

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Environmental Statement

Volume 3 Appendix 23.1 - Baseline Noise Survey

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BDC	Broadland District Council
BS	British Standard
BSI	British Standards Institution
DEP	Dudgeon Offshore Wind Farm Extension Project
DOW	Dudgeon Offshore Wind Farm
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
ETG	Expert Topic Group
HDD	Horizontal Directional Drilling
LPA	Local Planning Authority
NNDC	North Norfolk District Council
NSR	Noise Sensitive Receptor
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
PPG	Planning Practice Guidance
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SNC	South Norfolk Council

Glossary of Acronyms



Glossary of Terms

Order Limits	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
DEP onshore site	The Dudgeon Offshore Wind Farm Extension onshore area consisting of the DEP onshore substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable route which would house HDD entry or exit points.
Jointing bays	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall	The point at the coastline at which the offshore export cables are brought onshore, connecting to the onshore cables at the transition joint bay above mean high water
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 – 230kV.
Onshore Substation	Compound containing electrical equipment to enable connection to the National Grid.
PEIR boundary	The area subject to survey and preliminary impact assessment to inform the PEIR.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
SEP onshore site	The Sheringham Shoal Wind Farm Extension onshore area consisting of the SEP onshore



	substation site, onshore cable corridor, construction compounds, temporary working areas and onshore landfall area.
Study area	Area where potential impacts from the project could occur, as defined for each individual Environmental Impact Assessment (EIA) topic.
The Applicant	Equinor New Energy Limited



23.1 BASELINE NOISE SURVEY AND ACOUSTIC TERMINOLOGY

23.1.1 Introduction

- 1. This appendix of the Environmental Statement (ES) of the proposed Sheringham Shoal Offshore Wind Farm Extension Project (hereafter SEP) and Dudgeon Offshore Wind Farm Extension Project (hereafter DEP), details the baseline sound survey undertaken to characterise the existing soundscape within the SEP and DEP projects study area.
- 2. The baseline sound survey comprised of attended measurements at the Landfall location, and unattended measurements at the Onshore Substation. Measurements were conducted in accordance with current guidance including BS4142:2014+A1:2019 'Method for rating and assessing industrial and commercial sound' and BS7445:2003 'Description and measurement of environmental noise'.
- 3. The baseline sound data will be used within the construction and operational phase assessments for the SEP and DEP projects, individually and cumulatively.
- 4. The survey procedures were agreed with Broadland District Council (BDC) and North Norfolk Council (NNC). The survey was undertaken between 13th October 2021 and 25th October 2021.

23.1.2 Existing Environment

- 5. In order to determine noise measurement locations, aerial imagery was used to determine Noise Sensitive Receptor (NSR) locations at the landfall location, and at the onshore substation site.
- 6. NSR locations were chosen to represent the worst case for each group of receptors; closest to the proposed works and onshore substation site.
- 7. For the Preliminary Environmental Information Report (PEIR), baseline noise data was obtained from the Hornsea Project Three baseline noise survey¹ (as agreed with BDC and NNC), for use in the assessment.
- 8. The SEP/DEP project specific baseline sound survey was only able to take place following the lifting of government national lockdown measures associated with the Covid-19 pandemic. Timing arrangements to undertake and complete the survey (following the lifting of the lockdown measures) were discussed and approved with BDC.
- 9. NSRs along the cable corridor which may be temporarily impacted by construction phase works are all assumed to fall within the lowest threshold (Category A) level for daytime, evenings/weekends and night-time reference periods, using the relevant guidance detailed in BS5228:2009+A1:2014 'ABC method' threshold. This approach was agreed with BDC and South Norfolk Council (SNC) during consultation and as part of the Evidence Plan Process (EPP).

¹ Orsted (2018). 'Hornsea Project Three Offshore Wind Farm Environmental Statement: Volume 6, Annex 8.1 – Baseline Noise Survey PINS Document Reference: A6.6.8.1 APFP Regulation 5(2)(a)'.



- 10. Measurement locations (representative of individual or groups of NSRs) were identified and agreed with BDC and SNC are as shown in Table 23.1.1.
- 11. The NSR locations at the landfall, are labelled with the prefix LFR (denoting Landfall Receptor), and at the onshore substation with a prefix of SSR (denoting Substation Receptor). Each receptor was given an accompanying individual number.

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NSR identifier	Coordinates		Classification	Sensitivity
	x	Y		
Landfall location				
LFR1	610986	343479	Residential Medium	
LFR2	611574	343619	Residential	Medium
Onshore substati	on			
SSR1	620864	302308	Residential	Medium
SSR2	621153	301333	Residential	Medium
SSR3	620344	301827	Residential	Medium
SSR4	622480	302516	Residential	Medium
SSR5	622514	302184	Residential	Medium
SSR6	621564	302907	Residential	Medium
SSR7	621353	303104	Residential	Medium
SSR8	620969	301772	Residential	Medium
SSR9	620864	302308	Residential	Medium
SSR10	620997	301476	Residential	Medium

- 12. The noise measurements were conducted with Sound Level Meters (SLMs) mounted at a height of between 1.2m and 1.5m above ground level and 3.5m away from any reflecting surface other than the ground, i.e. in free-field conditions.
- 13. For all measurement locations during the noise survey SLMs were set to record the following parameters in 15-minute intervals:
 - L_{Aeq} the equivalent continuous sound pressure level over the measurement period. This parameter was standardised as pertinent for land use within BS 7445;
 - L_{Amax} the maximum sound pressure level occurring within the defined measurement period;
 - L_{A90} the sound pressure level exceeded for 90% of the measurement period and is indicative of the background noise level; and

- L_{A10} the sound pressure level exceeded for 10% of the measurement period. The L_{A10} index is used as an appropriate descriptor of traffic noise.
- 14. SLMs were calibrated before and after the survey using a portable calibrator. The pre and post measurement calibration levels are detailed in the location specific field data record, provided in Annex 23.1.1 of this document.
- 15. For the attended and unattended surveys, the instruments were also set to log sound pressure levels continuously at 100ms, using a Fast time response, an 'A' and Linear weighting network.
- 16. Audio capability was enabled on the unattended survey SLMs (to trigger with a sound pressure level of >70dB), in order to further characterise the soundscape and determine the nature and frequency of louder events occurring at the locale.
- 17. Two portable weather stations were deployed to log at 15 minute intervals, alongside noise monitoring equipment throughout the survey periods. Measurement location SSR2 (representative of the southern measurement locations) and SSR7 (representative of the northern measurement locations) were considered representative of the geographic spread of all other locations in the vicinity of the onshore substation study area.
- 18. In general surveys were conducted during periods of weather favourable for noise measurements, i.e. no rainfall and wind speeds below 5 m/s.

23.1.3 Data Analysis

- 19. For the unattended baseline noise survey, data were exported as 15 minute intervals in accordance with BS4142 guidance, with all samples cross-referenced against weather data recorded on site during the measurement period.
- 20. Data obtained from the portable weather station deployed at location SSR2 was used for subsequent analysis of sound data for receptors SSR1, SSR2, SSR3, SSR4 and SSR9. Data obtained from the portable weather station deployed at location SSR7 was used for subsequent analysis of sound data for receptors SSR5, SSR6, SSR7 and SSR8.
- 21. Due to access constraints, measurements were not obtained at SSR3. Baseline measurements obtained at location SSR2 are considered representative of the soundscape at receptor SSR3.
- 22. For the attended survey at the landfall, measurements were undertaken during the day (duration of around 30 minutes), evening (15 minutes) and night (15 minutes), covering the BS5228 reference periods. Qualitative comments and observations including weather conditions were noted during these measurements. Further details including equipment serial numbers are provided in the location specific field data record, in Annex 23.1.1 of this document.
- 23. Good practice detailed in BS4142 recommends that representative environmental noise measurements should be undertaken during favourable weather conditions, i.e. with windspeed <5 m/s and no precipitation. Data were therefore excluded where there were periods of precipitation and wind speeds (including gusts) in exceedance of 5 m/s.

23.1.3.1 Landfall Measurement Locations Data Summary

24. The results of the attended baseline noise survey are provided in Table 23.1.2 and Table 23.1.3 for LFR1 and LFR2 respectively.

Table 23.1.2: Baseline Noise Summary – Measurement Location LFR1

Period, Start Time and Date	Duration (mm:ss)	L _{Aeq} (dB)	L _{A10} (dB)	L _{A90} (dB)	L _{AFmax} (dB)
Daytime 13/10/21 16:48	36:14	51	52	35	70
Evening 13/10/21 19:49	16:38	39	41	35	55
Night time 13/10/21 23:24	15:31	40	41	37	65

 Table 23.1.3: Baseline Noise Summary – Measurement Location LFR2

Period, Start Time and Date	Duration (mm:ss)	L _{Aeq} (dB)	L _{A10} (dB)	L _{A90} (dB)	L _{AFmax} (dB)
Daytime 13/10/21 15:57	30:05	42	45	38	56
Evening 13/10/21 19:22	15:38	43	45	41	52
Night time 13/10/21 22:59	15:22	50	53	47	57

23.1.4 Onshore Substation Measurement Locations Data Summary

- 25. The results of the unattended baseline noise survey are summarised in this section for the BS4142 daytime (07:00 to 23:00) and night time (23:00 to 07:00) reference periods.
- 26. Qualitative comments and observations describing the dominant sound sources at each location, along with weather conditions were noted during the installation and decommissioning of the measurement equipment. Further details including photos, equipment serial numbers and unedited profile graphs are provided in the location specific field data record, in Annex 23.1.1 of this document.
- 27. All samples influenced by non-compliant weather conditions (and therefore unsuitable for noise monitoring due to noise interference) have been removed from the data presented in this section.



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28. For each measurement location, statistical analysis of the baseline background sound level (L_{A90}) was undertaken to determine an appropriate representative level for use in the Operational Phase BS4142 assessment. Histograms were produced based on the 15 minute interval periods and are provided in Annex 23.1.2.

23.1.4.1 Measurement Location SSR1 Data Summary

29. **Table 23.1.4** summarises the BS4142 weather compliant unattended baseline survey sound data (15 minute interval) measured at location SSR1.

LAeg,15mins Measurement Average LA10, Average LAFmax, 15mins Period Start and End (dB) (dB) LA90, 15mins 15mins Date (dB) (dB) Max Min 51 44 37 96 34 Daytime 14/10/21 to 25/10/21 39 30 29 73 Night time 36

Table 23.1.4: Baseline Noise Summary – Measurement Location SSR1 (Unattended)

 Statistical analysis of the background sound levels (LA90,15mins) measured during the unattended (BS4142 compliant data only) baseline survey at location SSR1 are detailed in Table 23.1.5.

Table 23.1.5: Baseline L_{A90} Noise Data Analysis – SSR1 (Unattended)

	Number of BS4142	L _{A90, 15mins} analytics (dB)				
Period	compliant 15-minute samples collected	Mode	Average	Median	Standard deviation	
Daytime	634	34.5	37.1	36.6	5.0	
Night time	329	23.0	29.6	28.7	6.4	

23.1.4.2 Measurement Location SSR2 Data Summary

31. **Table 23.1.6** summarises the BS4142 weather compliant unattended baseline survey sound data (15 minute interval) measured at location SSR2.

Table 23.1.6: Baseline Noise Summary – Measurement Location SSR2 (Unattended)

Period M St Da	Measurement Start and End	L _{Aeq,15mins} (dB)	Average L _{A10,}	Average L _{A90, 15mins}	L _{AFmax,} 15mins (dB)	
	Date		(dB)	(dB)	Мах	Min
Daytime	14/10/21 to	50	47	38	89	38
Night time	25/10/21	40	43	31	76	34

32. Statistical analysis of the background sound levels (L_{A90,15mins}) measured during the unattended (BS4142 compliant data only) baseline survey at location SSR2 are detailed in Table 23.1.7.



	Number of BS4142	LA90, 15mins and	_{ns} analytics (dB)				
Period	compliant 15 minute samples collected	Mode	Average	Median S 37.7 4 29.7 5	Standard deviation		
Daytime	636	36.0	38.3	37.7	4.5		
Night time	329	24.0	31.0	29.7	5.7		

Table 23.1.7: Baseline L_{A90} Noise Data Analysis – SSR2 (Unattended)

23.1.4.3 Measurement Location SSR3 Data Summary

33. Due to access constraints, measurements were not obtained at SSR3. Despite receptor SSR3 being in closer proximity to a railway line and Ipswich Road highway (east of the property boundary); baseline measurements obtained at location SSR2 are considered representative of the soundscape at receptor SSR3. Both properties are a similar distance from Hickling Lane, with agricultural fields to the northern boundary.

23.1.4.4 Measurement Location SSR4 Data Summary

34. **Table 23.1.8** summarises the BS4142 weather compliant unattended baseline survey sound data (15 minute interval) measured at location SSR4.

Table 23.1.8: Baseline Noise Summary – Measurement Location SSR4 (Unattended)

Period Measur Start ar Date	Measurement Start and End	L _{Aeq,15mins} (dB)	Average L _{A10} , 15mins	Average L _{A90, 15mins}	L _{AFmax} , 15mins (dB)	
	Date	((dB)	(dB)	Мах	Min
Daytime	15/10/21 to	51	44	37	92	37
Night time	25/10/21	37	35	29	71	31

35. Statistical analysis of the background sound levels (L_{A90,15mins}) measured during the unattended (BS4142 compliant data only) baseline survey at location SSR4 are detailed in Table 23.1.9.

Table 23.1.9: Baseline LA90 Noise Data Analysis – SSR4 (Unattended)

	Number of BS4142	L _{A90, 15mins} and	_{A90, 15mins} analytics (dB)				
Period	compliant 15-minute samples collected	e Mode Average Median	Median	Standard deviation			
Daytime	601	36.0	36.6	36.1	4.8		
Night time	299	24.0	28.7	27.3	6.0		

23.1.4.5 Measurement Location SSR5 Data Summary

36. **Table 23.1.10** summarises the BS4142 weather compliant unattended baseline survey sound data (15 minute interval) measured at location SSR5.

Table 23.1.10: Baseline Noise Summary – Measurement Location SSR5 (Unattended)



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Period	Measurement Start and End Date	L _{Aeq,15mins} (dB)	Average L _{A10,}	Average L _{A90, 15mins}	L _{AFmax} , 15mins (dB)	
			(dB)	(dB)	Мах	Min
Daytime	14/10/21 to	52	50	45	91	48
Night time	25/10/21	43	44	35	70	42

 Statistical analysis of the background sound levels (LA90,15mins) measured during the unattended (BS4142 compliant data only) baseline survey at location SSR5 are detailed in Table 23.1.11Table 23.1.5.

Table 23.1.11: Baseline LA90 Noise Data Analysis – SSR5 (Unattended)

	Number of BS4142	L _{A90, 15mins} analytics (dB)				
Period	compliant 15-minute samples collected	-minute ected Mode Averag	Average	Median	Standard deviation	
Daytime	579	46.0	45.4	46.0	3.3	
Night time	300	29.0	35.1	35.5	6.2	

23.1.4.6 Measurement Location SSR6 Data Summary

38. **Table 23.1.12** summarises the BS4142 weather compliant unattended baseline survey sound data (15 minute interval) measured at location SSR6.

Table 23.1.12: Baseline Noise Summary – Measurement Location SSR6 (Unattended)

Period S	Measurement L _{Ad} Start and End (de Date	L _{Aeq,15mins} (dB)	Average L _{A10,}	Average L _{A90, 15mins}	L _{AFmax,} 15mins (dB)	
			(dB)	(dB)	Мах	Min
Daytime	14/10/21 to	51	49	43	94	46
Night time	25/10/21	42	42	35	70	38

 Statistical analysis of the background sound levels (LA90,15mins) measured during the unattended (BS4142 compliant data only) baseline survey at location SSR6 are detailed in Table 23.1.13.

Table 23.1.13: Baseline L_{A90} Noise Data Analysis – SSR6 (Unattended)

	Number of BS4142	LA90, 15mins and	_{15mins} analytics (dB)				
Period	compliant 15 minute samples collected	Mode Average Median 45.0 43.3 43.5 36.0 34.7 34.6	Standard deviation				
Daytime	578	45.0	43.3	43.5	3.2		
Night time	300	36.0	34.7	34.6	5.1		

23.1.4.7 Measurement Location SSR7 Data Summary

40. **Table 23.1.14** summarises the BS4142 weather compliant unattended baseline survey sound data (15 minute interval) measured at location SSR7.

Table 23.1.14: Baseline Noise Summary – Measurement Location SSR7 (Unattended)



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Period	Measurement Start and End	L _{Aeq,15mins} (dB)	Average L _{A10,}	Average L _{A90, 15mins}	L _{AFmax} , 15mins (dB)	
	Date		(dB)	(dB)	Мах	Min
Daytime	14/10/21 to	53	48	43	98	43
Night time	25/10/21	47	42	36	75	39

41. Statistical analysis of the background sound levels (LA90,15mins) measured during the unattended (BS4142 compliant data only) baseline survey at location SSR7 are detailed in Table 23.1.15.

Table 23.1.15: Baseline LA90 Noise Data Analysis – SSR7 (Unattended)

	Number of BS4142	L _{A90, 15mins} analytics (dB)				
Period	compliant 15 minute samples collected	Mode	Average	Median	Standard deviation	
Daytime	592	42.0	42.5	41.7	4.9	
Night time	299	31.0	35.5	34.1	6.1	

23.1.4.8 Measurement Location SSR8 Data Summary

42. **Table 23.1.16** summarises the BS4142 weather compliant unattended baseline survey sound data (15 minute interval) measured at location SSR8.

Table 23.1.16: Baseline Noise Summary – Measurement Location SSR8 (Unattended)

Period Measurement Start and End Date	Measurement Start and End	L _{Aeq,15mins} Average L _{A10,} (dB) 15mins		Average L _{A90, 15mins}	L _{AFmax} , 15mins (dB)	
		(dB)	(dB)	Мах	Min	
Daytime	14/10/21 to	52	47	42	93	40
Night time	25/10/21	44	41	34	96	37

43. Statistical analysis of the background sound levels (L_{A90,15mins}) measured during the unattended (BS4142 compliant data only) baseline survey at location SSR8 are detailed in Table 23.1.17.

Table 23.1.17: Baseline L_{A90} Noise Data Analysis – SSR8 (Unattended)

	Number of BS4142	LA90, 15mins and	alytics (dB)		
Period	compliant 15 minute samples collected	Mode	Average	Median	Standard deviation
Daytime	594	39.0	42.0	40.4	5.8
Night time	298	28.0	34.4	33.3	6.2

23.1.4.9 Measurement Location SSR9 Data Summary

44. **Table 23.1.18** summarises the BS4142 weather compliant unattended baseline survey sound data (15 minute interval) measured at location SSR9.

Classification: Open



Table 23.1.18: Baseline Noise Summary – Measurement Location SSR9 (Unattended)

Period	Measurement Start and End	L _{Aeq,15mins} (dB)	Average L _{A10,}	Average L _{A90, 15mins}	L _{AFmax, 1} (dB)	5mins
	Date		(dB)	(dB)	Мах	Min
Daytime	14/10/21 to	52	45	37	95	38
Night time	25/10/21	38	36	29	68	31

45. Statistical analysis of the background sound levels (LA90,15mins) measured during the unattended (BS4142 compliant data only) baseline survey at location SSR9 are detailed in

46. **Table** 23.1.19.

Table 23.1.19: Baseline LA90 Noise Data Analysis – SSR9 (Unattended)

	Number of BS4142	LA90, 15mins and	alytics (dB)		
Period	compliant 15 minute samples collected	Mode	Average	Median	Standard deviation
Daytime	636	35.0	37.0	36.3	4.9
Night time	329	23.0	29.4	27.9	6.1

23.1.4.10 Measurement Location SSR10 Data Summary

47. Due to access constraints, measurements were not obtained at SSR10. Measurements obtained at location SSR9 are considered representative of receptor location SSR10 due to a similar proximity to Gowthorpe Lane and Hickling Road.

23.1.5 BS4142 Background Sound Levels (LA90, 15mins) Summary

- 48. Statistical analysis of the baseline background sound level (L_{A90}) was undertaken following guidance detailed in BS4142. This process enables the assessor to determine an appropriate representative background sound level for use in the Operational Phase assessment.
- 49. The Rion NL-52 is a Class 1 SLM, the measurement range is quoted as 25dB to 138dB 'A' weighting². As the background at night in a rural location is typically lower, it is not unusual for measurements to be logged below the quoted instrument measurement range. Where measurements of the LA90 are shown as below the measurement range level of an instrument, there is the potential for a higher uncertainty. Therefore, in order to minimise uncertainty, where this has occurred along with bi-modal/tri-modal peaks (detailed on the specific location histogram), the average LA90 value is deemed appropriate. For context, a background sound level of 30dBA is considered quiet, as previous iterations of BS4142 evidenced.
- 50. Histograms were produced based on the 15 minute interval periods, and are provided in Annex A23.1.2.

² Rion NL-42A_NL52A_NL62A_Datasheet_2202-0.pdf, Specifications, Page 10, url: https://rionsv.com/download/manual/NL-52A#NL-52A, accessed 30/03/22.



51. Representative background sound levels for use in the Operational Phase assessment of the onshore substation are displayed in **Table 23.1.20**.

Table 23.1.20: Representative BS4142 LA90, 15mins Sound Level per Receptor Location

NSR	Representative	L _{A90,15mins} (dB)	Justification
Identifier	Daytime	Night time	
SSR1	37	30	Daytime - 50 th percentile is 36dBA, Average shows good correlation with the median value. Night time – Bi-modal peaks around 23 and 33; therefore average L _{A90} used due to spread of data.
SSR2	38	31	Daytime – Good correlation between statistical parameters, with 38dBA approximately 50 th percentile. Night time – Tri-modal at 24dBA, 30dBA and 35dBA; therefore average L _{A90} appropriate due to data spread.
SSR3	38*	31*	L _{A90} values taken from location SSR2. Similar soundscape, proximity to agricultural fields and Hickling Lane, rural environment.
SSR4	36	29	Daytime – Good correlation between mode and average statistical parameters. Night time – Bi-modal at 24dBA and 37dBA; therefore average L _{A90} appropriate due to data spread.
SSR5	45	35	Daytime – Good correlation between mode and average statistical parameters. Night time – Number of peaks in dataset at 36, 38 and 43dBA and modal value is 29dBA; therefore average L _{A90} appropriate due to data spread.
SSR6	43	35	Daytime – Good correlation between average and 50 th percentile statistical parameters. 45dBA is modal value; however is the 75 th percentile. Night time – Number of peaks in dataset at 29 and 36dBA and modal value is 65 cumulative; therefore average L _{A90} appropriate due to data spread.
SSR7	42	36	Daytime – Good correlation between mode, average and median statistical parameters. Night time – Number of peaks in dataset at 31 and 43dBA; therefore average L _{A90} appropriate due to data spread.
SSR8	39	34	Daytime – Modal value clearly distinctive, and 50 th percentile is close at 40dBA.



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NSR	Representative	L _{A90,15mins} (dB)	Justification
Identiller	Daytime	Night time	
			Night time – Peaks evident in dataset at 28 and 38dBA; 50 th percentile is around 33dBA; therefore average L_{A90} appropriate due to data spread.
SSR9	37	29	Daytime – Modal value is around 46 th percentile, larger data spread above this value; therefore average is appropriate.
			Night time – Peaks evident in dataset at 23 and 26dBA; 20 th and 40 th percentiles. Average is around 50 th percentile; therefore average L _{A90} appropriate due to data spread.
SSR10	37**	29**	L _{A90} values taken from location SSR9. Similar soundscape, proximity to Gowthorpe Lane and Hickling Lane, rural environment.

Note: *LA90,15mins taken from location SSR2 and ** LA90,15mins taken from location SSR9 due to access constraints.

23.1.6 Summary

- 52. A baseline sound survey was undertaken at agreed sensitive receptor locations and following a procedure agreed with BDC and NNC in the vicinity of the proposed SEP and DEP order limits. The survey was arranged in order to characterise the existing soundscape. The attended and unattended surveys were centred around the Landfall and Onshore Substation study areas.
- 53. Measured data were collated for each location with LAeq, LA90, LA10, LAFmax levels determined from 100ms data at each specific measurement location.
- 54. Background noise levels used in the assessment were obtained from the baseline measurements. The background noise levels for the unattended measurement periods were assessed using statistical analysis of the measured LA90 values.
- 55. The baseline noise survey and the derived background sound levels (L_{A90}) used in the operational phase assessment are considered representative of the Study Area.

References

British Standard Institute (2003) BS7445-1:2003 - Description and measurement of environmental noise. Guide to quantities and procedure. London, BSI.

British Standard Institute (2003) BSEN61672-1:2003 - Electroacoustics. Sound level meters. Specifications. London, BSI.

BSI (2014). British Standards Institution [BS] 5228-1:2009+A1:2014 "Code of practice for noise and vibration control on construction and open sites – Part 1: Noise".

British Standard Institute (2019) BS4142:2014+A1:2019 - Methods for rating and assessing industrial and commercial sound. London, BSI.

International Organization for Standardization, (1996) ISO9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation. Switzerland, ISO.

Orsted (2018). 'Hornsea Project Three Offshore Wind Farm Environmental Statement: Volume 6, Annex 8.1 – Baseline Noise Survey PINS Document Reference: A6.6.8.1 APFP Regulation 5(2)(a)'.

Rion NL-42A_NL52A_NL62A_Datasheet_2202-0.pdf, Specifications, Page 10, url: https://rion-sv.com/download/manual/NL-52A#NL-52A, accessed 30/03/22.

ANNEX 23.1.1 MEASUREMENT LOCATION DATASHEETS



CLIENT:			Equ	uinor			PROJECT NUMBE	R ID:		PB8164		
SITE:			SEF	P/DEP			PURPOSE FOR M	ONITORING:		Baseline Noise	e Survey	
MEASUREMEN	r location ie):	LFF	R1			PERSONNEL:			DC/SC		
FOLUDATA			0004000			D: NC 74	CALIBRATOR	25001041	CEDTIFIED		04.10	
	SOUND LEVE		0864985			RION NC-74	CALIBRATOR Social No.	35081041			9408	
DETAILS		I Di	ion NL 52	D	PE/Serial No.	Rion NH 25		Rion NC 7			Anomomot	or/mobilo
		DEL IN	ION NL-JZ	Se	vial No	65110	MAKE/MODEL	Non NC-7.	ID/Nearest	Location	nhone weat	ther data
	START OF S		BSERVAT	IONS		MICROPHONE	HEIGHT (m)		1.2 to 1.	5m above grour	d	
FIELD CALIBRAT	ION LEVEL	LINE CH	ECK (dB)		94.0	FACADE/FREEF	IELD		Freefield	and above Broan		
		File Nam	ne/No.		0000	SITE LOCATION	/IMAGES/COORDI	NATES: X	: 610986		Y: 3434	79
DATE & TIME		13/10/2	21		15:20		, ,					
TEMPERATURE	(degrees C)	16			•	1						
CLOUD COVER		Overcast	st			1						
WINDSPEED/DI	RECTION	Slight br	reeze <3m	n/s	-]						
FILENAME		0002]						
TIME WEIGHTIN	IG	Fast										
FREQUENCY WI	EIGHTING	Linear/A	4-weightin	ng, 100ı	ms							
AUDIO ENABLE	D (Yes/No)	No										
AUDIO SETTINO	iS	n/a										
SOUNDSCAPE D	DETAILS					Below: Daytime	e LAeq profile uneo	dited				
Daytime survey	16:11					File:Auto_0002_Leq						
Sea noise and w	ild bird song a	and calls				dB Main:LAeq Band:LZeq						
Occasional car/	vehicle along l	ane to car	r park and	l dwelli	ngs	80						
16:14 aircraft u	ntil 16:17					70 60	A					
Occasional nois	e from houses	/dog bark	ĸ			50 A	Mg			ſ		
END OF DAYTIN	IE/START OF I	EVENING	SURVEY C	DBSERV	ATIONS	40 ph/latimeter bergg activity	"Hander to have the state	WINNIN HA WARMANN WA	Contraction and Contract	www.	A MARYNAM AND	MALINE MALINE
FIELD CALIBRAT	ION LEVEL	LINE CH	IECK (dB)		94.0	30						
		File Nan	me/No.		0003	10						
DATE & TIME		13/10/2	21		18:55	0 16:15:00.0	16:20:00.0	16:25:00.0	16:30:00.0	16:35:00.0	16:40:00.0	16:45:00.0



CLIENT:		Equinor			PROJEC		ER ID:				PB816	4				
SITE:		SEP/DEP			PURPO	SE FOR M	IONITOR	ING:			Baselir	ne Nois	e Surv	'ey		
MEASUREMENT LOCATION ID):	LFR1		-	PERSO	NNEL:					DC/SC					
SOUNDSCAPE DETAILS																
Evening survey 19:31																
Filename 0005, all other mete	er settings as al	pove		EilarAuta 0005 Los												
Sea noise audible				dB Main:LAeg Band:LZeg												
Slight breeze <3m/s, 13.9 deg	rees			80												
Road noise intermittent and b	arely perceptil	ole														
19:44 Car pass-by, idling until	19:45			50										da.		
Nearby coughing from resider	nt and footfall			40 - Walcourdbor, 100 may	mmum	wwwwww	hitroughot	www.	Anna	trung	WWW	when the	April 1	- Way	willing	within
				30		·····							-		U	
END OF EVENING/START OF N	NIGHT SURVEY	OBSERVAT	IONS	20												
FIELD CALIBRATION LEVEL	LINE CHECK (dB)	94.0	0												
	File Name/N	о.	0006	19:32:00.0 19:33:00.0 19:3	4:00.0 19:35:00.0	19:36:00.0 19:3	7:00.0 19:38:00.	0 19:39:00.0	19:40:00.0 1	9:41:00.0 19	9:42:00.0 19	:43:00.0 19:	44:00.0 19:4	45:00.0 19:4	6:00.0 19:47	:00.0 19:48:00.0
DATE & TIME	13/10/21		22:45													
SOUNDSCAPE DETAILS				Above: Evening	g LAeq pr	ofile une	dited									
Night time survey 23:24				File:Auto_0008_Leq												
Filename 0008, all other mete	er settings as al	oove		dB Main:LAeq Band:LZeq 80 T				-								
Sea noise audible				70												
Slight breeze <2m/s, 13.3 deg	rees			60												
					والبعرة والمعطوم	Ares along the standes	ty of the states and the states of the state	Marshalowan	n www.	n ^a weather	and manufactures	www	www.	man	d from the second	moundary
				30										•		
				20												
				0												
END OF NIGHT SURVEY OBSE	RVATIONS			-10	3:27:00.0 23:28:	00.0 23:29:00.0	23:30:00.0 23:	31:00.0 23:33	:00.0 23:33	00.0 23:34	:00.0 23:35	:00.0 23-36	:00.0 23:37	:00.0 23:38	:00.0 23:39	:00.0 23:40:00
FIELD CALIBRATION LEVEL	LINE CHECK (dB)	93.9													
	File Name/N	о.	0009	1												
DATE & TIME	13/10/21		23:43	Above: Night t	ime LAeq	profile u	nedited									



CLIENT:				Equino	r						PROJE	CT N	UMBE	R ID:					PB8164	ł				
SITE:				SEP/DE	P						PURP	OSE F	OR MO	ONITO	RIN	G:			Baselin	e Noi:	se Surv	/еу		
MEASUREMEN	FLOCATION ID):		LFR2							PERSC	DNNE	L:						DC/SC					
EQUIPMENT DETAILS	SOUND LEVE METER Seria	EL I No.	008649	83	MIC	CROPHONE PE/Serial No.	Ric 13	on NC 790	-74		CALIB Serial	RATO No.	DR	350	8104	41	CERTIF	IED C Ence	CALIBRA LEVEL	TION	94d	B		
	SOUND LEVE	EL DEL	Rion Nl	-52	PRE Ser	E-AMP TYPE/ rial No.	Ric 65	on NH 110	-25		CALIB	RATO	DR DEL	Rior	NC	-75	WEATI	HER S arest	TATION Locatio	n	Ane phc	momet	er/mo ther d	bile ata
	START OF S	URVEY	OBSER	VATION	s		M	ICRO	PHON	E HE	IGHT	(m)				!	1.2 t	o 1.5	m above	e grou	und			
FIELD CALIBRAT	ION LEVEL	LINE (CHECK (dB)	Т	94.0	FA	ÇADE	/FRE	EFIE	LD						Free	field		0				
		File N	ame/No	о.		0000	SIT			DN/I	MAG	ES/CO	OORDIN	NATES	:	X:	6115	74			Y:	3436	19	
DATE & TIME		13/10)/21			15:20											-							
TEMPERATURE	(degrees C)	16			•																			
CLOUD COVER		Overc	ast																					
WINDSPEED/DI	RECTION	Slight	breeze	<2m/s		-																		
FILENAME		0001																						
TIME WEIGHTIN	IG	Fast																						
FREQUENCY WI	EIGHTING	Linea	r/A-wei	ghting, 1	.00m	าร																		
AUDIO ENABLE	D (Yes/No)	No																						
AUDIO SETTINO	iS	n/a																						
SOUNDSCAPE D	ETAILS	_					Ве	low:	Daytiı	me l	.Aeq	profil	e uned	lited										
Daytime survey	15:26						0	1B																
Sea noise domin	nant and wild b	oird son	ig and ca	alls			8	0																LAeq
Occasional walk	ers along path	า					1	n																LAE
Road traffic nois	se perceptible,	, 15:29	Distant	clunk of	gate	е	6	io																LAFmin
15:51 Distant ga	ardening tool s	sound																			1			— L5
END OF DAYTIN	IE/START OF I	EVENIN	IG SURV	EY OBSE	ERVA	ATIONS	5	0 		يو الله		Halkar	HL a H	dada -						الع. اله	الم الم			
FIELD CALIBRAT	ION LEVEL	LINE	CHECK (dB)		94.0	4	e TANK	NHH M	H.M	Witho th	ARY WA	With Healt	WWWWW	M		AN THE	hindini	WAYAM	r Name	WAWA	- MARANA	ANN AN	
		File N	ame/No	D.		0003	,	0						.1		out of	1.1.1	1			[]i		hat a	L95
DATE & TIME		13/10)/21			18:55		~	2021/11/	13 15:30		2021/1	13 15:35		2021/10/13	15:40	202	/10/13 15:45		2021/10/13 1	5:50	2021/10/1	3 15:55	



CLIENT:		Equinor			PRO.	IECT NU	MBER	ID:				PB81	64				
SITE:		SEP/DEP			PUR	POSE FO	R MOI	NITOR	ING:			Baseli	ine Noi	se Surv	/ey		
MEASUREMENT LOCATION ID):	LFR2			PERS	ONNEL						DC/SC	2				
SOUNDSCAPE DETAILS																	
Evening survey 19:06																	
Filename 0004, all other mete	r settings as al	ove		Filedate 0004 Las													
Sea noise dominant				dB Main:LAeg Band:L	Zeq												
Slight breeze <4m/s, 13. degre	es			80													
				70													
				50													
				40 mm munit	Non Andrea	allenstelland	-longe two	w ^r lv n drhu	www	Manad	Merennery	white	Manon	www.	mm	www.	Manhander
				30													
END OF EVENING/START OF N	NIGHT SURVEY	OBSERVAT	IONS	20													
FIELD CALIBRATION LEVEL	LINE CHECK (dB)	94.0	0													
	File Name/N	0.	0006	19:07:00.0 19:	08:00.0 19:09:00.	0 19:10:00.0	19:11:00.0	19:12:00.0	19:13:00.0	19:14:00.0	19:15:00.0	19:16:00.0	19:17:00.0	19:18:00.0	19:19:00.0	19:20:00.0	19:21:00.0
DATE & TIME	13/10/21		22:45]													
SOUNDSCAPE DETAILS				Above: Eve	ning LAeq	profile	unedit	ed									
Night time survey 23:00				File:Auto_0007_Leq													
Filename 0007, all other mete	r settings as al	ove		dB Main:LAeq Band:L 90 TT	Zeq												
Sea noise dominant				80													
Slight breeze <2m/s, 13.3 deg	rees			70													
Exhaust noise slightly audible	some distance	away at beg	ginning	50 Ard All Party Mr. 14	mpleway	and a land a star	Anantha	rds-outly	~	he for the	hhar	fraquada	whythere	Mhylparys	popular	water the	Www.
				40	u -					1.0							
				20													
				10													
END OF NIGHT SURVEY OBSEI	RVATIONS			0 23:00:00.0 23:01:00.0	23:02:00.0 23:	03:00.0 23:04:	:00.0 23:05:	00.0 23:06	:00.0 23:07	:00.0 23:08	8:00.0 23:05):00.0 2 3:1	0:00.0 23:11	:00.0 23:12	; 2:00.0 23:	13:00.0 23	:14:00.0 23:15:00.
FIELD CALIBRATION LEVEL	LINE CHECK (dB)	93.9]													
	File Name/N	0.	0009]													
DATE & TIME	13/10/21		23:43	Above: Nig	nt time LA	eq prof	ile une	dited									



CLIENT:				Equino	r				PROJE	ECT NUMBER ID:			PB8164	
SITE:				SEP/DE	EP				PURP	OSE FOR MONITORIN	NG:		Baseline Noise Survey	,
MEASUREMEN	T LOCATION I):		SSR1					PERSC	DNNEL:			DC/SC	
EQUIPMENT DETAILS	SOUND LEVE METER Seria	EL Il No.	007321	.01	MIC TYP	CROPHONE PE/Serial No.	Rion 0528	UC-59 86		CALIBRATOR Serial No.	3508	1041	CERTIFIED CALIBRATI REFERENCE LEVEL	ON 94dB
	SOUND LEVE	EL DEL	Rion NL	52	PRE Seri	E-AMP TYPE/ ial No.	Rion 3212	NH-25 29		CALIBRATOR MAKE/MODEL	Rion	NC-75	WEATHER STATION ID/Nearest Location	Davis RHDHV own @ SSR2
	START OF S	SURVEY	OBSER	VATION	S		MIC	ROPHONE I	HEIGHT	(m)		1.2 to 1.	5m above ground	
FIELD CALIBRAT	TION LEVEL	LINE	CHECK (d	dB)	Т	94.0	FAÇ	ADE/FREEF	ELD			Freefield		
		File N	ame/No	b .		n/a	SITE	LOCATION	/IMAGI	ES/COORDINATES:	X :	620864	Y:	302308
DATE & TIME		14/10)/21			15:45								that there are
TEMPERATURE	(degrees C)	13.6										4		al a pr
CLOUD COVER		Most	ly Cloudy	y (76%)			t			all the second sec				
WINDSPEED/DI	RECTION	<2m/	s			SW/WSW		E	1		1000			Shanding Providence of the second second
FILENAME		0001					-	-			-			
TIME WEIGHTIN	١G	Fast						Jan -						
FREQUENCY W	EIGHTING	Linea	r/A-weig	ghting, 1	.00ms	S						Sec. 1		
AUDIO ENABLE	D (Yes/No)	Yes							States.					
AUDIO SETTINO	S	>70df	3 Lp, 12-	bit			4				100			
SOUNDSCAPE D	DETAILS						SSR	1 Facing No	rth			SSR1 Fac	ing East/South East	
Intermittent wile	d bird song an	d calls										100	A REAL PROPERTY	1
Aircraft noise												-		
Game bird calls							4							the local
Night time Sur	vey 14/10/21	23:33 a	pproxin	nately			-							New Concession
Dry/Overcast 13	3 degrees, win	dspeed	<2m/s, V	WSW/E										- None
Leaf rustle													No. Carlos The	
Distant road tra	ffic perceptibl	e												
												SSR1 Fac	ing South to South We	st



CLIENT:		Equinor			PROJECT NUMBER ID:	PB8164
SITE:		SEP/DEP			PURPOSE FOR MONITORING:	Baseline Noise Survey
MEASUREMENT LOCATION ID	D:	SSR1			PERSONNEL:	DC/SC
END OF SU	RVEY OBSERV	ATIONS		ADDITIONAL DET	TAIL/IMAGES	
FIELD CALIBRATION LEVEL	LINE CHECK	dB)	94.0	dB		
	File Name/N	о.	n/a			
DATE & TIME	25/10/21		12:00	10		
TEMPERATURE (degrees C)	14.2				Ale with let be a survey	
CLOUD COVER	n/a			a Norman	Harts Hours Harden at Manhala All And T	Ma Martin Letter M - Um
WINDSPEED/DIRECTION	<2m/s		WSW/SSW	11 them Willing . Ma	AINNE PHALEANNA AMERICANAAT NE	
SOUNDSCAPE DETAILS						
Intermittent wild bird song and	d calls			4 Hor Anne H		-5
Aircraft noise					a set of the	-B
Game bird calls in residence g	rounds			21	W W W	
				anagayis wan acagayis w	AN ANALAYA MAN MELANYA KAN ALEHAYA WAN ANJAYANGA ALAPATA KAN	NATUALINEO BETUKANAN AKTURA MAN AKTURA KEO
				Above:	Survey Profile unedited	Below: Weather data unedited
				SEP/	DEP Baseline Noise Survey Weather Data 15 n	ninute periods - SSR2 Location
				(s/w) p		
				udspee	M A A M	5
				W pue (
				10 U	m v m	A Charles and a set
				mberatu		2
				e white	Mary Mary Mary	A MA A A A A A A
				50,00000000000000000000000000000000000		
				Temper	Date and Time ature	Vindspeed Threshold (5m/s) Precipitation (mm)



CLIENT:				Equino	r		PROJE	CT NUMBER ID:			PB8164	
SITE:				SEP/DE	Р		PURP	DSE FOR MONITORIN	IG:		Baseline Noise Survey	
MEASUREMEN	r location i):		SSR2			PERSC	DNNEL:			DC/SC	
EQUIPMENT DETAILS	SOUND LEVE	EL (006208	67	MICROPHONE TYPE/Serial No.	Rion UC-59		CALIBRATOR Serial No.	3508	1041	CERTIFIED CALIBRATION	94dB
	SOUND LEVE	LF	Rion NL	-52	PRE-AMP TYPE/	Rion NH-25		CALIBRATOR	Rion	NC-75	WEATHER STATION	Davis RHDHV
	METER MOD	DEL			Serial No.	20927		MAKE/MODEL			ID/Nearest Location	own @ SSR2
	START OF S	SURVEY (OBSER\	ATION	;	MICROPHONE	HEIGHT	(m)		1.2 to 1.5	ōm above ground	
FIELD CALIBRAT	ION LEVEL	LINE C	HECK (d	lΒ)	94.0	FAÇADE/FREEF	IELD			Freefield		
		File Na	ame/No).	n/a	SITE LOCATION	/IMAGI	ES/COORDINATES:	Х:	621153	Y: 301	333
DATE & TIME		14/10/	/21		18:45			and the state				
TEMPERATURE	(degrees C)	13.6			•	A		ALC: NO	and the second			
CLOUD COVER		Mostly	/ Cloudy	<mark>/ (</mark> 76%)		- 74.00						
WINDSPEED/DI	RECTION	<2m/s			SW/WSW	a contraction			Conception of			
FILENAME		0002				A CONTRACTOR			11.2			
TIME WEIGHTIN	IG	Fast				and all and a		A REAL MARK				
FREQUENCY W	EIGHTING	Linear/	/A-weig	hting, 1	00ms	Maria						
AUDIO ENABLE	D (Yes/No)	Yes						State of the state	-			
AUDIO SETTINO	iS	>70dB	Lp, 12-	bit			and the second second	C. S. Martin, M. S.				
SOUNDSCAPE D	ETAILS					SSR2 Facing No	rth We	st (Building works)				
Road traffic noi	se distant – "w	hooshin	ıg"					New York				
Intermittent Bir	d song and cal	ls						13 C-12		¥		2 20 10
						and the second		A DAT			A AND AND	the to
							1 .			ALC: NO		
									Charles and the second			
Night time Sur	vey 14/10/21	23:55 ар	oproxin	nately				A CONTRACT				
Dry/Overcast 12	2.9 degrees, w	indspeed	l <2m/s	, WSW/	SSW		19.00				-	
Leaf rustle											Contract Ala	
Road traffic not	perceptible					a traine of			10			
						SSR2 Facing No	rth to N	lorth West		SSR2 Fac	ing South to South West	



CLIENT:		Equinor		PROJECT NUMBER ID: PB8164					
SITE:		SEP/DEP			PURPOSE FOR MONITORING:	Baseline Noise Survey			
MEASUREMENT LOCATION IE	D:	SSR2			PERSONNEL:	DC/SC			
END OF SU	RVEY OBSERV	ATIONS	-	ADDITIONAL DET	TAIL/IMAGES				
FIELD CALIBRATION LEVEL	LINE CHECK	(dB)	94.1	dB					
	File Name/N	о.	n/a	12					
DATE & TIME	25/10/21		12:45	10					
TEMPERATURE (degrees C)					And the second states and the	- Una			
CLOUD COVER	n/a			8	thank of what allow allow to pay the	437 - 14 - 1 Alay - 1 - 14			
WINDSPEED/DIRECTION	<1m/s		WSW/SW	month the the	ARE THE MAIN BRANNAL MAIN	MANA MALANA			
SOUNDSCAPE DETAILS				0	A A A A A A A A A A A A A A A A A A A				
Road traffic noise distant						-5 -5 -5			
				Above: Above: SEP/ 25 (jul) presspection 25 (jul) presspection 25 (jul	A DATIM IMAM MININ MININ AND ALLAN SURVEY Profile unedited //DEP Baseline Noise Survey Weather Data 15 h //DEP Baseline Noise Survey Weather Data 15 h ////////////////////////////////////	Mindspeed Threshold (5m/s)			



CLIENT:		Equinor						PROJE	CT NUMBER ID:		PB8164			
SITE:				SEP/DE	ЕР			PURP	OSE FOR MONITORIN	IG:		Baseline Noise Survey		
MEASUREMEN	r location ie):		SSR4				PERSC	ONNEL:			DC/SC		
EQUIPMENT DETAILS	SOUND LEVE METER Seria	EL I No.	005869	06	MIC	ROPHONE E/Serial No.	Rion UC-59 13364		CALIBRATOR Serial No.	35081	.041	CERTIFIED CALIBRATION REFERENCE LEVEL	94dB	
	SOUND LEVE	L	Rion NL	-52	PRE-	-AMP TYPE/	Rion NH-25		CALIBRATOR	Rion I	NC-75	WEATHER STATION	Davis RHDHV	
	METER MOD	DEL			Seria	al No.	87025		MAKE/MODEL			ID/Nearest Location	own @ SSR2	
	START OF S	SURVEY	OBSER\	VATION	S		MICROPHONE	HEIGHT	(m)		1.2 to 1.5	im above ground		
FIELD CALIBRAT	ION LEVEL	LINE C	CHECK (a	dB)	9	94.0	FAÇADE/FREEF	IELD			Freefield			
		File Na	ame/No) .	r	n/a	SITE LOCATION	/IMAGI	ES/COORDINATES:	Х:	620344	Y: 301	.827	
DATE & TIME		15/10/	/21		1	10:30			144. 11					
TEMPERATURE	(degrees C)	12.7								1				
CLOUD COVER		Mostly	y Clear l	olue sky	(30%)	b)	BANA		e deserve	4				
WINDSPEED/DI	RECTION	<pre><2m/s, gusts up 4m/s NW/NNW 0004</pre>												
FILENAME	NAME 0004						with the second		T. TRACK					
TIME WEIGHTIN	IG	Fast								944. Tu 84 11				
FREQUENCY W	EIGHTING	Linear	/A-weig	hting, 1	.00ms	6				N.				
AUDIO ENABLE	D (Yes/No)	Yes					Kin and S							
AUDIO SETTINO	iS	>70dB	⁸ Lp, 12-	bit			and the second			i se				
SOUNDSCAPE D	ETAILS	-					SSR4 Facing No	rth						
Road traffic noi	se distant						The second second		de ad.	8				
10:30 Aircraft p	assover							1						
Regular Bird so	ng and calls							1		13				
Dry road surfac	es, some dew o	on grass	6				and the second s	- The		2. 14 		and the second second	n.t. S	
									Kaling -					
Night time Survey 14/10/21 23:45 approximately														
Dry/Overcast 12.9 degrees, windspeed <2m/s, WSW/SSW				ſ		NO PERSON								
Distant road traffic noise														
							SSR4 Facing We	est			SSR4 Fac	ing South		



CLIENT:		Equinor		PROJECT NUMBER ID: PB8164					
SITE:		SEP/DEP			PURPOSE FOR MONITORING:	Baseline Noise Survey			
MEASUREMENT LOCATION ID	D:	SSR4			PERSONNEL:	DC/SC			
END OF SU	RVEY OBSERV	ATIONS		ADDITIONAL DE	TAIL/IMAGES				
FIELD CALIBRATION LEVEL	LINE CHECK	(dB)	94.0	dB					
	File Name/N	о.	n/a	120					
DATE & TIME	25/10/21		11:45	m					
TEMPERATURE (degrees C)	14.3			W					
CLOUD COVER	n/a			8		- Hit			
WINDSPEED/DIRECTION	<1m/s		WSW/SW	march Mar	AN AN ANT ANY MANY	MAN MALL MALL MALL			
SOUNDSCAPE DETAILS				60	Wash White Washington and the second				
Road traffic noise distant									
				Above:	Dep Baseline Noise Survey Weather Data 15	Below: Weather data unedited			
					Windspeed (m/s) Windspeed (m/s) Gust	Windspeed Threshold (5m/s) Precipitation (mm)			



CLIENT:		Equinor					PROJECT NUMBER ID:					PB8164			
SITE:				SEP/DE	Р			PURP	OSE FOR MONITORIN	IG:		Baseline Noise Survey			
MEASUREMEN	T LOCATION I):		SSR5				PERSO	DNNEL:			DC/SC			
EQUIPMENT DETAILS	SOUND LEVE METER Seria	EL Il No.	008649	82	MICROPHONE TYPE/Serial No.	Rion 0991	UC-59 L 2		CALIBRATOR 3508 Serial No.		1041	CERTIFIED CALIBRATION REFERENCE LEVEL	94dB		
	SOUND LEVE	EL	Rion NL	-52	PRE-AMP TYPE/	Rion	NH-25		CALIBRATOR	Rion	NC-75	WEATHER STATION	Davis RHDHV		
	METER MOD	DEL			Serial No.	6510)9		MAKE/MODEL			ID/Nearest Location own @ SSR7			
	START OF S		OBSER	ATIONS	5	MIC	MICROPHONE HEIGHT (m) 1.2 to 1.5m above gr				5m above ground				
FIELD CALIBRAT	TION LEVEL	LINE C	CHECK (d	IB)	94.0	FAÇ4	ADE/FREEF	IELD		-	Freefield	Freefield			
		File N	ame/No).	n/a	SITE	LOCATION	/IMAG	ES/COORDINATES:	X:	622480	Y: 3025	516		
DATE & TIME		14/10)/21		14:15				State State			and the second s	100		
TEMPERATURE	(degrees C)	14.0										COMPLEX SHIELD	and the second		
CLOUD COVER	COVER Mostly Cloudy (91%)						All and		and Share				-		
WINDSPEED/D	D/DIRECTION <3m/s, gusts up >5m/s WSW														
FILENAME	ENAME 0005														
TIME WEIGHTII	IME WEIGHTING Fast					Here we want		TEAM CO							
FREQUENCY W	EIGHTING	Linear	r/A-weig	hting, 10	00ms		10-12								
AUDIO ENABLE	D (Yes/No)	No							A STATE OF A						
AUDIO SETTINO	6S	n/a													
SOUNDSCAPE	DETAILS					SSR5	SSR5 Facing North-west					ing East			
Road traffic noi	se audible - "v	vhooshi	ing"												
14:12 Train pas	s-by and 14:16	5 Aircra	ft passo	ver											
Occasional Bird	l song and call	s													
Dry road surfac	es														
Night time Survey 14/10/21 23:06 approximately															
Dry/Overcast 13.6 degrees, windspeed 2 to 5m/s, WSW															
23:10 Tram pass-by															
Distant road traffic noise – "whooshing"						_		_							
Occasional light breeze/Leaf rustle															



CLIENT:		Equinor		PROJECT NUMBER ID: PB8164						
SITE:		SEP/DEP			PURPOSE FOR MONITORING:	Baseline Noise Survey				
MEASUREMENT LOCATION ID):	SSR5			PERSONNEL:	DC/SC				
END OF SU	RVEY OBSERV	ATIONS		ADDITIONAL DET	TAIL/IMAGES					
FIELD CALIBRATION LEVEL	LINE CHECK (dB)	94.1	dB						
	File Name/N	о.	n/a			[Jan				
DATE & TIME	25/10/21		11:00	100		——————————————————————————————————————				
TEMPERATURE (degrees C)	13.1				a man when a falling to Man	ulu - Ufinax				
CLOUD COVER	n/a			· · · · · · · · · · · · · · · · · · ·						
WINDSPEED/DIRECTION	<2m/s, gusts	up 3m/s	SSW/WSW		MALAL MALA I WAANA MAADA I WAALII AA					
SOUNDSCAPE DETAILS										
Road traffic noise audible - "w	vhooshing"			40	And an an an an an an					
Aircraft						10 - V V - U				
Bird song and calls				20						
				2021/10/15 00:00 2021/10/14	<u>5 00:00 2021/10/17 00:00 2021/10/18 00:00 2021/10/19 00:00 2021/10/20 00:00 2021/10/21 00:00 2</u>	021/10/22 00:00 2021/10/23 00:00 2021/10/24 00:00 2021/10/25 00:00				
				Above:	: Survey Profile unedited	Below: Weather data unedited				
				25.0	SEP/DEP Baseline Noise Survey Weather Data 15 mir	nute periods - SSR7 Location				
						35				
				20.0	M					
				speed (m/						
				Pui 15.0	· A A M					
				100 V	1/WV Y	a A Min My				
				emperatur	h. u.	XI - m				
				5.0 History	W A A A A A A A A A A A A A A A A A A A	and the second				
				N. m	1 march Mar	and a start and a				
				0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00						
				88888888999999999999999999999999999999	참가가가가 가장 이야지 않았다. 또한 것이 이야지 않는 것이 있는 것이 있는 것이 있는 것이 있는 것이 있다. Date and Time					
1				T	emperature — Windspeed (m/s) — Windspeed (m/s) Gust — W	indspeed Threshold (5m/s) Precipitation (mm)				



CLIENT:				Equinor			PROJ	CT NUMBER ID:		PB8164		
SITE:				SEP/DEF)		PURP	OSE FOR MONITORIN	IG:		Baseline Noise Survey	
MEASUREMEN	T LOCATION IE):	•	SSR6			PERSO	ONNEL:			DC/SC	
EQUIPMENT DETAILS	SOUND LEVE METER Seria	EL 0	062096	4	MICROPHONE TYPE/Serial No.	Rion UC-59 03884		CALIBRATOR Serial No.	35081	L041	CERTIFIED CALIBRATION REFERENCE LEVEL	94dB
	SOUND LEVE	L R	lion NL-	52	PRE-AMP TYPE/	Rion NH-25		CALIBRATOR	Rion I	NC-75	WEATHER STATION	Davis RHDHV
	METER MOD	DEL			Serial No.	21005		MAKE/MODEL			ID/Nearest Location	own @ SSR7
	START OF S	SURVEY O	DBSERV	ATIONS	_	MICROPHONE	HEIGHT	(m)		1.2 to 1.5	ām above ground	
FIELD CALIBRAT	TION LEVEL	LINE CH	IECK (dE	В)	94.0	FAÇADE/FREEF	IELD			Freefield		
		File Nar	me/No.		n/a	SITE LOCATION	/IMAG	ES/COORDINATES:	X :	622514	Y: 302	184
DATE & TIME		14/10/2	21		13:30			a strate.				
TEMPERATURE	(degrees C)	14.2			-	5		The second second				
CLOUD COVER		Mostly	Cloudy	(91%)								
WINDSPEED/DI	RECTION	<2m/s,	gusts u	p >5m/s	WSW/SW	e transfer and the second s						
FILENAME		0006			-	Waster Harris	Carlo A					
TIME WEIGHTIN	١G	Fast										
FREQUENCY W	EIGHTING	Linear//	A-weigh	nting, 10	0ms			T. Super F				
AUDIO ENABLE	D (Yes/No)	Yes							162			
AUDIO SETTINO	6S	>70dB L	Lp, 12-b	it								
SOUNDSCAPE D	DETAILS					SSR6 Facing No	orth					
Distant road tra	ffic noise audi	ble - "who	ooshing	3"								
Bird song and c	alls										All Street	
Occasional vehi	icle passing he	ading to (Golf cou	urse car	park				and a	1 della		af 12 h
Dry road surfac	es								-			
Night time Sur	Survey 14/10/21 23:06 approximately									2		AND NO.
Dry/Overcast 13.6 degrees, windspeed 2 to 5m/s, WSW					V					a Change	- and the -	and the second
23:10 Train pass-by								Tus:		RE LAND	and the second	
Distant road traffic noise – "whooshing"							The Part of the State		a de			
Occasional light breeze/Leaf rustle									1			
Occasional car movement in car park area						SSR6 Facing We	est			SSR6 Fac	ing South	



CLIENT:		Equinor			PROJECT NUMBER ID: PB8164						
SITE:		SEP/DEP			PURPOSE FOR MONITORING:	Baseline Noise Survey					
MEASUREMENT LOCATION ID):	SSR6			PERSONNEL:	DC/SC					
END OF SU	RVEY OBSERV	ATIONS		ADDITIONAL DET	TAIL/IMAGES						
FIELD CALIBRATION LEVEL	LINE CHECK	(dB)	93.9	dB							
	File Name/N	о.	n/a			[Jan					
DATE & TIME	25/10/21		10:45	100		——————————————————————————————————————					
TEMPERATURE (degrees C)	12.7			90							
CLOUD COVER	n/a			80 Hanny Mathiele Pray	Marine Jone de Mil Marine Marine Marine						
WINDSPEED/DIRECTION	<2m/s, gusts	up 4m/s	SSW/SE	70							
SOUNDSCAPE DETAILS				60 - CONTRACTOR OF CONTRACTOR							
Distant road traffic noise audit	ole - "whooshi	ng"		50		— LSU					
Bird song and calls				40	And a subscription of the second s						
Occasional vehicle in car park				30	V V V I						
Aircraft				20							
				2021/10/15 00:00 2021/10/1	16 00:00 2021/10/17 00:00 2021/10/18 00:00 2021/10/19 00:00 2021/10/20 00:00 2021/10/21 00:00 2	021/10/22 00:00 2021/10/23 00:00 2021/10/24 00:00 2021/10/25 00:00					
				Above:	Survey Profile unedited	Below: Weather data unedited					
				25.0	SEP/DEP Baseline Noise Survey Weather Data 15 mir	nute periods - SSR7 Location					
						3.5					
				20.0	M						
				preod (my							
				PuiMpue	· A A M						
					1/WV Y	A Am M					
				emperatu	The up of	MIL					
					I have a superior and the second of the	and a second standing of the second					
				1011 X22202 1011 X2202 1011 X220 1011 X220 1011							
				3 3 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	នការមិនមិនមិនមិនមិនទំនួនទំនួនទំនួនទំនួនទំនួនទំនួនទំនួនទំន	다이지 다이지지 않지 않지 않지 않지 않고 있었 것 또 또 또 또 또 또 또 또 또 있 있 것 것 것 것 것 것 것 것					
				T	emperature — Windspeed (m/s) — Windspeed (m/s) Gust — W	indspeed Threshold (5m/s) Precipitation (mm)					



CLIENT:				Equino	r	PROJECT NUMBER ID:					PB8164		
SITE:				SEP/DE	Р		PURP	OSE FOR MONITORIN	IG:		Baseline Noise Survey		
MEASUREMEN	r location ie):		SSR7			PERSO	ONNEL:			DC/SC		
EQUIPMENT DETAILS	SOUND LEVE METER Seria	L I No.	005101	42	MICROPHONE TYPE/Serial No.	Rion UC-59 02847		CALIBRATOR Serial No.	35081	1041	CERTIFIED CALIBRATION REFERENCE LEVEL	94dB	
	SOUND LEVE	L	Rion NL	52	PRE-AMP TYPE/	Rion NH-25		CALIBRATOR	Rion I	NC-75	WEATHER STATION	Davis RHDHV	
	METER MOD	DEL			Serial No.	31928		MAKE/MODEL		ID/Nearest Location own @ SSR/			
	START OF S		OBSER							1.2 to 1.5	om above ground		
FIELD CALIBRA	ION LEVEL		HECK (a	dB)	94.0	FAÇADE/FREEF	IELD		v	Freefield	N 200	207	
		File Na	ame/No) .	n/a	SITE LOCATION	/IMAG	ES/COORDINATES:	Х:	621564	Y: 302	907	
DATE & TIVIE		14/10/	/21		13:00		1						
TEMPERATURE	(degrees C)	14											
CLOUD COVER		Mostly	y Cloudy	y (91%)					n.				
WINDSPEED/DI	RECTION	s, gusts i	up 5m/s	WSW/SW				124					
FILENAME	FILENAME 0007						M.	EL WROKE					
TIME WEIGHTIN	FIME WEIGHTING Fast							1 - A.B.					
FREQUENCY W	EIGHTING	Linear	/A-weig	ghting, 1	00ms								
AUDIO ENABLE	D (Yes/No)	Yes						THE LOCAL					
AUDIO SETTINO	is	>70dB	3 Lp, 12-	bit			2.2						
SOUNDSCAPE D	ETAILS					SSR7 Facing No	rth						
Distant road tra	ffic noise audi	ble					Seal of						
Bird calls/Leaf	rustle from tall	trees de	ominant	t			No.						
Occasional vehi	cle passing alo	ong Man	ngreen I	lane			- Car	Jak Binderick	A.	- 1			
Farm yard activ	ity noise, occa	sional cl	lunk and	d animal	sounds		they						
Dry road surfaces										11.154 (An 1			
Night time Survey 14/10/21 23:21 approximately									1				
Dry/Overcast 13.7 degrees, windspeed 2 to 4m/s								A Sale Con	No.		West Law Mark	1000	
23:21 Vehicle along Mungreen Lane								S.E.			Al Part		
Distant road traffic noise – "whooshing"						and the same						And the second second	
Occasional light breeze/Leaf rustle						SSR7 Facing We	est			SSR7 Fac	ing South		



CLIENT:		Equinor		PROJECT NUMBER ID: PB8164						
SITE:		SEP/DEP			PURPOSE FOR MONITORING:	Baseline Noise Survey				
MEASUREMENT LOCATION ID):	SSR7		-	PERSONNEL:	DC/SC				
END OF SU	JRVEY OBSERV	ATIONS		ADDITIONAL D	DETAIL/IMAGES					
FIELD CALIBRATION LEVEL	LINE CHECK (dB)	94.1	dB						
	File Name/N	ο.	n/a							
DATE & TIME	25/10/21		13:55	10						
TEMPERATURE (degrees C)	15.2			nd March	J. March March M					
CLOUD COVER				N The Army and the	March with mathin of the work of	1 Martin Martin M. UM AN _ UPP				
WINDSPEED/DIRECTION	<2m/s, gusts	up 5m/s	SW	a Mahat Alkalar	a CANAL TA ANAL TA ANA					
SOUNDSCAPE DETAILS										
Distant road traffic noise audit	ble			40						
Bird calls/Leaf rustle from tall	trees dominan	t			North All All All					
Farm yard activity noise, occas	sional clunk an	d animal s	ounds	20	in a bib do	U5				
				2021/10/15 00:00 2021/	10/16 10:00 2021/10/17 10:00 2021/10/18 00:00 2021/10/19 00:01 2021/10/20 00:00 2021/10/21 00:00	2021/10/22 00:00 2021/10/23 00:10 2021/10/24 01:10 2021/10/25 10:00				
				Abov	e: Survey Profile unedited	Below: Weather data unedited				
				25.0	SEP/DEP Baseline Noise Survey Weather Data 15 m	inute periods - SSR7 Location				
						- 35				
				20.0	M	. a				
				the set of		- 25				
				201 15.0 M						
				10.0	1 /WV h					
				² so han he had he ha						
				0.011.02200.00 0.011.02200.00 0.011.02200.00 0.011.02200.00 0.01200.00 0.01200.00 0.01200.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0100.00 0.0000.00 0.0000.00 0.0000.00 0.0000.00 0.0000.00 0.0000.00 0.0000.00 0.0000.00 0.0000.00 0.0000.00 0.0000.00 0.0000.0000.00 0.0000.0000.00 0.0000.0000.0000.00 0.0000.0000.0000.000000						
					Date and Time Temperature ——Windspield (m/s) ——Windspield (m/s) Gust	Windspeed Threshold (Sm/s) Precipitation (mm)				



CLIENT:				Equino	r	PROJECT NUMBER ID:					PB8164		
SITE:				SEP/DE	Р		PURP	OSE FOR MONITORIN	IG:		Baseline Noise Survey		
MEASUREMEN	r location ie):		SSR8			PERSO	ONNEL:			DC/SC		
EQUIPMENT DETAILS	SOUND LEVE METER Seria	L No.	003206	43	MICROPHONE TYPE/Serial No.	Rion UC-59 03392		CALIBRATOR Serial No.	35081	L041	041 CERTIFIED CALIBRATION REFERENCE LEVEL		
	SOUND LEVE METER MOD	ËL DEL	Rion NL	-52	PRE-AMP TYPE/ Serial No.	Rion NH-25 10651		CALIBRATOR MAKE/MODEL	Rion I	NC-75	WEATHER STATION ID/Nearest Location	Davis RHDHV own @ SSR7	
	START OF S	URVEY	OBSER\	VATIONS	5	MICROPHONE	HEIGHT	(m)		1.2 to 1.5	5m above ground		
FIELD CALIBRAT	ION LEVEL	LINE C	CHECK (d	dB)	94.0	FAÇADE/FREEF	IELD			Freefield			
		File Na	ame/No	b .	n/a	SITE LOCATION	/IMAGI	ES/COORDINATES:	X:	621353	Y: 3031	L04	
DATE & TIME		14/10	/21		11:59				t stilled				
TEMPERATURE	(degrees C)	14				-							
CLOUD COVER		Mostl	y Cloudy	y (91%)			Tool .						
WINDSPEED/DI	RECTION	<2m/s	s, gusts ı	up 5m/s	WSW/SW								
FILENAME		0001				N 2014 A							
TIME WEIGHTIN	IG	Fast					and the second second						
FREQUENCY WI	EIGHTING	Linear	r/A-weig	ghting, 10	00ms		-	The second second					
AUDIO ENABLE	D (Yes/No)	Yes				12 to all							
AUDIO SETTINO	iS	>70dB	3 Lp, 12-	bit		5.2000							
SOUNDSCAPE D	ETAILS					SSR8 Facing No	rth						
Distant road trat	ffic noise audi	ble A47	/A140			10 10 10		4	A		Sales and		
Bird calls/Leaf	rustle						Sim.	the state	ren j	100		10 7 B.A	
Occasional vehi	cle passing alo	ong Mar	ngreen I	lane				La aller			Contraction (1)	A MALER	
No audible nois	e from quarry	or Mang	green Co	ountry H	louse venue	-	A Maine						
Dry road surface	ry road surfaces								dite:	-			
Night time Survey 14/10/21 23:21 approximately							and a second second	A Albert Carles of Friday		A AND			
Dry/Overcast 13.7 degrees, windspeed 2 to 4m/s										and the second	A CONTRACTOR		
23:21 Vehicle along Mungreen Lane					W. P. Barreto	S.P.C	Contraction of the second						
Distant road traffic noise – "whooshing"													
Occasional light	Occasional light breeze/Leaf rustle						SSR8 Facing West SSR8 Facing South						



CLIENT:		Equinor		PROJECT NUMBER ID: PB8164						
SITE:		SEP/DEP			PURPOSE FOR MONITORING:	Baseline Noise Survey				
MEASUREMENT LOCATION ID	:	SSR8			PERSONNEL:	DC/SC				
END OF SU	RVEY OBSERV	ATIONS		ADDITIONAL DET	TAIL/IMAGES					
FIELD CALIBRATION LEVEL	LINE CHECK (dB)	94.1	dB						
	File Name/N	ο.	n/a			Der				
DATE & TIME	25/10/21		13:29	10		UG				
TEMPERATURE (degrees C)	14.9			my mut	and a like a balance of the	the market in the market in the later of the				
CLOUD COVER	n/a				and the state of the well was a	1 111 11 Martin 11 Martine MA - Utim				
WINDSPEED/DIRECTION	<2m/s, gusts	up 4m/s	SW/SSW	A RANK A MANAGER	I MARKATA AND AND AND AND A MARKATA AND AND A MARKATA A					
SOUNDSCAPE DETAILS										
Distant road traffic noise audit	ole A47/A140			40						
				Above:	Survey Profile unedited SEP/DEP Baseline Noise Survey Weather Data 15 min Office Survey Office Unedited SEP/DEP Baseline Noise Survey Weather Data 15 min Office Survey Office Unedited Office Survey Office Unedited SEP/DEP Baseline Noise Survey Weather Data 15 min Office Survey Office Unedited Office Survey Office Unedited Office Survey Office Unedited Survey Office Survey Office Unedited Survey Office Survey Office Unedited Survey Office Survey Office Unedited Survey Office Survey Office	Below: Weather data unedited				



CLIENT:				Equino	r		PROJE	CT NUMBER ID:		PB8164			
SITE:				SEP/DE	Р		PURP	OSE FOR MONITORIN	IG:		Baseline Noise Surv	/ey	
MEASUREMEN	r location ie	D:		SSR9			PERSO	ONNEL:			DC/SC		
EQUIPMENT DETAILS	SOUND LEVE METER Seria	EL C al No.	008983	20	MICROPHONE TYPE/Serial No.	Rion UC-59 15834		CALIBRATOR Serial No.	3508:	1041	CERTIFIED CALIBRA REFERENCE LEVEL	TION	94dB
	SOUND LEVE	EL F	Rion NL	-52	PRE-AMP TYPE/	Rion NH-25		CALIBRATOR	Rion	NC-75	WEATHER STATION	1	Davis RHDHV
	METER MOD	DEL			Serial No.	98534		MAKE/MODEL			ID/Nearest Locatio	n	own @ SSR2
	START OF S	SURVEY C	OBSER\	ATIONS	6	MICROPHONE	HEIGHT	(m)		1.2 to 1.5	ōm above ground		
FIELD CALIBRAT	ION LEVEL	LINE CH	HECK (d	B)	94.0	FAÇADE/FREEF	IELD			Freefield			
		File Na	ime/No).	n/a	SITE LOCATION	/IMAG	ES/COORDINATES:	X:	620969	Y:	3017	72
DATE & TIME		14/10/2	/21		16:15								
TEMPERATURE	(degrees C)	15					4						
CLOUD COVER		Mostly	Cloudy	y (76%)		S- H- Left State							
WINDSPEED/DI	RECTION	<2m/s			SW				m				
FILENAME		0009											
TIME WEIGHTIN	IG	Fast					1						
FREQUENCY W	EIGHTING	Linear/	/A-weig	hting, 10	00ms								
AUDIO ENABLE	D (Yes/No)	Yes					6 - 9 - 9 -						
AUDIO SETTINO	iS	>70dB	Lp, 12-	bit				A Charles and and a second second					
SOUNDSCAPE D	ETAILS					SSR9 Facing No	orth						
Intermittent wild	d bird song an	d calls						Star and	1			3	H. A. C.
Occasional vehi	cle alon <mark>g l</mark> ane									Ten		1	
Animal calls												sale 1	A STREET
Breeze, general	ly still, occasio	onal leaf r	rustle.						1				
						and the second	a start			89		=	
Night time Survey 14/10/21 23:33 approximately											Carl International Providence		A CAR
Dry/Overcast 13 degrees, windspeed <2m/s, WSW/E							()	and the second se	Sec.	1 Second	2,012		
Leaf rustle											and an and a set		
Distant road traffic perceptible								-					
							est			SSR9 Fac	ing South		



CLIENT:		Equinor			PROJECT NUMBER ID:	PB8164	
SITE:		SEP/DEP			PURPOSE FOR MONITORING:	Baseline Noise Survey	
MEASUREMENT LOCATION ID:		SSR9			PERSONNEL:	DC/SC	
END OF SURVEY OBSERVATIONS				ADDITIONAL DET	TAIL/IMAGES		
FIELD CALIBRATION LEVEL	LINE CHECK	dB)	94.0	dB			
	File Name/N	о.	n/a			(ber	
DATE & TIME	25/10/21		12:15	10			
TEMPERATURE (degrees C)	es C) 14.8			M Lulu A			
CLOUD COVER	n/a			ANTIN JUN AND MARK MILLING TO	A ANA A A		
WINDSPEED/DIRECTION	<2m/s W/S			and <u>an. Berka daring dara per</u> tab			
SOUNDSCAPE DETAILS					un de la constante de la consta		
Intermittent wild bird song an	d calls			4)			
Occasional vehicle along lane				ANK I	and a build a suff to sufficient of the	— и — и	
Animal calls				D			
Breeze, generally still, occasional leaf rustle.							
				2021/10/15 00:00 2021/10/16 0	nezno sostitutika nezno sostitutika nezno sostitutika nezno sostitutika nezno sostitutika. Nezno s	uzej tily zz oksio – zazej tily zs oksio – zazej poj zk oksio – zazej poj zs oksio	
			Above:	Survey Profile unedited	Below: Weather data unedited		
				SEP/DEP Baseline Noise Survey Weather Data 15 minute periods - SSR2 Location 7 7			
				(s/w) p	₹ <u>20</u>		
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			10 V	m v m	A (WW » E		
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ANNEX 23.1.2 ACOUSTIC TERMINOLOGY

This document provides a layperson's explanation of the acoustics terms that commonly appear in reports. It is not intended to give full scientific definitions or explain why these terms are as they are. Some obsolete terms and abbreviations have been included as they still appear in documents from time to time.

Term	Description
Sound	the physical phenomenon of the transmission of energy through gaseous or liquid media via rapid fluctuations in pressure.
Level	values measured in decibels
Loudness	the human perception of the level of sound
Noise	no strict definition and is often used interchangeably with sound however it is usually taken to mean unwanted sound
Index	a value based on the mathematical processing of raw data
Indicator	a value used to indicate the likelihood of a particular response of effect e.g. $L_{10,18hr}$ is an index based on statistical processing of sound pressure data that is used as an indicator for road traffic noise response.
Weighted	spectral values have been modified to reflect a frequency sensitivity.
Directivity	the amount by which a source radiates more sound in one direction than another.
Decibels dB	a logarithmic ratio of two values of a variable. The decibel is not a true measurement unit nor is it exclusive to acoustics. Decibels are used because they can represent very wide ranges of ratios (from trillionths and billionths to billions and trillions) with a small range of decibel values. Decibels can be used to represent measured values by using a known reference value in the ratio. When using decibels to measure something it is therefore important to specify what variable is being measured and what reference level has been used. This is done by adding a reference value statement in the form "dB re x units", where the units indicate the variable being measured and x is the reference value. Decibels are used in acoustics because the human ear responds to sound pressure in a logarithmic way and



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Term	Description
	the quantities measured in acoustics vary over wide ranges. As the decibel is used in acoustics to represent a range of sound level parameters, there is a standardised notation system. This takes the form of an italic capital letter 'L' (referring to 'level') and subscript characters which give specific details of what is being represented. Because decibels are logarithmic, they must be added, subtracted, multiplied, divided and averaged using different techniques from normal numbers.
Sound Pressure Level L_p obsolete – SPL	the basic measure of how much sound there is at a given location. It is a measure of the size of the pressure fluctuations in the air that we perceive as sound. Sound Pressure Level is expressed in decibels with a reference level of 20×10^{-6} Pa (L_p in dB re 20 µPa)
Sound Power Level <i>L</i> w obsolete – SWL	is the total amount of sound produced by a source. It cannot be measured directly but it can be calculated from Sound Pressure Level measurements in known conditions. It can be used to predict the Sound Pressure Level at any point. Sound Power Level is expressed in decibels with a reference level of 1x10 ⁻¹² W (<i>L</i> _W in dB re 1 pW).
A-weighting L_A or L_{pA} , L_{WA} , similar – C-weighting L_C or L_{pC} , L_{WC}	is an electronic filter which is equal to the frequency sensitivity of the human ear. Our sensitivity is at a maximum at around 2 kHz and steadily decreases above and below. Below 20 Hz and above about 20 kHz we can't hear at all. Within its operating limits a precision measurement microphone measures all frequencies the same so the output it produces does not reflect what we would hear. When considering impacts on humans, it is therefore often necessary to apply an A-weighting to the measured sound frequency spectrum. When A- weighted, the Sound Pressure Level L_p becomes L_{pA} (or L_A) and the Sound Power Level L_W becomes L_{WA} . The response of the human ear varies depending on how loud the sound is. A-weighting matches the response of a sound level meter to human hearing at low levels (~ 40-90 dB). For higher levels there are other weightings, the most common of which is the C- weighting.
Near and far-fields	are the regions of the radiation field of a sound source. In the near field, the sound pressure and acoustic particle velocity are not in phase and there is no simple



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Term	Description
	relationship between sound pressure level and distance from the source. The near field is limited to a distance from the source of around a wavelength of sound or three times the largest dimension of the sound source (whichever is the larger). The far field is the region of the sound field in which sound pressure level decreases predictably with distance. For a point source, the sound pressure level decreases by 6 dB for each doubling of distance. It extends from the near field to infinity.

Table A.2 Different types of decibels commonly used in acoustics

Term	Description
L _p L _{pA} (or L _A)	The instantaneous sound pressure level (L_p) The A-weighted instantaneous sound pressure level $(L_{pA} \text{ or } L_A)$ This is the root mean square size of the pressure fluctuations in the air. This level can fluctuate wildly even for seemingly steady sounds. To make sound level meters easier to read the values on the display are smoothed or damped out. This is effectively done by taking a rolling average of the previous 0.125 s (FAST
Laf, Las	time constant) or the previous 1 s (SLOW time constant). The letters F or S are added to the subscripts in the notation to indicate wh FAST or SLOW time constant has been used. These are often omitted but good practice to include them.
Lmax LAmax LAFmax Lmin , LFmin	The maximum instantaneous sound pressure level (L_{max}), The A-weighted maximum instantaneous sound pressure level (L_{Amax}) The A-weighted maximum instantaneous sound pressure level with a FAST time constant (L_{AFmax}). This is the highest instantaneous sound pressure level reached during a measurement period. The opposite of the L_{max} is the minimum instantaneous sound pressure level or L_{min} etc. It is good practice to include the letter which identifies the time constant used as
$L_{N,T}$ $L_{AN,T} L_{AFN,T}$ N = %age value, 0-100 T = measurement time e.g. LA90, LA10, LAF90, 5 min	The percentage exceedance sound pressure level (LN,T), The A-weighted percentage exceedance sound pressure level (LAN,T), the A- weighted percentage exceedance sound pressure level with a FAST time constant (LAFN,T). This is the sound pressure level exceeded for N% of the time T. e.g. If an A- weighted level of x dB is exceeded for a total of 6 minutes within one hour, the level will have been above x dB for 10% of the measurement period. This is written as LA10,1hr = x dB. LA0 (the level exceeded for 0 % of the time) is equivalent to the LAmax and LA100 (the level exceeded for 100 % of the time) is equivalent to the LAmin.



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Term	Description
	It is good practice to include the letter which identifies the time constant used as this can make a significant difference to the value.
$L_{eq,T}$ $L_{Aeq,T}$ $_{T}$ = measurement time eg. $L_{Aeq,5min}$	The equivalent continuous sound pressure level over period T ($L_{eq,T}$), The A-weighted equivalent continuous sound pressure level over period T ($L_{Aeq,T}$). This is effectively the average sound pressure level over a given period. As the decibel is a logarithmic quantity the L_{eq} is not a simple arithmetic mean value. The L_{eq} is calculated from the raw sound pressure data. It is not appropriate to include a reference to the FAST and SLOW time constants in the notation