**Protected site buffer zone – 300 metre buffer**

A 300 metre buffer zone has been widely adopted in General Licences since spring 2019 as a generic distance within which there is a credible risk of impacts to features of interest on protected sites, as a result of undertaking activities permitted under licences for the lethal control of bird species. Supporting evidence and rationale for settling on that particular distance is explained in this note.

The features of interest considered are all habitats, landforms and species that protected sites were designated for. The term ‘protected sites’ refers to Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites. The buffer zone was applied to SPAs, SACs and Ramsar sites in Defra’s 2019 general licences.

Species most sensitive to licensed activities, in other words, those species that can exhibit impacts at greatest distances, was an important consideration. However, some species most sensitive to visual or audible distance, particularly birds, have additional legal protection from reckless disturbance under section 1 of the Wildlife & Countryside Act 1981 (as amended; the ‘Act’), as Schedule 1 listed species. European Protected Species also have some legal protection relating to disturbance under The Conservation of Habitats and Species Regulations 2017 ‘Habs Regs’ (and additionally under the Act). Since compliance with existing legal protection can be reasonably expected, and since each bird licence clearly state the limits of its derogation, there is not a need to superimpose a buffer zone that expresses maximum disturbance distances of these legally protected species.

The types of activities permitted under licences to control birds is another important consideration. Report noise from a firearm has the furthest reach in causing potential impacts, and associated activities are human presence, companion animals and possibly various audible and visual scaring measures employed in conjunction with licensed actions to help resolve the problem.

Use of gas-cannons, rope-bangers and ‘shooting-to-scare’ (e.g. firing with blank cartridges) are measures that to some degree resemble shooting in terms of impacts, notwithstanding frequency and duration of use.

Although some individuals/ populations of some species may have habituated to shooting noise to some extent, national scale use of a buffer zone, by respecting the ‘precautionary principle’, must be based on non-habituated sensitivity. The issue of impact is explored further.

Legal protection to species is described above; legal protection to designated sites also exists with the ‘Act’ relating to SSSIs, and the ‘Habitats Regulations, relating to SPAs, SACs. It is Government policy to apply the same protection to Ramsar sites as is afforded to SPAs and SACs. With regard to actions that NE permits under licence, it must consider the ‘likely effect’ on SSSIs and the ‘adverse effect on integrity’ on the other types of sites. Species that are interest features of these sites may be aware of licensed activities through sight and sound, but this does not necessarily imply impact. The advice here is based on interpreting impact as something with potential detrimental effect, either acutely e.g. abandonment of an occupied nest, or chronically if sustained, e.g. preventing water birds from utilising an important high tide roost site. Eliciting flight response (in birds) is the benchmark used. Walking away and increased alertness responses are forms of disturbance that will be elicited at, sometimes, considerably greater distances than those expressed in this advice, but those lower levels of disturbance are adjudged to be below the threshold of inducing ‘impact’.

Different species of wading birds and different individuals of those species vary in the distances at which they take flight from humans walking over mudflats. Results (e.g. Smit & Visser, 1993) suggest that some individual birds are relatively tolerant and can more readily habituate to human presence down to 25 metres, but some species are far more shy with Curlew results in the range of 225-550 metres (average 339 m). Research, e.g. on the Humber (Ross & Liley, 2014) indicates that people walking along established paths cause disturbance from less than 100 metres away to a proportion of birds belonging to a species that is generally quite tolerant to human presence. And on the Exe Estuary, Devon (Liley et al, 2011), which experiences high levels of human activity and where some wading birds that reside there presumably show higher levels of habituation, were found to take major flights at median distances as short as 27.5 – 77.5 metres (five species with largest samples).

In the round, 100 – 300 metes is a range that most frequently induce flight responses in the more sensitive bird species that are not also *directly* legally protected from human disturbance. However, human presence alone does not present the greatest risk – firearms report combined with human presence will cause disturbance to birds at greater distances.

Loudness of the bang (dBmax) is one factor explored. Military shooting produced sound levels of 84-100 dB at 5 km away and this continued to cause disturbance effects to waterbirds (Smit & Visser, 1993). Wright, Goodman & Cameron (2010) found that at roughly 70 dB responses in birds were detectable. Wright et al cited Dooling & Popper (2007) suggested chronic effects to noise exposure could exist at levels as low as 55-60 dB. Smit & Visser cited Wintermans (1991) found no obvious visible reactions in birds up to 55 dB. The research cited here relates to sounds at frequencies that both humans and birds can hear.

If an unmoderated 12-gauge shotgun blast is 156-165 dBmax at 0.5 metre (firearms generally 140-175 dBmax), the inverse square law gives a result of 96-105 dB at 500 metres away, roughly equating to a reduction of 6 dB for every doubling of distance (Nikolaos, 2010), but in the countryside, attenuation and noise reduction is likely to occur and reduce noise levels at shorter distances. Fox & Madsen (1997) concluded that, based on studying the effects of hunting disturbance on local waterbird distribution and abundance, disturbance-free refuges are required, based on their review of waterbird disturbance (Madsen & Fox, 1995) and, “Generally, escape flight distances approximately doubled after hunting seasons opened, amongst geese increasing from 150–211 metres to 367–500 metres”.

In summary, impacts on wintering waterbirds that are likely to be already highly habituated to human presence, but where they are not also subject to exposure of firearms use, will result at distances from tens of metres away. More sensitive and less habituated waterbirds can be impacted from human disturbance from a few hundred metres away. Noise from shotguns and activities where quarry birds are being targeted displaces birds a few hundred metres away.

Given the evidence above, a buffer zone within the range of 300 – 500 metres is precautionary. It is reasonable to assume that activities undertaken and permitted by the General Licences are not conducted unremittingly in terms of duration and frequency. It is concluded that birds that are occasionally or periodically disturbed by licensed actions conducted at a *reasonable* distance away are likely to be able to resume their natural behaviour quickly with no lasting impact. The recommendation for this reasonable distance is **300 metres**.