

Appendix 1 – Assessment of potential for impacts as a result of rain radar installation and operation.

Receptor identified within EOWDC Operational phase impact assessment*	Impacts predicted as a result of rain radar installation?
Coastal Processes	No route to impact identified.
Marine Ecology Intertidal Ecology, Sediment and Water Quality	No route to impact identified.
Ornithology	No route to impact identified.
Bats	<p>It has been hypothesized that some operational radar may act as a deterrent to bats (thus potentially reducing likelihood of interactions), with some studies demonstrating a reduction in bat activity in proximity to S-band/L-band (1-4 GHz) or X-band (8-12 GHz) radar stations (Nicholls & Racey 2007, 2009). Another more recent study has been unable to replicate the deterrent effect with X-band radar (Gilmour et al., 2020).</p> <p>To the applicant’s knowledge, at the time of writing, there has been no assessment of a K-band (circa 20 GHz) radar’s effectiveness as a bat deterrent. Furthermore, the applicant is not aware of any studies which have suggested that radar (operating at any frequency) attract bats. Therefore it is considered that, based on the available information, the operation of a K-band radar will not attract bats and may or may not deter them, and therefore no alteration the findings of the original EOWDC assessment in relation to bats is proposed. Impact significance remains negligible.</p>
Marine mammals	No route to impact identified.
Electromagnetic fields	No route to impact identified.
Shipping and Navigation	No route to impact identified due to radar operating frequency out with Marine Frequency Bands.
Aviation	<p>The applicant currently considers there to be no route to impact due to operating frequency of the rain radar. Awaiting confirmation from Ofcom.</p> <p>Ofcom Innovation and Trial licence Application (OfW225) submitted 30h November 2021. As per Ofcom guidance - <i>Technical details will be coordinated with other UK spectrum managers (for example, the Ministry of Defence and the Civil Aviation Authority) who will conduct assessments on the risk of harmful interference to existing services. An Ofcom licence would be issued only after these necessary assessments have been completed.</i></p>

Ministry of Defence (firing range)	As above.
Marine and Maritime archaeology	No route to impact identified.
Seascape, Landscape and Visual	No – installation is not of sufficient size to negatively impact seascape. NB: Proposed radar is approximately 1m in both width and height.
Cultural Heritage	No route to impact identified.
Commercial Fisheries	No route to impact identified.
Salmon and Sea trout	No route to impact identified.
Socioeconomics Recreation and Tourism	No route to impact identified.
In Air Noise	No route to impact identified.
Electromagnetic Interference	The applicant currently considers there to be no route to impact due to operating frequency of the rain radar. Awaiting confirmation from Ofcom. <i>Ofcom Innovation and Trial licence Application (OfW225) submitted 30h November 2021. As per Ofcom guidance - <i>Technical details will be coordinated with other UK spectrum managers (for example, the Ministry of Defence and the Civil Aviation Authority) who will conduct assessments on the risk of harmful interference to existing services. An Ofcom licence would be issued only after these necessary assessments have been completed.</i></i>
Other Marine Users	No route to impact identified. NB: No additional vessels are required for installation / maintenance / removal.

*Receptors which underwent formal assessment in AOWFL (2011) European Offshore Wind Deployment Centre Environmental Statement and AOWFL (2012) European Offshore Wind Deployment Centre Environmental Statement Addendum (SEIS).

Gilmour LRV, Holderied MW, Pickering SPC, Jones G (2020) Comparing acoustic and radar deterrence methods as mitigation measures to reduce human-bat impacts and conservation conflicts. PLoS ONE 15(2): e0228668. <https://doi.org/10.1371/journal.pone.0228668>

Nicholls B, Racey PA (2007) Bats avoid radar installations: Could electromagnetic fields deter bats from colliding with wind turbines? PLoS ONE 2(3): e297. doi: 10.1371/journal.pone.0000297.

Nicholls B, Racey PA (2009) The Aversive Effect of Electromagnetic Radiation on Foraging Bats—A Possible Means of Discouraging Bats from Approaching Wind Turbines. PLoS ONE 4(7): e6246. doi:10.1371/journal.pone.0006246