need to address this issue as a material consideration.

28. I bear in mind that previous appeal decisions are material considerations to which I must have regard. However, as I have evidence before me which does not appear to have been put to the original Inspector, I am satisfied that there is no inconsistency in our decisions. I also take into

account that the conservation of wildlife is explicit in the statutory purposes of the National Park, and is reflected in Core Policy C of the Core Strategy. According I must conclude that the failure to demonstrate that protected species would not be harmed runs contrary to local and national policy and must be given significant weight.

Conclusion

32. The proposal would not harm the special character of the National Park and would not materially diminish the quality of life of local residents or the enjoyment of the Park by walkers or horse-riders. Subject to appropriate mitigation it would also not give rise to harm to heritage assets. It would provide some benefits in terms of farm diversification and tourism. However, based on the information before me I cannot conclude that the proposal would not harm protected species. I take into account the conservation of wildlife is explicit in the statutory purposes of the National Park, and that having regard to the Sandford Principle, this harm must carry greater weight than the stated benefits.

33. Therefore having regard to all other matters before me, the appeal is dismissed.

In consequence, the conclusion and decision by the Inspector led to the Bird Assessment being undertaken, its aims being “to determine the potential for nightjar and goshawk to be affected by the proposed development”.

2. METHODOLOGY

A comprehensive and in depth review was carried out of the bird assessment report which was in essence a critical review. All parts were examined in detail in chronological order as set out in the Bird Assessment, the text from that report is shown in *italics* and all comments from the review are given in bold letters alongside the relevant section.

3. RESULTS AND FINDINGS

Review of Introduction and Background

With regard to the ‘Introduction and Background’ this section was concise and accurate and set the scene for the reader. It basically relayed the information about the proposed development site and the aims of the bird assessment itself, namely “to determine the potential for nightjar and goshawk to be affected by the proposed development”. It further outlined the history of the planning application, subsequent appeal and dismissal and provided the necessary information from the Planning Inspectors Appeal Decision.

Review of 2.Assessment Methodology, 3.Background Ecology and Other Information and 4.Survey Results. 5. Conclusions

Review of 2. Assessment Methodology

Initial examination of the Bird Assessment Report showed it to be structured in the typical manner for a straightforward assessment, survey or scientific research paper. However closer examination revealed that it did not appear to flow in the typical manner.

A basic report usually gives a summary or abstract of the work undertaken, this is followed by the introduction which has already been discussed. The next section is the methodology showing how the assessment was actually carried out, then the results give a summary of the findings or data. Finally, the conclusions (or discussion) give an interpretation of the results with supporting evidence. Further discussion can be made in this section on how the results relate to the original aims of the work, from this recommendations or further work can be outlined.

Although well structured, it was discovered that some results were given in the Assessment Methodology section. It appeared that the results of the literature review were given almost entirely in Section 3 under the heading Background Ecology and Other Information. Finally, the results for the Desk Study, Bird Species Records and Field Survey were given in Section 4 under the heading Survey Results.

To avoid confusion and for the purposes of this report the review was made of each section namely, the Assessment Methodology, Background Ecology and Other Information, Survey Results and finally the Conclusions in the order they were presented and discussed simultaneously. Hopefully this would assist when the Bird Assessment Report could be read in conjunction with the review.

The methodology for the Desk Study and Literature Review was outlined as follows:

Desk Study and Literature Review

North and East Yorkshire Ecological Data Centre (NEYEDC) was contacted for a search of bird records within a 1km radius of the sub-500-foot flight path shown in Appendix 3, i.e. a straight line between grid reference SE893891 in the south-west and SE917910 in the north-east.

*Regarding the NEYEDC data search, it is noted that many species records are not supplied to such record centres for a variety of reasons one of which was the threat of illegal egg-collecting particularly for the rarer raptors such as goshawk. **The last sentence was found at the bottom of the page of this section under the sub-heading of 'Limitations' and indicates that the search for records of species of birds in the area may be of limited value.***

Several attempts were made to contact the Forestry Commission (Pickering office) to obtain information regarding nightjar and goshawk in Langdale Forest and the wider area. At the time of writing, no information had been received.

A search for protected nature conservation sites was undertaken on the Multi Agency Geographic Information for the Countryside (MAGIC) website. **The results of this search were given later in the Survey Results Section.**

A literature review was also undertaken. The aim of the literature review was to search for background information regarding the effects of light aircraft on nightjar and goshawk. The literature review was extended to include information regarding

the effects of other relevant disturbance effects, e.g. from other types of aircraft and other anthropogenic sources. The results of the Literature Review were actually compiled in section 3 of the report under the heading “Background Ecology and Other Information with a sub-heading of General Notes on Avian Responses to Aircraft.

The methodology of the Field Survey was outlined as follows:

Field Survey

An ecological field survey was undertaken on 25th October 2016. During the survey, all land within a 1 km radius of the sub-500-foot flight path shown in Appendix 3 was assessed in terms of its potential value to nightjar and goshawk as habitat for breeding, feeding or other behaviour. During the field survey, any observations of notable bird species were recorded (no evidence of nightjar or goshawk was observed during the survey).

The survey involved walking along the majority of paths, tracks and roads within the survey area. There is an extensive network of paths in the survey area used by mountain bikers and walkers. Additionally the surveyor walked along Dalby Forest Drive which is used by visiting traffic and forest vehicles. During the field survey, all areas of relevance were fully accessed. The majority of the land within a 1 km radius of the sub-500-foot flight path shown in Appendix 3 is designated as ‘open access land’ under The Countryside and Rights of Way Act 2000. Non- ‘open access land’ within the survey area was largely visible from public rights of way.

Further information was given about the field survey later in this section under the sub-heading “Limitations”.

The field survey was undertaken in October 2016 which is outside the main bird breeding season. During October, it is not possible to confirm the presence or absence of nightjar or goshawk as breeding species. Nightjar winters in Africa and is typically present in breeding territories in the UK only between May and August. Goshawk is resident in the UK but the population is normally bolstered during the winter by birds which breed in continental Europe but winter in the UK; goshawk territorial behaviour typically occurs between February and August.

During the field survey on 25th October 2016, all areas of relevance were fully surveyed and there were no significant access limitations.

The field survey did not prove the presence or absence of nightjar or goshawk as breeding species. All nightjars should have returned to Africa for the winter long before the survey was carried out (Tate 1989). Undertaking a walkover survey through woodland in an attempt to see or find evidence of a goshawk is a very difficult task. For much of the time they will be ‘still perch hunting’ or gliding silently hunting through the woodland and at the slightest sound or movement from a human will fly quietly away (pers. obs.).

Outside of the breeding season in the month of October, it would be very difficult to find evidence of breeding from a small bird like a nightjar. However, with a bird the size of a goshawk to a person that has experience in the field it

is possible to find evidence of the current year or even the previous year's breeding. Once a nest is found if the area immediately below and surrounding it is checked for the remains of items of prey, feathers, pellets, faeces, etc. (Petty 1989), they can all indicate the year of breeding, and quite often from the signs it is possible to estimate the stage at which the breeding attempt reached from egg stage to fledging. (*pers. obs.*).

It should be noted that when conducting a review of literature for research purposes or writing a scientific report it is common practice to reference each piece of information gathered. The purpose is to prove its source and authenticity and perhaps allow the reader to search for further information, examination of the Bird Assessment revealed this was not always done.

The last section in Assessment Methodology was titled Limitations and related to the field survey and data search. This information really should have been in the results section but has been dealt with above along with each of the respective topics.

Review of 3. Background Ecology and Other Information

The next part of the Bird Assessment was Section 3 'Background Ecology and Other Information'. It had a sub-heading of 'General Notes on Avian Responses to Aircraft' and as previously stated this appeared to be the main part of the results of the literature review.

The notes on this section comprised two and a half pages in total and began: *Most species of bird have evolved predator-evasion responses as a technique to avoid aerial predators such as raptors². This predator-evasion response will sometimes be elicited erroneously, such that birds respond to the sudden approach of animals or machines that are essentially harmless. No reference could be found for this statement which is clearly stating that birds are disturbed by aerial predators and they will respond accordingly to the sudden approach of animals or machines that are essentially harmless. What is apparent here is that birds will still respond even though there is no threat and little point, essentially they have been disturbed.*

Ruddock and Whitfield (2007) defined two types of disturbance response shown by birds. 'Static' disturbance distance was defined as the distance at which there was a static behavioural response to the disturbance stimulus, such as increased vigilance and/or alarm calling. 'Active' disturbance distance was defined as the distance at which there was active behavioural response to disturbance stimulus, for instance taking flight, moving away from/towards the observer. This is very interesting on how birds react to disturbance but it is very general in its outlook. It was found that the Ruddock & Whitfield recommendations were made largely on ground-based disturbance methods. A sift of the published scientific literature revealed that there is limited empirical data to support evidence-based buffer distances for aerial disturbances (Scottish Natural Heritage 2015).

Not all bird species will exhibit the same predator-evasion response to a given stimulus. There is significant inter-species variation with some species flying off

when the stimulus is several hundred metres away and some species using crypsis⁴ and only flying off when the stimulus approaches to within a few metres. There will also be significant intra-species variation, whereby individuals of the same species will react to the same stimulus at different distances; this may be because individuals in a certain location (e.g. near a long-established airfield) have become attenuated to non-predator stimuli such as aircraft. A reference could not be found for this paragraph; however, this is very interesting and relevant to this work. It can be confirmed from experience that birds from different species do behave in different ways, but it is also true that birds from the same species also behave in different ways (pers. obs.). It would be safe to say therefore that even if a person is considering the behaviour of only one or two species of birds they may all behave differently. This is supported from Ruddock and Whitfield (2007) which states in their research it was clear from the literature review, and from the expert survey, that there are considerable differences in the distances at which birds of the same species respond to disturbance and this suggests that whenever possible buffer zones should be responsive to such differences.

*The predator-evasion response will also be affected by the nature of the habitat, e.g. birds may feel safer from aerial stimuli when they are within, or close to, a cluttered environment such as a woodland and may therefore be less likely to exhibit a predator-evasion response. This effect may be more marked if the stimulus is large (e.g. an aircraft) and therefore perceived as less able to effectively pursue prey within a cluttered woodland canopy environment. Species which spend much of their time on open-ground with no nearby woodland cover tend to be most susceptible to disturbance from aerial stimuli, e.g. wintering flocks of geese are known to exhibit predator-evasion responses at distances of over 1 km from aircraft. **Once again this is good information and may well be accurate, no reference was found. Birds may feel safer in woodland if threatened but if the disturbance is sufficient it may at the very least cause increased vigilance as outlined from Ruddock & Whitfield (2007). Increased vigilance is in itself disturbance. The last sentence reveals how geese were affected by aircraft at over 1 km away.***

*Repeated predator-evasion responses can adversely affect birds by increasing their energy expenditure (i.e. energy reserves are used up every time a bird makes a flight); reducing the time available to participate in other activities such as feeding, defending a territory and rearing young; and causing birds to be displaced from otherwise favourable habitat **This paragraph is extremely relevant to this situation and it shows how aircraft can seriously interfere with the everyday lives of birds and not only during the breeding season.***

The next five paragraphs of the Bird Assessment from Scottish Natural Heritage (SNH) (2015) gave an excellent insight into how much disturbance aircraft can actually cause to birds, including how it can interfere with breeding attempts, cause injury and often death in some cases:

Scottish Natural Heritage⁵ states that raptors may react to aerial disturbance in a number of ways. They have been recorded watching nearby aircraft, ‘flattening’ or ‘clamping down’ on nests (usually in incubating or brooding birds) and standing up on nests with eggs or chicks. Birds may also be flushed from the nest, and may

delay returning to the nest or a change-over between the pair during incubation or brooding being disrupted. This can result in the nest being unattended for an extended period, and the eggs or young chicks being vulnerable to the effects of weather (chilling or overheating), starvation or predation. Breeding birds may also be panicked off a nest and, in the process, dislodge eggs or young leading to a breeding failure⁵.

Behaviour of young in nests is not well studied but there is evidence to suggest that they can 'flatten' on the nest or exhibit startled/panic behaviours. This latter reaction can lead to premature fledging in older chicks which risks injury and potential abandonment by the parents, although the latter is probably rare⁵.

Less commonly, territorial adults can show defensive or aggressive reactions to aircraft by treating them as an intruder. This can manifest as circling or mobbing (birds have sometimes been heard using alarm calls) or 'shadowing' (following the aircraft's movements by flying alongside or above) the aircraft. In more extreme cases birds may attack the aircraft⁶. This most often leads to the injury/death of the bird, but aircraft have also been damaged or brought down in such incidents. Video evidence from cameras on drones in the USA has shown raptors will attack the drone as an intruder if it used irresponsibly close to a nest⁵.

In some cases, disturbance by helicopters has led to raptors shifting nest site the following year even if they have bred successfully despite disturbance^{5 7}.

There is evidence that birds may habituate over time to aircraft activity⁸, but where it remains irregular or sporadic, or where background levels increase over time, there is a greater risk of disturbance⁹. There is, however, individual variation between birds, and some will tolerate more disturbance than others⁵.

The work undertaken by Scottish Natural Heritage (2015) for the above was intended for anyone, including SNH staff, planning aerial work in the vicinity of specially protected bird species. It summarises issues arising from the use of helicopters and other aircraft in areas known to support bird species listed on Schedules 1, and 1A of the Wildlife & Countryside Act 1981 (as amended). It provides guidance on the likelihood of disturbance, and provides information to use as the basis for Method Statements for planning work. Furthermore, it would appear this research was aimed at temporary work as appropriate licences would be issued where necessary.

The following two paragraphs of the Bird Assessment discuss habituation of birds to aircraft.

*Although based on only six observations, Evans¹⁰ concluded that wintering pink-footed geese rapidly habituated to the presence of microlights landing and taking off from an airstrip only 250m from their feeding grounds. **This is contrary to a previously mentioned piece of research of how wintering flocks of geese (species unknown) exhibited predator-evasion response at distances of over 1 km from aircraft. This emphasises how different species of birds may react differently to aircraft.***

*Smit and Visser*¹¹ observed that waders exhibited a high degree of habituation to the 'predictable' stimulus of helicopters passing regularly overhead at a frequency of 2-3 hour at 100-300m altitude. However, 'unusual' types of plane, which showed up at low frequencies still had strong effects. **Although the birds are habituated this research shows that different types of aircraft from the 'usual ones' can still cause disturbance.**

Aircraft may disturb birds both visually and audibly. *Drewitt*⁹ concluded that helicopters disturb more than fixed wing aircraft although there are a number of factors that can affect the level of disturbance. These include the timing and frequency of flights; type of aircraft (e.g. different helicopters have different noise signatures); existing level of aircraft flight activity; height and speed of flight; type of flight (e.g. single pass or repeat passes) and distance from nests and roosting areas⁵. **This paragraph highlights how much disturbance helicopters can cause, possibly more than any other type of aircraft. But in addition it shows how birds can respond to different flight activities, speed, noise and is very relevant to this research.**

Flights less than 500m in altitude are considered to present a higher risk of disturbance to birds⁹. Many flying operations typically involve flights between 100-300m in altitude, e.g. material transfer and surveys. Low flying military jets are often considered to be less of an issue due to the speed at which they pass. There is some evidence from the USA that raptors can habituate on military training grounds and also evidence that their reaction to the sonic boom of a passing jet is similar to that of a natural thunder clap (i.e. very little reaction). In contrast, there are also cases of birds flushing from nests, chicks showing a startle reaction, and individual birds panicking in response to military jets, although these have usually involved a relatively close approach⁵.

This section shows perhaps how difficult it is to generalise with aircraft disturbance and birds, because it claims the birds can become habituated and yet conversely, they can still be startled and panic.

*Experimental studies of the effects of microlights on pink-footed geese*¹⁰ indicated that they caused no detectable disturbance of geese, lapwing or golden plover when at an altitude of over 1000ft; signs of disturbance were first noted at 500ft.

Most recorded incidents of flushing from nests have occurred due to a combination of the aircraft being relatively close to the nest (most within 300m), sudden appearance over a ridge or cliff, lingering near corries or ridges and/or repeated passes. Noise effects in more enclosed glens or corries and visual disturbance may also contribute to disturbance, but there is limited direct evidence for this. Noise transmission may be influenced by the local topography or wind speed/direction, so it should not be assumed that birds will already be alert to the presence of the craft in the area⁵.

Other raptor disturbance behaviours related to aircraft have been recorded in literature at distances out to 800-850m⁵ ¹².

*Aerial surveys for raptors in North America use methods to minimise the risk of disturbing birds. These include a slow and obvious approach from as far out as possible and minimising the time spent close to a nest. This greatly reduces flushing or defence/aggressive responses, although does not eliminate them altogether*⁵.

The previous four paragraphs indicate that the lower the altitude or the nearer the distance to the aircraft then the greater appears to be the disturbance to the birds. This could be a good example of aircraft flying over woodland and suddenly appearing over a clearing or below a fellside and causing panic and fright to birds and other wildlife.

*There is some evidence for raptor nests failing due to aircraft disturbance but few confirmed records because of the relatively low intensity of nest monitoring and inability to rule out other factors. It has, however, been suspected as being a more regular causal factor in breeding failures than the confirmed incidents suggest. Obvious disturbance of flushed birds is much more often reported, although many of these birds have gone on to breed successfully*⁵.

*Bird strike is also a risk in lower level flying. These may result from defensive/aggressive reactions and are probably not widely considered by the operators/pilots in their risk assessments. More typical bird strikes for raptors have also been recorded*⁵.

*SNH guidance*⁵ provides ‘Safe Working Distances’ (both lateral and altitudinal) for 6 raptor species (not including goshawk) with recommended lateral distances ranging from 300m for red kite to 1000m for golden eagle and recommended altitudinal distances ranging from 500m for red kite, golden eagle, hen harrier, osprey and peregrine to 1000m for white-tailed eagle.

The last three paragraphs of the literature review are from the research study paper from Scottish Natural Heritage (2015) Guidance. Basically, this is the use of helicopters and aircraft in relation to disturbance risks to Schedule 1 &1A raptors and wider Schedule 1 species. It provides guidance on the likelihood of disturbance, and provides information to use as the basis for Method Statements for planning work. This appears to provide guidance for people undertaking temporary work such as field surveys or research and not setting up an airfield which will run continually year after year.

The final part of the section Background Ecology and Other Information relates to the two species of birds concerned in this review namely the Nightjar and Goshawk. The coverage is extensive and comprehensive on both species and covers legal and conservation status, general ecology and background information on the effects of disturbance.

Review of 3.2 Nightjar *Caprimulgus europaeus*

*Nightjar *Caprimulgus europaeus**

Legal Status

As with all wild birds, nightjar receives general protection under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to

intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs.

*Nightjar is listed on Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006 as a Species of Principal Importance for the conservation of biodiversity in England. Under Section 40 of the Act, every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. **This legislation is extremely important in that it places a duty on the Secretary of State to publish a list of flora and fauna and habitats considered to be of principal importance for the purpose of conserving biodiversity. As stated the nightjar is on that list which is used to guide decision makers 'to have regard' to the conservation of biodiversity in England when carrying out their normal functions. It is worthy of note that this legislation covers Regional and Local Planning Authorities, Public Bodies and woodland managers including the Forestry Commission and private and commercial forestry.***

*Nightjar is listed in Annex 1 of the EU 'Birds' Directive (Directive on the conservation of wild birds 79/409/EEC). The Directive requires EU member states to identify Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive. The SPA suite for nightjars in the UK comprises 10 sites. 9 of these are in southern England and East Anglia; 1 is in Northern England: Thorne and Hatfield Moors SPA which is located approximately 75 km south-south-west of South Moor Farm. **The nightjar in the North York Moors National Park is of course still covered under Annex 1 of the EU Birds Directive within the SPA. It should be remembered that the boundary for the SPA for the National Park from the proposed development site is only 6 kilometres away.***

Conservation Status

The most recent published estimate for the UK breeding population of nightjars in the UK was 4600 (males) in 2004; an increase of over 36% since 1992¹³. The nightjar population within North Yorkshire Moors Important Bird Area (IBA) was estimated to be 207 males in 2004¹⁴.

Unpublished surveys and anecdotal information suggests that the nightjar population in North Yorkshire (including Dalby Forest) has increased significantly in recent years. A press release from the Forestry Commission in 2011¹⁵ stated: "The elusive Nightjar, under threat of extinction just 40 years ago, has once again returned to North Yorkshire's woodlands in record numbers. The nocturnal bird, famed for its churring love-call and aerobatic courtship dance, has made local Forestry Commission woods its key summer stronghold in northern Britain. A survey underway in 3,000-hectare (7,500-acre) Langdale Forest, between Whitby and Pickering, has so far recorded 73 churring males with two more areas to be checked, meaning last summer's record numbers are set to be toppled. Pickering-based Mick Carroll, from the Forest Bird Study Group, now estimates that there could be well over 500 Nightjar pairs in the 22,400-hectare (56,000-acre) public forest estate in North Yorkshire."

In 2009, nightjar was on the Red List of Birds of Conservation Concern¹⁶ due to qualification under three categories:

- 1. Breeding Range Decline. Severe decline in the UK range, of more than 50%, as measured by number of 10 km squares occupied by breeding birds, over the longer-term.*
- 2. SPEC status. Categorised as a Species of European Conservation Concern (SPEC 1, 2 or 3).*
- 3. Breeding Localised. At least 50% of the UK breeding population found in 10 or fewer sites.*

However, by 2014 ¹⁷, nightjar had moved from the Red List to the Amber List thanks to the creation and management of suitable habitat, stimulated by species action plans. Nightjar currently qualifies for Amber List status under one category:

- 1. Breeding Range Decline. Moderate decline in the UK range, of more than 25% but less than 50%, as measured by number of 10 km squares occupied by breeding birds, over the longer-term. **It must be emphasised here that although the nightjar was moved from the Red List species that are globally threatened it moved to the Amber List which is a species with unfavourable conservation status in Europe. Essentially with its breeding range contracting in Europe and the UK it is still of great conservation concern.***

At a European level, nightjar is listed as ‘SPEC 2’¹⁸, i.e. a species with an unfavourable conservation status in Europe (population threatened, declining, depleted from historical levels or found only in a few locations) and is concentrated in Europe (i.e. more than 50% of the global population occurs in Europe).

General Ecology

The legal and conservation status and general ecology of the nightjar appeared to be completed accurately and thoroughly.

Background Information on the Effects of Disturbance

Whilst there is plentiful evidence of adverse effects on the numbers of breeding nightjars as a result of direct human disturbance from walkers and dogs; we have found no published information regarding the effects of aircraft on nightjar.

When threatened at roost, adults rely on crypsis²⁸, adopting ‘cigar-posture’ with head moved forward and down with eyes closed to a slit. In this position, the bird remains motionless and usually allows approach to within a few metres (circa 5 metres) before finally flying up suddenly and giving alarm call¹⁹.

Given the nightjar’s reliance on crypsis and its nocturnal behaviour, it is expected that this species will have relatively low levels of susceptibility to aerial predators during daylight hours and therefore aerial predators (and by inference, aircraft) are not likely to elicit regular ‘active’ predation-response effects (as defined by Ruddock and Whitfield³). It is likely that nightjars will tend to be largely tolerant of potential

sources of disturbance during daylight hours unless the birds are approached to within a few metres (circa 5 metres). Nightjars may be less tolerant of airborne disturbance at night (it is understood that no nocturnal flights will be undertaken at this site). This appears to be speculation and is inferring the noise, sight and location of any aircraft may not disturb the nightjar. It was clearly stated that the literature research found no published information about the effects of aircraft on nightjar and so anything else is conjecture.

For nightjar, Currie & Elliot²⁹ proposed safe (i.e. non-disturbing) working distances of 50 – 250m for forestry workers.

*Ruddock and Whitfield³ state that because breeding nightjars rely on their cryptic plumage to escape detection, estimates of static disturbance distances should be viewed with some scepticism because avoiding any movement is probably part of the suite of behaviours nightjars use to escape detection. This trait is also likely to lead to low active disturbance distances, with birds only flushing from the nest when an approaching potential predator is close. Surveys revealed that nightjars were flushed from nests only at distances of <10 m during incubation and 50 – 100m during chick rearing. These values were lower than those suggested by Currie & Elliott²⁹ (i.e. 50 – 250m). Although difficult for an observer to detect, however, passive disturbance is likely to occur at greater distances than could be revealed by the expert survey. Ruddock and Whitfield³ suggest that detrimental effects of disturbance may occur at greater distances than implied by upper limits of active disturbance responses to an approaching human. **When a nightjar adopts its posture and relies on its plumage to avoid detection it could be assumed the bird has already been disturbed regardless of distance.***

The published information clearly shows that nightjars are sensitive to daytime disturbance from people and dogs and that nightjars preferentially select undisturbed areas for nesting and day-time resting. However, observations of nightjars hunting over gardens, roads, orchards and even around street-lights at night suggests that they may be more tolerant of human presence whilst airborne at night.

*Lowe *et al*³⁰ examined habitat use and reproductive success over 10 years in a breeding population on 1335 ha of managed land in Nottinghamshire, England. The study site was divided into a heavily disturbed section and a less disturbed section of equal habitat availability, forming a natural long-term experiment. They found that overall nightjar density was significantly lower and there were significantly fewer breeding pairs in the heavily disturbed habitat compared with the less disturbed habitat. However, average breeding success per pair, in terms of eggs and fledglings produced, was not significantly different between the two sections across years. The findings suggest that human recreational disturbance may drastically alter settlement patterns and nest site selection of arriving females in nightjar and may reduce the utility of apparently suitable patches of remnant and created habitat. **It is shown that when nightjars are continually disturbed during breeding the density of pairs is significantly fewer than in undisturbed habitat. This is relevant to this work; the last sentence in particular shows where there is human recreational disturbance (this could include other forms of habitual disturbance) then it can reduce the utility of apparently suitable habitat.***

*English Nature*³¹ compared the breeding success of nightjars on several sites in Dorset with varying levels of public access. Sites with no public access showed significantly higher breeding success than sites with open access. On sites with public access, territory centres and nest sites occurred considerably further away from urban development. In addition, nests that did succeed were located significantly further away from paths. The probability of nest survival was 12%. The key cause of nest loss was predation (60% of all nests failed, 93% due to predation). The evidence from nest remains, post predation, suggested that 63% of failed nests were predated by corvids. The results therefore suggest that predation and disturbance may be linked, the possible mechanism being that birds nesting close to paths are flushed from the nest more often, betraying the nest site to predators. Anecdotal evidence suggests that dogs off leads may be a particular cause for concern. **This was research undertaken by English Nature which echoed the previous work by Lowe and others in Nottinghamshire. Underlining how disturbance leaves the nightjars open to the risk of predation and also interferes with their breeding densities and choice of site.**

It is fair to say that there appears to be no research having been undertaken with regard to nightjars being disturbed by aircraft and that was stated at the outset of this section by the author of the report under review. Such is the nature of this species of bird that it would be extremely difficult to research whether or not an aircraft would disturb this creature and that applies not only around the immediate proposed site of the airfield but also along the flight path of any aircraft at varying heights. This section has shown that this bird is of great conservation concern in Britain and Europe and is rightly protected.

Goshawk Accipiter gentilis

Legal Status

Goshawk is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) which means that it receives special protection which makes it an offence to intentionally or recklessly disturb this species while building a nest or in, on or near a nest containing eggs or young; or to disturb dependent young of this species. This protection is additional to the general protection afforded to all wild birds under the Act as described above for nightjar. The additional protection measures given to the goshawk in Britain give this species the highest level of legal protection under UK law. Unfortunately, this bird still suffers from persecution within the North York Moors National Park and is shot, trapped, poisoned and disturbed during breeding to such a degree the attempt fails (pers. obs.).

Conservation Status

*Goshawk is on the Green List of Birds of Conservation Concern (BoCC) as the species meets none of the criteria for inclusion on the Red or Amber lists. The British breeding population is estimated to be approximately 400 pairs³² although there is anecdotal evidence that the population may now be higher than 400 pairs. The population in the North York Moors area is not known. **The goshawk is a rare species within the UK and its population numbers equate with the Golden Eagle *Aquila chrysaetos* another extremely scarce species. Although it is part***

of the Green List of Bird of Conservation Concern it is still considered very rare in the UK, populations are usually stable on this list (RSPB Birds and Wildlife 2007).

General Ecology

Goshawk is a large raptor which, in Britain, breeds primarily in large areas of plantation woodland. Goshawk is active during daylight hours and hunts for its prey items (largely pigeons, corvids, thrushes and starlings although many other species are taken) by rapid flight, often through woodland.

Those goshawks which breed in Britain remain resident year-round. Populations breeding in northern Europe are partially migratory, and some individuals may reach Britain from Scandinavia.

Goshawks defend only the nesting territory and hunt within large overlapping home ranges. Home range sizes and nest densities vary with the availability of suitable prey and woodland. In lowland Britain, the distance between adjacent nests in woodland blocks varied from 1–3.7 km (Anon., 1989).

Nest sites are usually placed in areas with a high density of mature trees and well developed canopy cover, surrounded by relatively open woodland³³.

Background Information on the Effects of Disturbance

Ruddock and Whitfield³ state that, although apparently highly dependent on extensive tracts of native forests in North America, goshawks in Europe are highly adaptable to human-altered landscapes and in the absence of illegal killing and other forms of persecution are tolerant of intense human activities in some areas, including occupying urban habitats with relatively successful productivity³⁴. Goshawks in Britain generally avoid housing and public roads at distances greater than 200m but goshawk colonisation of large cities elsewhere in Europe is a demonstration that the presence of humans per se does not prevent successful breeding³.

Urban-breeding goshawks are remarkably tolerant of human and the flushing distance for perched hawks is typically as low as 10 – 20 metres ^{3 34}.

Brooding females in urban territories may not flush from the nest even when the nest tree is struck with a stick^{3 34}. Rutz et al³⁴ suggested that tolerance shown by urban pairs was unlikely to be a regular occurrence in rural pairs although it had been recorded, albeit infrequently³. For goshawk, Currie & Elliot²⁹ proposed safe (i.e. non-disturbing) working distances of 250 – 400m for forestry workers.

It is quite apparent from the bird assessment that for some reason there is almost four times more information on the nightjar than the goshawk. The section of effects of disturbance on nightjar is quite extensive and comprehensive but on the goshawk, appears to be quite limited. It almost entirely shows that the species can habituate to man's activities. There is much information available from scientific research on this species. However, it is also apparent that there is no information about disturbance of goshawks from aircraft.

From experience the goshawk in Britain is a species that is highly secretive in its natural environment and will avoid human contact at all times. It was stressed in Ruddock and Whitfield (2007) that European goshawks apparently have adapted better than North American birds to human alterations of ancestral forest habitats where some have moved into cities. But it appears that the avoidance of humans visiting nests appears to be stronger in Europe than North America, where researchers routinely wear protective clothing because of hawk attacks. (Speiser & Bosakowski 1991, Rutz et al. 2006). The reason for the difference may lie in greater persecution in Europe than North America and the resulting greater selection in rural pairs to avoid close contact with humans.

Review of 4. Survey Results

4. Survey Results

4.1 Desk Study

4.1.1 Protected Sites

North York Moors Special Protection Area (SPA) lies approximately 6.02 km to the north-west of the site. The SPA Qualifying Features are: merlin Falco columbarius (breeding); and European golden plover Pluvialis apricaria (breeding).

Troutdale and Rosekirk Dale Fens Site of Special Scientific interest (SSSI) lies approximately 2.00 km south of the site. The SSSI citation describes the site's value as fen habitat.

Bride Stones SSSI lies approximately 2.76 km west of the site. The SSSI citation describes the site's value in geological terms and for the habitats present.

The site is located within North Yorkshire Moors Important Bird Area³⁵ (IBA). IBA is a nonstatutory designation for areas of key importance for particular species. North Yorkshire Moors IBA is designated as an IBA due to its populations of nightjar Caprimulgus europaeus (population estimate 207 males in 2004), merlin Falco columbarius (population estimate 40 breeding pairs in 1996) and European golden plover Pluvialis apricaria (population estimate 141 breeding pairs in 2000)³⁵.

As outlined above the proposed development site is extremely close to important conservation sites for reasons other than nightjar and goshawk. Only several kilometres away are areas of UK and European conservation concern, listed as such for species of birds, habitat and geological features.

4.1.2 Bird Species Records

Information provided by NEYEDC is reproduced at Appendix 2. NEYEDC provided one record of nightjar, dated 30th June 1992, at grid reference SE910907 which is approximately 300 metres north of the northern end of the proposed runway. NEYEDC provided no records of goshawk from the search area. It is worthy of note that the record of the nightjar was quite possibly a breeding bird because at this time they would have eggs or young (pers. obs.) The other records all within a 1 km buffer of the proposed site are of limited value some going back

to 1967. There are however, two records of Willow Tit *Poecile montanus* in the area in 2014 a species on the Red List and one that is globally threatened (RSPB Birds and Wildlife 2007).

Despite several attempts to contact the Forestry Commission (Pickering office) to obtain information regarding nightjar and goshawk in Langdale Forest and the wider area, no information had been received at the time of writing. It is understood that the Forestry Commission did responded to the authors request (pers. com. F.C.).

4.1 Field Survey

4.1.1 Nightjar

The field survey was undertaken at a time of year when nightjars have migrated to Africa and therefore no evidence of nightjar was observed during the field survey.

The areas within the survey area have been assessed in terms of their suitability to support nightjars.

Areas assessed as containing habitat potentially capable of supporting breeding nightjar are shaded orange in Appendix 3. These areas comprise former coniferous plantation which has been clear-felled no more than 20 years ago and where the canopy of planted or naturally colonising trees has not yet become too dense to potentially support breeding nightjars.

Areas assessed as unsuitable nesting habitat for nightjar but potentially suitable for foraging are shaded bright green in Appendix 3. These areas comprise habitats such as forestry rides, forestry edges, deciduous or mixed woodland, riparian habitats and areas of young coniferous plantation.

As shown in Appendix 3, within 500 metres of the proposed sub-500ft flight path, the following areas of potentially suitable nightjar habitat have been identified: • 4 patches of potentially suitable breeding habitat covering approximately 11.5ha; 2.7ha; 2.5ha; and 0.6ha respectively, 17.3 hectares in total.

Potentially suitable foraging habitat covering approximately 22.3 hectares in total.

The previous record of nightjar supplied by NEYEDC relates to the orange-shaded patch of potentially suitable breeding habitat approximately 175 metres north of the northern end of the proposed runway.

The four identified patches of potentially suitable breeding habitat within 500m of the proposed sub-500ft flight path could potentially each support breeding nightjars. Given the known variability in the breeding density of this species; in the absence of surveys during the breeding season, it is not possible to determine how many pairs of breeding nightjars may occur in these areas.

Nightjars breeding within the four identified patches of potentially suitable breeding habitat, plus nightjars breeding elsewhere within 2-3km radius or more, may forage within the identified 22.3ha of potentially suitable foraging habitat identified. Habitats elsewhere within 500m of the proposed sub-500ft flight path have been assessed as

largely unsuitable for nightjar, although these areas could be used on an occasional basis, e.g. for nocturnal passage/commuting flights.

N.B. There appears to be some confusion in the report about the actual size of the area that was surveyed. In the methodology section the author talks about all land within a 1km radius of the sub-500ft-flight path was assessed and walked via the majority of paths, tracks and roads within the survey area.

He goes on to say ‘the majority of land within a 1km radius of the sub-500ft-flight path shown in Appendix 3 is designated as open access land’. However, examination of the photographs shown in Appendix 3 and 4 show only a 500-metre buffer zone around the flight path. It is possible that all land within a 1km buffer was walked and surveyed but only the area within 500m buffer shown for habitat purposes. (This obviously applies to the data recorded during the goshawk field survey).

Without a full field survey during the breeding season it would be difficult to say what the actual potential is for breeding and foraging nightjar within the 500-metre buffer zone around sub-500ft-flight path.

The results in Appendix 3 do give a good indication of the potential habitat for breeding and foraging for nightjars. That said, any aircraft flying outside the 500m buffer zone must also be considered as potential disturbance when taking into account its height and latitudinal distance from any nightjars in the area.

4.1.2 Goshawk

During the field survey, no evidence of goshawk was observed. Occasional evidence of a raptor-kill was found (i.e. remains of plucked pigeons), but these could not conclusively be attributed to goshawk.

The areas within the survey area have been assessed in terms of their suitability to support goshawk.

Areas assessed as containing habitat potentially capable of supporting breeding goshawk are shaded orange in Appendix 4. These areas comprise mature woodland. Some parts of the study area contain habitats highly suitable for goshawk, i.e. dense mature coniferous plantation with very low levels of human disturbance surrounded by extensive tracts of woodland including some areas with less-dense tree cover but Appendix 4 shows all areas assessed as potentially suitable nesting habitat.

Whilst goshawks generally hunt in woodland in Britain, this species can hunt over open-ground also. Whilst the large expanse of grassland near the runway is considered to provide suboptimal hunting ground for goshawk, it is possible that this fast-moving and relatively far-ranging species could hunt anywhere within the study area.

As shown in Appendix 4, within 500 metres of the proposed sub-500ft flight path, the following areas of potentially suitable goshawk nesting habitat have been identified (the entire area is considered to provide potentially suitable, although not necessarily

optimal hunting habitat for goshawk): • Potentially suitable nesting habitat covering approximately 165 hectares.

NEYEDC provided no previous records of goshawk within the search area.

Given the known variability in the breeding density of this species; in the absence of surveys during the breeding season, it is not possible to determine how many pairs of breeding goshawk may occur in these areas. It is possible that up to 4 breeding pairs of goshawk could occur within 500 metres of the proposed sub-500ft flight path, although the actual number, if present, may be much less than 4 pairs.

*Goshawk breeding within the identified suitable habitat areas may hunt throughout the entire area. **No goshawks were seen during the survey and no records of breeding were found.** The field survey carried out revealed that virtually the whole of the 500-metre buffer zone around the sub-500ft-flight path is suitable foraging habitat for goshawk. The Bird Assessment states that the area has the potential to hold 4 sites for goshawk.*

N.B. As stated for nightjar, it would appear that twice the area was actually walked during the survey i.e. 1km radius of the flight path; but only a 500m buffer zone referred to in the report. Also, consideration must be given to an aircraft flying immediately outside the 500m buffer zone with regard to its height and latitudinal distance from any birds at this location.

Review of 5. Conclusions

5 Conclusions

5.1 Nightjar

Nightjar is known to occur within the vicinity of the proposed runway with a previous record dated 1992 from approximately 300 metres north of the northern end of the proposed runway. This study has identified four patches of potentially suitable breeding habitat covering a total of approximately 17.3 hectares within 500m of the proposed sub-500ft flight path and a further approximately 22.3 hectares of potentially suitable foraging habitat within the same area.

There is no known published research on the effects of aircraft on nightjar although there is plentiful evidence of the confirmed adverse effects of disturbance from humans and dogs on nightjar in England.

*The ecology of nightjar, including its nocturnal behaviour and its use of crypsis to avoid detection, suggests that this species may be relatively tolerant of daytime flights of light aircraft. **This is speculation as there is no evidence to support this.***

There is evidence of other bird species becoming habituated to disturbance from aircraft. Birds appear to become better habituated to aircraft flight activity where the flights are 'regular' in terms of their occurrence, type of aircraft and flight path. The proposed runway is anticipated to involve a fairly regular pattern of flight activity, i.e. involving flights of the same/similar type of aircraft along a regular flight path and

without the erratic flight activity which would be associated with a pilot training airfield.

As mitigation for nightjar, it may be appropriate to avoid flight activity during the periods 30 minutes after dawn and 30 minutes before sunrise during the main nightjar breeding period of May to August inclusive. Additionally, flight activity in the vicinity of suitable breeding habitat (clear-fell) should be limited to direct 'in-and-out' flights rather than circling and/or erratic flight activity at low altitude. It is not surprising that there is a record of a nightjar having been seen in this area because the assessment has suggested that the habitat is in fact suitable for breeding and foraging for this species. Neither is it surprising that no literature could be found on the effects of aircraft on nightjar because this would be an extremely difficult subject to research given the ecology, biology and behaviour of this bird.

To suggest that because the nightjar is largely nocturnal in behaviour and uses crypsis to hide during daylight and therefore may be relatively tolerant of daytime flights from light aircraft is conjecture. Breeding birds still have to remain at the nest sites during the day and so are open to the effects of disturbance and predation. This assessment and review has shown how different birds of the same species can react differently and to say this species may be relatively tolerant is speculation.

Although there is evidence of other bird species becoming habituated to disturbances from aircraft and they may well become better habituated if the flights are of a regular occurrence, type and from similar aircraft etc. once again it would appear to be supposition as there is no evidence to show nightjar will not be affected.

With regard to the mitigation put forward suggesting avoiding flight activity during the periods 30 minutes after dawn and 30 minutes before sunrise. This equates to an hour about sunrise or dawn therefore if this is correct there is no consideration of the birds' activity at sunset or dusk.

When undertaking bird surveys and recording numbers for populations then it is not unusual to have to carry out surveys at optimal times of activity to ensure the most accurate records are obtained. However, to assume that this is best practice to prevent ongoing potentially disruptive activities is wrong because nature does not work like that. Things happen, predators interfere with activities as does the weather and so it is dangerous to assume all will be well at those times to be adhered to.

With regard to the last sentence where it is suggested that flight activity in the vicinity of suitable nesting habitat should be limited to direct in and out flights rather than circling and or erratic flight activity at low altitude, this could be potentially implying anything other than a direct flight may disturb the birds.

5.2 Goshawk

Goshawk could to breed within the vicinity of the proposed runway although NEYEDC did not provide any previous records from the search area. This study has

identified potentially suitable nesting habitat totalling approximately 165 hectares within 500m of the proposed sub-500ft flight path. It is possible that up to 4 breeding pairs of goshawk could occur within 500 metres of the proposed sub-500ft flight path, although the actual number, if present, may be much less than 4 pairs.

There is no known published research on the effects of aircraft on goshawk although there is evidence that this species is highly tolerant of anthropogenic disturbance, particularly in continental Europe.

There is evidence of other bird species becoming habituated to disturbance from aircraft. Birds appear to become better habituated to aircraft flight activity where the flights are 'regular' in terms of their occurrence, type of aircraft and flight path. The proposed runway is anticipated to involve a fairly regular pattern of flight activity, i.e. involving flights of the same/similar type of aircraft along a regular flight path and without the erratic flight activity which would be associated with a pilot training airfield.

*As a best practice measure in order to minimise the potential for disturbance of goshawk, the runway operator liaise with local Forestry Commission ornithologists on a regular basis so that pilots can aim to avoid flying close to any known goshawk nest sites, although it is important that details of goshawk nest sites remain confidential due to the threat of egg-collectors. Additionally, flight activity in the vicinity of suitable nesting habitat (mature dense woodland) should be limited to direct 'in-and-out' flights rather than circling and/or erratic flight activity at low altitude. In the conclusions section for goshawk, it appears the author of the **Bird Assessment** report is saying that goshawk could breed within the vicinity of the proposed runway although the data search did not reveal any records for the species in the area.*

If the figures are accurate the study has identified 165 hectares of potentially suitable habitat, then it is possible there could be that number of pairs nesting but it is equally possible there are not that many or indeed none at all. If the birds are not nesting in the area it could be for a variety of reasons, ranging from interference from other species, lack of suitable nest trees or density of woodland, also potential disturbance from humans (*pers. obs.*) including disturbance from aircraft already in that area.

Evidence has been shown that the goshawk in Europe can become tolerant of humans and their activities. But we have also seen evidence that birds of the same species when persecuted behave differently to those that are not and consequently are less tolerant of humans. From experience it can be said that the goshawk in the UK has been highly persecuted even after being brought back from extinction. They do not trust and are fearful of mankind and react accordingly. (*pers. obs.*).

To suggest that flights from aircraft within the vicinity of nesting goshawks will not disturb them and perhaps the birds may become habituated is pure conjecture. Anyone that has studied and observed this species of bird for many years will know how they react and behave to disturbance. To suggest the birds would become accustomed to aircraft if the flights are of a regular

occurrence, type and from similar aircraft etc. is supposition. To suggest that the same birds are going to continually nest in the same nest sites year after year again is supposition. The partners in a breeding pair can and do change for a variety of reasons. When a different bird comes into an established site there is nothing to suggest it will behave exactly like its predecessor (*pers. obs.*).

The assessment report showed that no research has been undertaken with regard to the effects of aircraft on this species. Again, this is not surprising given that this species is essentially a forest dwelling raptor and has evolved in the wilder more remote places usually away from humans. It is obvious this creature can survive quite well on its' own until it comes into contact with man. To undertake research of this nature would be extremely difficult and very time consuming and even then, not conclusive. As stated individual birds of this species can behave very differently when disturbed from flying silently away to alarm calling and some almost attacking an intruder (*pers. obs.*).

With regard to a 'best practice measure' to minimise disturbance to goshawk from aircraft by the runway operator liaising with a Forestry Commission ornithologist so that pilots can be aware of known nest sites and avoid them would be a very difficult thing to enforce. The locations of sites are constantly changing in response to forestry operations and changing habitats.

Most of the bird assessment is based on the area immediately around the proposed development. It is worthy of note that flight paths at all altitudes over forested areas must be considered as they can seriously affect displaying birds, those defending territories and those breeding. In addition, the flights could potentially interfere with and disturb prey species of the goshawk.

In response to the last sentence where it is suggested that flight activity in the vicinity of suitable nesting habitat should be limited to direct in and out flights rather than circling and or erratic flight activity at low altitude once again is potentially implying anything other than a direct flight may disturb the birds. This shows a lack of understanding of the breeding behaviour and biology of these birds and is conjecture.

Although What the author did realise however, is that it is important that site details should be kept confidential in case of egg collectors, another difficult task to enforce. There are indeed other serious threats to this species such as major disturbance in and out of the breeding season, shooting, poisoning, trapping and theft of birds.

4. DISCUSSION

The report for the Bird Assessment was written and structured in the typical manner for a scientific research paper, survey, assessment, etc. The presentation was very good and professional. However, closer examination revealed that it did not flow in the typical manner. For instance, the results would normally be given in their own section but were found in the sections

for Assessment Methodology, Background Ecology and Survey Results. At times this made it difficult for the reader to follow. It also appeared that some work was not referenced including that sourced during the literature review. It is common practice when writing a scientific report to reference each piece of information gathered. The purpose is to prove its origin and authenticity.

The Desk Study involved a Data Search for all records of birds within a 1km radius of the sub-500ft-flight path of the proposed development. The search revealed one sighting of a nightjar during the breeding season in 1992 a bird that was about 300 metres north of the northern end of the runway of the proposed development. There is every possibility this bird was breeding at this time of year. No other records were found and there were no records of goshawk. For rarer birds of prey like goshawk most records are not routinely supplied to record centres for various reasons including the threat of illegal egg-collecting and other forms of persecution. This part of the data search was shown to be of limited value.

The Desk Study also involved a search for protected nature conservation sites and revealed how important the surrounding area of the proposed development is for wildlife. To the north-west is the North York Moors Special Protection Area (SPA). The qualifying features of this are important breeding populations of Merlin and Golden Plover, the SPA covers an extremely large area of conservation concern. The boundary for the SPA lies only 6kms to the north-west of the proposed development.

Approximately 2km to the south of the proposed site is the Troutsdale and Rosekirk Dale Fens Site of Special Scientific interest (SSSI). The SSSI citation describes the site's value as fen habitat.

To the west of the site approximately 2.76 km away is the Bride Stones SSSI, the citation describes the site's value in geological terms and for the habitats present.

The proposed development site is also within the North York Moors Important Bird Area (IBA). An IBA is a non-statutory designation for areas of key importance for particular species. The North York Moors IBA is designated as such due to its populations of nightjar, (population estimate 207 males in 2004), merlin (population estimate 40 breeding pairs in 1996) and European golden plover (population estimate 141 breeding pairs in 2000).

The Literature Review was extensive and included Background Ecology and avian response to aircraft. The results of the search were mainly given in this section and discussed at the same time.

Most of the literature cited showed that birds were indeed disturbed by aircraft. It began with how birds had evolved a predator-evasion response to aerial predators such as birds of prey, and how they can mistakenly respond to the sudden approach of something which is essentially harmless. Ruddock and Whitfield (2007) defined two types of disturbance to birds but this was ground-based research and therefore not relevant. Accounts were given of

different types of disturbance, in different situations and how birds responded. Most of this was largely irrelevant to the proposed development under review.

It also revealed that not all birds respond to a given stimuli in the same way, different species behave in different ways some will fly off and some will try to hide. It stated further that there is some variation with individuals of the same species, this is also confirmed from experience (*pers. obs.*). Ruddock & Whitfield (2007). This is extremely relevant to this situation and makes it difficult to generalise and suggest that birds will not be disturbed.

The report stated that repeated predator-evasion responses can adversely affect birds by increasing their energy expenditure, namely using up reserves when flying off due to disturbance. This can reduce time for other activities such as feeding, defending a territory, raising young and being displaced from favourable habitat. Unfortunately, there appeared to be no reference to this but this is accurate and again very relevant (*pers. obs.*).

Research by Scottish Natural Heritage SNH (2015) demonstrated how much disturbance and disruption aircraft can cause to birds of prey. Their behaviour was recorded when watching aircraft and it showed the disturbance effects on breeding birds. Young in nests were 'flattening or clamping down' and adults standing up when on eggs or chicks. Birds flushed from nests can leave young or eggs for extended periods and expose them to the risk of chilling or predation, they have been known to dislodge young or eggs when flushed and this can lead to breeding failures. Where young are panicked out of the nest it can lead to premature fledging which risks injury and possibly abandonment by the parents.

In addition, and extremely relevant to this situation it was shown that territorial adults can show defensive or aggressive reactions to aircraft by treating them as an intruder. This can result in birds circling or mobbing (also alarm calling) or 'shadowing' (following the aircraft's movements by flying alongside or above) the aircraft. In some cases birds may attack the aircraft (e.g. Gregory, 1985). This often leads to the injury or death of the bird; however, aircraft have also been damaged or even brought down in such incidents. Video evidence of drones in the USA has shown raptors will attack the drone as an intruder if it used irresponsibly close to a nest.

Further evidence from the SNH research suggested birds may habituate over time to aircraft activity but where it was sporadic or irregular there was a greater risk of disturbance. It confirmed individual variation between birds where some would tolerate more disturbance than others. Other research related to birds becoming habituated to aircraft but the species were wildfowl and waders which are totally different to the two-species concerned in this case.

Altitude was discussed which showed that the lower the aircraft was to the ground the greater the disturbance, something that was possibly quite predictable. Some research on safe working distances for disturbance by

helicopters and aircraft was really aimed for temporary work only and not a full time working airfield and was not relevant here.

Aerial surveys for raptors in North America used methods to minimise the risk of disturbing birds. These included a slow and obvious approach from as far out as possible and minimising the time spent close to a nest. Although it greatly reduced flushing or defence/aggressive responses, it did not eliminate them altogether.

For the nightjar, its legal and conservation status and general ecology were compiled accurately and thoroughly. No information was found on the effects of aircraft on nightjar. There was however, much evidence on the disturbance of nightjar mainly by walkers and dogs. Research showed that breeding productivity was significantly reduced in areas where there was greater disturbance.

The report stated that given the nightjar's reliance on crypsis and its nocturnal behaviour, it is expected that this species will have relatively low levels of susceptibility to aerial predators during daylight hours and therefore aerial predators (and by inference, aircraft) are not likely to elicit regular 'active' predation-response effects (as defined by Ruddock and Whitfield). This appears to be speculation; it does not consider the sight, sound or location of any aircraft and the species as such could be vulnerable to displacement especially in daytime to breeding individuals.

The field survey for nightjar was carried out in October when the species would have migrated back to Africa and no evidence of the bird was found. Potential suitable habitat for breeding and foraging was found in the survey area. An inference that other bird species can become habituated to aircraft where flights are 'regular' in terms of occurrence, type of aircraft and flight path does not prove that nightjars will become habituated.

In considering mitigation for nightjar and allowing the development of the airfield the author suggests *"it may be appropriate to avoid flight activity during the periods 30 minutes after dawn and 30 minutes before sunrise during the main nightjar breeding period of May to August inclusive. What has been written here actually refers to an hour around sunrise or dawn therefore if this is correct there is no consideration of the birds' activity at sunset or dusk. It is possible that the author meant restrict flights to 30 minutes after dawn to 30 minutes before sunset which would overlap the period when nocturnal birds like nightjars may not be as active. In other words, there would be no flights when the birds were foraging during the night but they would be allowed during the daylight when adult birds would be covering eggs and young exposing them to the sight and sound of the aircraft. If birds were disturbed and nests were left it would expose the eggs and young to the risk of chilling and predation. This mitigation is conjecture, and there is no evidence to show that this would not affect the birds.*

The report goes on to suggest *"Additionally, flight activity in the vicinity of suitable breeding habitat (clear-fell) should be limited to direct 'in-and-out' flights rather than*

circling and/or erratic flight activity at low altitude". Although this is proposition, it could imply that circling and/or erratic flight activity at low altitude would indeed disturb nightjar.

The legal and conservation status of the goshawk was concise and well documented. It is worthy of note that the population in the UK for the goshawk is 280-430 pairs whilst the Golden Eagle *Aquila chrysaetus* is 440 pairs, both are considered very scarce (RSPB Birds and Wildlife 2007).

Information in the bird assessment was given on how goshawks in parts of Europe had become tolerant of humans and breed relatively successfully in urban habitats. However, Ruddock and Whitfield (2007) revealed that while European goshawks have apparently adapted better than North American birds to human alterations of ancestral forest habitats, even to the point of moving into some cities, avoidance of humans visiting the nest seems to be stronger in Europe than in North America, where researchers visiting goshawk nests routinely wear protective clothing because of attacks by hawks (Speiser & Bosakowski 1991, Rutz et al. 2006). The difference evidently may lie in greater persecution in Europe than in North America, and greater selection in rural pairs to avoid close contact with humans.

Other information was discussed but all related to ground disturbance including Currie and Elliot (1997) which proposed safe working distances of 25-400m for forestry workers, as this relates to ground disturbance it is not relevant here.

During the field survey for goshawk no evidence was found of the birds. A habitat assessment was made of the suitability of foraging and breeding areas and suggested that within 500m of the proposed sub-500ft-flight path it was possible for up to 4 breeding pairs to occur. There may well be 4 breeding pairs in this area and conversely there may be none at all, this is pure assumption. Goshawks may not nest in the area for a variety of reasons including unsuitable habitat, density of trees, lack of nest trees (*pers. obs.*) and disturbance from the aircraft activity in the area.

It was revealed that no research had been undertaken with regard to the effects of aircraft on goshawk. This is hardly surprising given that this species is essentially a forest dwelling raptor and to undertake research of this nature would be very difficult and extremely time consuming and even then, not conclusive. As previously stated individual birds of this species can behave very differently, it cannot be assumed the same birds are coming back year after year to breed. (*pers. obs.*).

A 'best practice measure' was proposed to minimise potential disturbance to goshawk from aircraft, this could be achieved by the runway operator liaising with a Forestry Commission ornithologist on a regular basis so that pilots can aim to avoid known nest sites. This obviously involves imparting confidential

and sensitive information to parties hoping it would be treated as such. Once armed with the information it would be hoped the pilots could avoid the sites.

This is conjecture, it seems quite reasonable to suggest this would raise major concerns especially with the obvious matter of confidential information being leaked to the detriment of the birds. This shows a lack of understanding of the breeding behaviour and biology of these birds and the necessity to ensure they are protected at all times. The report states it would be important for site details to be kept confidential in case of egg collectors, there are indeed other serious threats to this species such as major disturbance in and out of the breeding season, shooting, poisoning, trapping and theft of birds. Attempting to ensure that only the right people held confidential information about sites would be very difficult to achieve in practice.

Goshawks are a protected species and because they are highly sensitive and susceptible to disturbance and persecution the locations of sites should remain confidential. In addition, site locations are constantly changing in response to forestry operations and changing habitats. Most of the bird assessment report has been based on the area immediately around the proposed development. It should be mentioned that flight paths at all altitudes over forested areas must also be considered as they could seriously affect and interfere with displaying birds, those defending territories and those breeding.

To mitigate for potential disturbance to goshawk the report states that *“flight activity in the vicinity of suitable nesting habitat (mature dense woodland) should be limited to direct in and out flights rather than circling and/or erratic flight activity at low altitude”* as stated with the nightjar, this seems to suggest that circling and/or erratic flights at low altitudes and over mature stands of timber may disturb breeding birds. It is worthy of note that the forests of the North York Moors National Park contain vast areas of mature timber most of which is not inhabited by goshawks, and this practice could be difficult to achieve if not impossible and to enforce it would be equally as difficult.

It appears from the bird assessment report that the survey and desk top research has proved neither presence nor absence of nightjar or goshawk at the site of the proposed development. In addition, there is no evidence from the literature research that the two species will not be affected by disturbance from aircraft. However, the literature research did reveal how much birds can actually be disturbed and subsequently affected by aircraft.

I have personally worked within the North York Moors National Park for over 22 years studying birds of prey, finding and monitoring their nests and studying their populations. All work is undertaken out in the field on open moorland and within the forests, most of the work is done under special licences granted by Natural England and the British Trust for Ornithology. The main species I have studied are merlin and goshawk, I have researched their breeding ecology, each year finding and monitoring their nests and ringing the young prior to fledging (Appendix 1.)

In my experience to undertake a field survey to ascertain the presence of nightjar and goshawk in a forested area is a very difficult task especially to someone without experience of the birds. I have personally undertaken surveys for nightjar and they need to be carried out certainly when the birds are in this country and at the correct time of the day which is actually during the hours of darkness (Gilbert *et al.*, 1998). It was useful to assess the suitability of the habitat for breeding and foraging but this did not prove presence of the birds.

In respect of goshawk they are an extremely elusive and secretive bird to study. In my experience at the very sight or sound of a human they will fly off as quietly and discreetly as possible, this is why they are rarely seen. Only during the breeding season is it possible to get glimpses of these birds or watch them from a hide.

In my opinion and to someone that has studied goshawks for many years there would be no doubt that light aircraft flying in a forested region would cause the birds severe disturbance. This could be detrimental at all times of year, for instance in late winter and early spring the birds perform display flights to attract a mate or advertise their choice of site for breeding. The birds can display over vast areas and do not stick rigidly over their own territory. I have seen them display a mile or more from their own site when other birds are in the air.

To have an aircraft fly near or through such a display flight would only disturb the birds and disrupt their behaviour and could possibly lead to them losing ownership of their site, and ultimately interfere with the breeding attempt. In addition, any displaced bird may interfere with another breeding attempt elsewhere. The literature research from Scottish Natural Heritage (2015) revealed that territorial adults can show defensive or aggressive reactions to aircraft by treating them as an intruder. This can result in birds circling, mobbing, following aircraft and in some cases attacking them.

Goshawks are a very sensitive species especially to sudden noise or disturbance in the forest and are especially vulnerable during breeding at the nest site because effectively they are tied to the area. Disturbance can lead to the birds leaving eggs or young in the nest for extended periods which may result in them chilling or being predated. As explained previously the report from Scottish Natural Heritage (2015) states young birds can be disturbed to such a degree they can fledge prematurely and risk injury or predation or even abandonment by parents. Effectively this all results in failed breeding attempts and so interferes with the population.

Furthermore, it cannot be assumed that flights from aircraft within the vicinity of nesting goshawks will not disturb them and that the birds may become habituated, there is no evidence to support this. A person with experience of these birds will know how they react and behave to disturbance. When checking nest sites, at times it is possible to know how some individual birds will react and they can be different. Some birds will quietly slip off the nest and

hardly be seen, some will sit tight, others will fly round and call. Only once have I seen a female dive at but fall short of striking my colleague when checking a nest site.

So, although they are the same species they have their own characters and can be very different. An example could be a young inexperienced female with her first brood of young when disturbed and frightened, if her mate was away hunting she may desert the nest in comparison to an experienced 5 or 6-year-old female who has raised several broods of young and is very confident. Therefore, to say the birds could become habituated is speculation.

Finally, on habituation of birds it is virtually assuming the same birds are going to stay in the area or continually use the same nest sites year after year. The partners in a breeding pair can and do change for a variety of reasons. When a different bird comes into an established site there is nothing to suggest it will behave exactly like its predecessor.

It should be mentioned that the forest under discussion is in fact a commercial crop and so is an ever-changing environment. For breeding purposes Nightjars inhabit clear fell and small immature plantations whilst the goshawk more mature parts of the forest. Consequently, at any one time throughout the forest these two stages of growth may be inhabited by these birds. It naturally follows that some parts that are unsuitable for one species may become suitable in the future either as the trees mature or are clear-felled. Therefore, at some time the area around the proposed development should become suitable for both species and subsequently inhabited.

I have an excellent working relationship with Forest Enterprise and they are the people who manage the landscape of the forests. I have indeed found them to be sensitive managers and they do so with sympathy for the needs of the birds and wildlife that they know and respect. If the landscape has to be changed it is done sensitively by the foresters. However, the development of an airfield in a forest is invoking change to the landscape.

An airfield and associated buildings would be a permanent structure whilst the forest around it changes constantly. During the breeding season if birds are disturbed by everyday aircraft activity, then from experience and knowledge of monitoring bird populations the site around would become a second-rate, poor quality habitat. On the face of it the surrounding habitat could be attractive, birds move in attempting to set up site and breed, only to be disturbed. They move out and try to find a safer site. As soon as the area is vacant other birds will move in to make the attempt all over again. The birds that have moved out may well interfere with other breeding attempts in their efforts but more than likely will fail that year, and so it goes on. The site becomes a non-productive area even though it appears they are making breeding attempts and the habitat looks suitable.

For a migratory species like the nightjar to travel to the UK from Africa to breed is a tremendous effort, and to fail in such a short window of opportunity is a waste for that year. With a large species like the goshawk most failed

breeding attempts will not result in a second attempt being made. In both scenarios, the breeding attempts have failed, no young are produced, and populations could fall. Of course, this disturbance could affect other species of wildlife that would normally inhabit the area as well.

The forests within the North York Moors National Park hold important populations of species of birds, some of which are of great conservation concern and as such are protected. Taking into consideration some of their numbers it is a privilege to have them breeding within the area.

One of the species is the Turtle Dove (*Streptopelia turtur*) which is very much a bird in trouble; they are vulnerable to global extinction (IUCN Red List of Endangered Species). They have suffered a 91% UK population decline since 1995 and a 78% decline across Europe since 1980. The species could be extinct in the UK if it doesn't receive help (Operation Turtle Dove 2017). The population for turtle dove is estimated to be 14,000 sites within the UK (RSPB Birds and Wildlife 2007).

The Honey Buzzard *Pernis apivorus* a very rare breeder in the UK has bred within the forests of the North York Moors National Park, this is another long-distance migrant travelling back from Africa each year to breed. The last known figure for this species was between only 33-69 pairs within the UK (RSPB Birds and Wildlife 2007).

Other birds of prey that breed within the national park forests include Sparrowhawk *Accipiter nisus*, Kestrel *Falco tinnunculus* and Common Buzzard *Buteo buteo* which is only making a comeback to the area after an absence of many years.

5. CONCLUSION

The field survey and desk top research that was undertaken failed to show neither presence nor absence of the nightjar or goshawk within the survey area of the proposed development. In addition, no scientific research was found to show the birds were not affected by aircraft.

The literature review from the bird assessment report has shown that birds can be disturbed and disrupted severely by the presence of aircraft activity not only during breeding but in their everyday lives as well. The assessment failed to show that the protected bird species would not be affected not only in the immediate area around the proposed development but also in the adjacent and surrounding areas.

It is quite possible that both species of bird will be present in the area surveyed and this report has shown there are other important bird species that may also be present. There is no evidence to suggest that they will not be disturbed, however this review has shown there is a good chance they will be disturbed.

To mitigate in an attempt to show that birds would not be disturbed when there is no supporting evidence is supposition. If there is any doubt as to whether the proposed development would disturb wildlife in general or protected species of birds, then the doubt should go in favour of the wildlife as according to the Sandford Principle National Parks Authority (2016).

In conclusion, the applicant has failed to show the Planning Authority that protected bird species would not be affected by the proposed development.

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APPENDICES

APPENDIX 1

COPY OF BIRD ASSESSMENT BY QUANTS ENVIRONMENTAL LTD

ATTACHED COPY OF ENGLISH NATURE – BIRDS NETWORK INFORMATION NOTE

GARRY KENNETH MARCHANT BSc (Hons)

Education and Qualifications

Achieved Post Foundation Degree in Applied Ornithology

- Achieved BSc (Hons) Degree in Wildlife and Countryside Conservation
- Subjects studied: bird biology, ethology and avian ecology. Bird population studies, avian monitoring methodologies, field research, statistics, data gathering and handling, agro-ecology, biodiversity, international environmental law.

Research and Studies of Raptors

1995 to date

1995 joined the North York Moors Merlin Study Group and the North York Moors Forest District Bird Study Group. Research includes:

- Nest site selection, breeding success and productivity of the Goshawk in the north of England. (Supported and sponsored by Forest Enterprise and the North York Moors National Park).
- Spatial distribution and monitoring using radio telemetry.
- Breeding biology and behaviour monitored by hide observations and CCTV.
- Participation in the conservation and re-introduction programme of vultures in the Pyrenees and Massif Central in France.
- Conference Speaker on the ecology and breeding biology of the Goshawk - Central Science Laboratory 2004, BTO North East England Regional Conference and BTO Annual Conference 2010.
- Delivered presentations on raptor ecology and biology to local Natural History and Bird Study Groups.
- Qualified as Specific Ringer of Raptors, with radio telemetry, colour ring and trapping endorsements.
- Trained in rock and tree climbing and experienced user of maps, compass and GPS systems.
- Nominated contact with Forest Enterprise to consult and advise on conservation and possible disturbance to breeding Goshawks.
- Experience of working in partnership with various professional organisations including RSPB, Natural England, Forest Enterprise, North York Moors National Park, BTO, Moorland Landowners Association and Gamekeepers Association.

Ornithological Interest/Studies

1963 – 1995

- Compiled and maintained detailed ornithological records of studies.
- Joined and retained membership of Hawk and Owl Trust and RSPB monitoring their research and conservation progress.
- Has studied raptors on a local basis including Sparrowhawks *Accipiter nisus*, Peregrine *Falco peregrinus* and Hen Harrier *Circus cyaneus*.
- Extensive travel in Britain and Europe to observe and study raptors.

Consultancy Work 2003 - 2017

- Has considerable experience in ornithological surveys including Common Bird Census, Breeding Bird Survey, Wetland Survey and Brown & Shepherd Upland Breeding Wader Survey.
- Participated in breeding surveys (BTO) in North York Moors National Park for Hen Harrier, Merlin, Upland Waders, Nightjar *Caprimulgus europaeus*, Woodlark *Lullula aborea* and Long-eared Owl *Asio otus*.
- Has much experience in avian monitoring as part of ecological assessment for proposed windfarm development sites and other engineering projects in Scotland, the Borders, northern and eastern England, Cumbria and Cambridge. Including vantage point survey for flight activity of raptors, wildfowl and other target species.
- Experienced in survey and monitoring for Great Crested Newt, Bats, Otter and Water Vole as part of ecological assessment for proposed developments.
- Skilled in data gathering, handling, computer inputting and report compilation.
- Holds Schedule 1 Disturbance and Ringing licence for all birds of prey and owls in the UK.