Bilag H. Skema til kommentering af udkast hos rekvirent/ekstern part

Titel på produkt	2. (final) draft report USBL vs PAM		
Ansvarlig for produktet (projektleder hos NIRAS)	Line A. Kyhn		
Ekstern institution	**Energinet**		
Kontaktperson	**Majken Them Tøttrup**		
Deadline for fremsendelse af kommentarer	03/01-2025	**Dato for afslutning af håndtering af kommentarer** 28/2-2025	

	Rekvirent			Institut	
Sidetal	**Evt. linjenr.**	**Kommentar**	**Ansvarlig for kommentar***	**Begrundet håndtering af kommentar**	**Ansvarlig for håndtering**
	41	Please include an Executive Summary	Energinet	Added	LIAK
5	47	Please delete Lot 1 as this is an internal designation	Energinet	Removed	MAM
	48	Suggest to use 'survey' instead of 'monitoring'	Energinet	Replaced	LIAK
5	73	Please consider adding '...and if so, to what extent the baseline data are impacted..-'	Energinet	Added, however changed to : "…and if so, to quantify the extent."	MAM
5	72-73	Add text that the purpose is to investigate quantitative measures for the degree of behavioural influence.	Energinet	Please see sentence in answer above	LIAK
6	87	There should be a brief discussion of requirements to a baseline	Energinet	As discussed, no changes are made	LIAK

6	90-	Please consider briefly discussing the data quality of the dataset. It is our understanding, that there are some inherent weaknesses, as the PAM/soundtrap setup was not intended for this use	Energinet	Included: ”Since the purpose of the monitoring program was to collect baseline data on harbour porpoise presence in the area, and not to collect data to assess the effects of USBLs on harbour porpoise presence, there are limitations to which analysis can be carried out. Ideally, all 42 PAM stations should have had both a wideband recorder (a SoundTrap) and a harbour porpoise datalogger (an FPOD), so presence of harbour porpoises at all stations could be directly correlated to received sound pressure level of USBL signals. However, only six such stations were included with the aim to collect data on underwater noise levels and presence of dolphins. The analysis is limited to these six PAM stations where three stations were placed outside the area, where the geophysical surveys were carried out and three were placed inside that area.”	LIAK
6	92	Please provide a reference instead of a link	Energinet	Done	LIAK
6	97-99	A formatting issue; line break mid-sentence	Energinet	Done	MAM
6	113	Please insert reference	Energinet	Done	LIAK

7	122	Formatting; line break mid-sentence	Energinet	Done	MAM
9	132	Empty page	Energinet	Done	MAM
13	193	Suggets changing 'is' to 'was' to maintain past tence across sentences	Energinet	Corrected	MAM
13	218-220	Text is clear but could you please add a few words about what loud sources there are in this frequency band - what is it we are looking for here?	Energinet	The sentence has been changed to: "To avoid incorrect detections due to higher frequency noise sources (*sonars, anti-fouling and echo sounders*), an additional comparison was carried out peak by peak." Where the parentheses has now been included to elaborate.	LIAK
14	248	Suggest changing 'a curve fit' to curve fits' to avoid confusion	Energinet	Corrected	MAM
14	260-270	Numbering/litration of hypoteses has suffered a formatting error	Energinet	Corrected	LIAK
16	302	Figure 3.2. It is very hard to distinguish between the red and the orange circles. Please use colors that differ more.	Energinet	Changed colour scheme (orange to blue) to make it easier to distinguish.	FVB
17	305-307	Is it possible to mention the sound level of the USBL recordings seen in this example?	Energinet	Added a legend to the figure to show the SPL values	FVB
23	402-403	Suggest formatting numbers in table to have e.g. one digit after the comma. Also there shall be consistence on the use of point and comma as separators.	Energinet	Now follows English nomenclature	LIAK /MAM
25	426-427	Here comma is used as thousands separator contrary to Table 4.2	Energinet	Now follow English nomenclature	LIAK /MAM

33	628-630	The result of the assessment has more details than are being conveyed here. It is important to inform the reader that the graphs in 4.5 and 4.6 does show variations so large they can not be explained only by USBL settings. Please include more details from the assessment prepared by Energinet	Energinet	As agreed during meeting on 19-02-2025, we have softened the statement**.**	LIAK
37	672-677	When rs is close to zero does that not mean there is little correlation between ranks? Please could some more information be added how to interprete the results of the Spearman correlation test?	Energinet	The correlation tests previously reported have been removed and replaced by results of more appropriate GLMER models. The reason for this change is that the Spearman correlation tests were done during the pilot study phase of this project to get a “quick and dirty” idea of the relationships between porpoise echolocation activity and USBL signals. However, further analyses of the data during this project clearly revealed substantial autocorrelation and over/under dispersion of CPM and PPM, which biases simple correlation tests as they cannot account for these intricacies of the data structure. The correlation test results should have been removed from the report at an earlier stage, but this is now corrected.	FVB
46-52	792-997	The discussion is quite lengthy (which is good). It could ease the reading if is was structured into a number of sub-sections	Energinet	Done	MAM

47	837-839	It is correct that a certain SNR is required to ensure continuous operation of USBL. It is however not correct that optimal operation comes with the highest source level as this sentence indicates. From the communication with the survey contractor it is clear that the aim generally has been to use a moderate source level. This is also in agreement with our survey experience. What this study has made clear is that there shall be much more focus on the use of USBL and especially it shall be made a target to limit noise pollution as much as possible. It would be a good and clear observation that this is currently not the case and that it would be little effort to have criteria for USBL source strength amongst the technical criteria in tenders and that there should be sufficient documentation on the operation of USBL in order to avoid unexpected and undocumented variations in source levels.	Energinet	We have now included this clear observation in the text as: "This study has made clear is that there should be much more focus on the use of USBL and especially it should be made a target to limit noise pollution as much as possible. This is currently not the case and it would be a limited effort to have criteria for USBL source strength amongst the technical criteria in tenders, and that there should be sufficient documentation on the operation of USBL in order to avoid unexpected and undocumented variations in source levels".	LIAK
46	805	Please consider using 'the pre-investigation area...' as previously.	Energinet	The survey area is the pre-investigation area + a 20 km buffer around the pre-investigation area. We have gone through all 'survey' and 'pre-investigation' areas and corrected where wrong. Here it should be survey area.	LIAK
46	826	How often have impacts ranges for the harbour porpoise behavioral reaction criterion been registered on distances over 3,5 km (percentage)?	Energinet	Following meeting with EN on 19/2-25: This has been resolved as a nice to have, that we can not include now, as it requires a larger effort.	LIAK

46	828	Please consider making this important finding more explicit, e.g. 'This analysis found that the majority.....This is a key finding for further assessment of potential impacts....and for the definition of baseline....'	Energinet	The statement remains as per discussion on 19-02-2025 meeting, where it was explained by NIRAS how the 60% is not a fair comparison. The 60% includes both impact and control stations, and naturally, the control stations are 100% unknown sources. So the more control stations, the higher the total percentage of unknown. Inversely, had all stations been impact, the percentage would go down. And as discussed, the presence of geophysical surveys may have further skewed the relationship between fishing/survey vessels.	MAM
47	846	Please consider deleting '....if a maximum source level is not defined by authorities', as this has nothing to do with the fact about the function of SNR.	Energinet	Deleted	LIAK
47	847-848	Please consider starting the section with 'It remains...' and avoid the value-laden wording.	Energinet	Following meeting with EN on 19/2-25: EN and AU/NIRAS agrees to keep the sentence.	LIAK
47	858-863	Numbering of the bullit point seems to be out of sync	Energinet	Corrected	MAM

47	856-859	Please consider deleting and just start with 'Without more knowledge....'	Energinet	Following meeting with EN on 19/2-25: The sentence has been changed to: "To obtain a better understanding of the differences in source levels between the geophysical survey in the North Sea 1 pre-investigation area, and that of the Pace study (Pace, Robinson, Lumsden, & Martin, 2021), it would be necessary to obtain a better understanding of the equipment and operating parameters used. However, this is not included in the present study."	LIAK
49	928	Consider using another phrase than polluted	Energinet	Changed to impacted	LIAK
49	947	Please make it very clear that the focus / the objective of the study is to analyze if the baseline data are impacted by USBL noise from the geophysical surveys.	Energinet	Clarified. The sentence now reads: "It should also be noted that this study only focused on USBL signals *from geophysical surveys* and effects hereof."	LIAK
49	950	Please re-consider the use of the work polluted, since the soundscape created by fishing activities seem to be baseline .....there is no 'clean' baseline.	Energinet	Changed to impacted	LIAK

49	953	Could it not be argued that the baseline is in fact the data not impacted by the geophysical survey activities?	Energinet	Given that the data was collected in such a polluted environment this is likely the necessitated approach to be able to use the collected data as baseline. However, since we can measure that the waiting time is longer following geophysical surveys than following trawler USBLs, there is an actual effect of the trawlers, despite there omnipresence. Secondly; due to the presence of the geophysical surveys, the fishing vessels have likely changed activity areas, which may have affected the presence of marine mammals. All in all difficult to justify a baseline with presence of geophysical/technical surveys present.	LIAK
49	959	But why should the approach account for the influence from unknown sources?....why not just the source from the geophysical surveys?	Energinet	It shouldn't. It is only to clarify that it is not possible	MAM
53	1021	See earlier comment regarding 'polluted'	Energinet	Changed to impacted	LIAK

53	1027 and 1029	Suggest adding info about total number of PAM station days and the percentage of affected days.	Energinet	Following the meeting with EN on 19/2-25: Table 5.1 has been corrected to show the amount of minutes actually removed from the FPOD data, rather than the number of minutes corresponding to total survey activity overlap. While it was discussed during the meeting to add the total number of active PAM station days to Table 4.1 and calculate the percentage of days affected, this proved to be a significantly larger task than anticipated, and was therefore not carried out. While the number of active PAM days in itself is readily available, there has not been a correlation into which of the survey days fall within the active PAM days. This means, that while, as an example, a station would have 40 days marked as affected by USBL in 2023, this does not necessarily correspond to 40 days where the PAM was actively recording. It is therefore not possible to calculate the percentage without a more detailed analysis on daily basis of each individual PAM stations active status versus the presence of survey vessels with act Also note that the “PAM station days” has been rephrased to “days	LIAK

				in 2023” to signify the above limitation. Lastly, the number of days affected have been recalculated, as per table 4.1, to only cover North Sea 1 survey vessels with active USBL systems onboard. Impacted number of days has therefore dropped significantly.	
53-54	1036-1042	The conclusion is very strict and does not sufficiently support the use of the 2023 data as a baseline for the environmental assessment. It is a fact that the baseline recordings were disturbed by known noise. Through this present investigation, methods have been tested for quantifying the disturbance. Additional hitherto unknown sources of disturbance were also found. All in all, this means there is a much better understanding of the soundscape. It must therefore be possible to use the 2023 data together with the 2024 recordings, especially when applying the 'advanced' exclusion method.	Energinet	Following the meeting with EN on 19/2-25 this was resolved: We can use the method developed in this study to take out affected periods in 2024 as well. However, it requires that we get gps tracks that will allow us to take out affected minutes from all PAM stations, when geotechnical and/or geophysical surveys were carried out in 2024. This has been clarified in the text with: “The suggested method for correction data impacted by geophysical surveys may be used to try to correct the 2023 dataset from the North Sea 1 survey area, but the method can not be applied in other areas or to other species. The method can also be used to correct 2024 data from the same area, provided that tracks of the geotechnical surveys active there, are available.”	LIAK

54	1041-1042	This may be true in isolation, but the fact is we have 6 sound traps and have made the best possible use of the data. Suggest deleting this last sentence.	Energinet	Deleted	LIAK
	1066	There should be a clear conclusion regarding the number / the percentages for baseline data that should be excluded from the date-set, to obtain a clear representation of the baseline situation without impact from geophysical survey.	Energinet	Done	FVB