

Norfolk Vanguard Offshore Wind Farm

The Applicant

Responses to First

Written Questions

Appendix 5.1 - Comparison of MarLIN
and Norfolk Vanguard sensitivity
definitions for benthic receptors
(Q5.21)



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1 COMPARISON OF MARLIN AND NORFOLK VANGUARD SENSITIVITY DEFINITIONS FOR BENTHIC RECEPTORS

1. This document supports the Applicant’s response to Q5.21 of the First Written Questions by providing a comparison of the Norfolk Vanguard benthic sensitivity definitions (provided in Table 10.3 of Environmental Statement (ES) Chapter 10 Benthic and Intertidal Ecology) with the Marine Life Information Network (MarLIN) Marine Evidence Based Sensitivity Assessment¹ (MARESA) definitions.
2. MarLIN defines sensitivity as “*the intolerance of a species or habitat to damage from an external factor and the time taken for its subsequent recovery*” and uses the following categories for Tolerance and Recovery.

Table 1 MarLIN Tolerance/Resistance Definitions

Tolerance/Resistance	Description
None	Key functional, structural, characterizing species severely decline and/or physicochemical parameters are also affected e.g. removal of habitats causing a change in habitats type. A severe decline/reduction relates to the loss of 75% of the extent, density or abundance of the selected species or habitat component e.g. loss of 75% substratum (where this can be sensibly applied).
Low	Significant mortality of key and characterizing species with some effects on the physicochemical character of habitat. A significant decline/reduction relates to the loss of 25-75% of the extent, density, or abundance of the selected species or habitat component e.g. loss of 25-75% of the substratum.
Medium	Some mortality of species (can be significant where these are not keystone structural/functional and characterizing species) without change to habitats relates to the loss <25% of the species or habitat component.
High	No significant effects on the physicochemical character of habitat and no effect on population viability of key/characterizing species but may affect feeding, respiration and reproduction rates.

Table 2 MarLIN Recovery/Resilience Definitions

Recovery/Resilience	Description
Very Low	Negligible or prolonged recovery possible; at least 25 years to recover structure and function
Low	Full recovery within 10-25 years
Medium	Full recovery within 2-10 years

¹ https://www.marlin.ac.uk/sensitivity/sensitivity_rationale

Recovery/Resilience	Description
High	Full recovery within 2 years

3. MarLIN uses the following matrix to determine the overall sensitivity of a benthic species or habitat.

Table 3 MarLIN Sensitivity Definition for Benthic Receptors

		Recovery/Resilience			
		None	Low	Medium	High
Tolerance/Resistance	Very low	high	high	medium	low
	Low	high	high	medium	low
	Medium	medium	medium	medium	low
	High	medium	low	low	Not sensitive

4. Taking into account the MarLIN definitions of tolerance and recovery, the sensitivity definitions outlined in Table 4 can be derived. Table 4 also provides a comparison of the sensitivity definitions provided in the Norfolk Vanguard ES Chapter 10 Benthic and Intertidal Ecology demonstrating that a highly conservative approach has been taken in the Norfolk Vanguard ES.

Table 4 Summary of MarLIN and Norfolk Vanguard Sensitivity Definitions for Benthic Receptors

	Summary of MarLin sensitivity based on Table 2 below	Norfolk Vanguard sensitivity definitions
High	Loss of 25-75% of the extent, density, or abundance of a species or habitat for 10-25 years	Individual receptor (species or habitat) has very limited or no capacity to accommodate, adapt or recover from the anticipated impact e.g. receptor is killed/destroyed or damaged with recovery greater than 10 years.
Medium	Loss of <25% of the extent, density, or abundance of a species or habitat for 2-25 years or 75% loss for up to 10 years	Individual receptor (species or habitat) has limited capacity to accommodate, adapt or recover from the anticipated impact e.g. killed/destroyed with recovery in 1 to 10 years or damaged with recovery in 5 to 10 years.
Low	Loss of <25-75% of the extent, density, or abundance of a species or habitat for up to 2 years or No significant effects but	Individual receptor (species or habitat) has some tolerance to accommodate, adapt or recover from the anticipated impact. e.g. killed/destroyed with recovery with 1 year or damaged with recovery in 1 to 5 years.

Summary of MarLin sensitivity based on Table 2 below		Norfolk Vanguard sensitivity definitions
	may affect feeding, respiration and reproduction rates for 2-25 years	
Not sensitive/Negligible	No significant effects but may affect feeding, respiration and reproduction rates for up to 2 years	Individual receptor (species or habitat) is generally tolerant to and can accommodate or recover from the anticipated impact.