



Sporad na Mara Offshore Wind Farm

Offshore Project

Environmental Impact Assessment Report

Appendix 19.6: Baseline Noise Analysis Comparison – Design Option 1 vs Design Option 2, Volume 2c

Document Reference No.: SNM-SNM-PAC-APP-1196

Date: February 2026



Quality Control Page

Document details	
Document title	Offshore Project Environmental Impact Assessment Report
Document subtitle	Appendix 19.6: Baseline Noise Analysis Comparison - Design Option 1 vs Design Option 2
Document Reference No.	SNM-SNM-PAC-APP-1196
Date	February 2026
Version	1.0
Author	WSP
Client Name	Sporad na Mara Limited

Document history						
Version	Revision	Issued	Checked	Approved	Date	Comments
1.0	A	WSP	WSP	SnM Ltd	February 2026	Final for submission

Contents

1	Introduction.....	1-1
1.1	Overview	1-1
1.2	Purpose of this appendix.....	1-2
2	All Data Analysis.....	2-3
2.1	Measurement Location LT1	2-3
2.2	Measurement Location LT2	2-4
2.3	Measurement Location LT3	2-5
2.4	Measurement Location LT4	2-6
2.5	Measurement Location LT5	2-7
2.6	Measurement Location LT6	2-8
3	Glossary of terms and abbreviations.....	3-9

List of Tables

Table 3-1	Acronyms and abbreviations.....	3-9
Table 3-2	Glossary	3-9

List of Plates

Plate 2-1:	LT1 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-3
Plate 2-2:	LT1 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-3
Plate 2-3:	LT2 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-4
Plate 2-4:	LT2 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-4
Plate 2-5:	LT3 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-5
Plate 2-6:	LT3 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-5
Plate 2-7:	LT4 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-6

Plate 2-8: LT4 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-6
Plate 2-9: LT5 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-7
Plate 2-10: LT5 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-7
Plate 2-11: LT6 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-8
Plate 2-12: LT6 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison.....	2-8

1 INTRODUCTION

1.1 OVERVIEW

1.1.1.1 This appendix of the Environmental Impact Assessment Report (EIAR) presents a comparison of the background noise curves (polynomial lines of best fit) for Turbine Layout Option 1 (hub height of 175.8 m) compared to Option 2 (hub height of 198.4 m). The background noise curves are used to determine operational wind turbine generator (WTG) site-specific noise limits. The information contained within this appendix is relevant to the assessment of offshore airborne noise of the proposed Spiorad na Mara Offshore Wind Farm (hereafter referred to as 'the Offshore Project'). This appendix accompanies **Chapter 19: Offshore Airborne Noise, Volume 2a** of the EIAR.

1.1.1.2 This appendix should be read in conjunction with the project description provided in **Chapter 3: Project Description, Volume 1a** and the relevant parts of the following chapters and appendices:

- **Chapter 19, Volume 2a;**
- **Appendix 19.1: Policy, Guidance and Legislative Context, Volume 2c;**
- **Appendix 19.2: Noise Modelling and Prediction, Volume 2c;**
- **Appendix 19.3: Baseline Noise Survey, Volume 2c;**
- **Appendix 19.4: Wind Shear Correction, Volume 2c;**
- **Appendix 19.5: Baseline Noise Conditions - All Wind Directions, Volume 2c;**
- **Appendix 19.7: Baseline Noise Conditions - Directional Split, Volume 2c;**
- **Appendix 19.8: Existing Wind Turbine Contribution Check, Volume 2c;**
- **Appendix 19.9: Modelled Receptor Noise Levels, Volume 2c;**
- **Appendix 19.10: Noise Limits, Volume 2c;**
- **Appendix 19.11: Cumulative Wind Turbine Noise Assessment, Volume 2c.**

1.1.2 PROJECT BACKGROUND

1.1.2.1 Spiorad na Mara Limited (hereafter referred to as 'the Applicant') is proposing to develop the Project. The Project is an offshore wind farm (OWF) that will consist of up to 60 fixed-bottom WTGs.

1.1.2.2 The Project will include both offshore and onshore infrastructure. This EIAR supports the application for the offshore components of the Project as outlined in **Chapter 1: Introduction, Volume 1a**. The offshore components of the Project (the Offshore Project) includes all infrastructure and activities located seaward of Mean High Water Springs (MHWS) within the Array Area and Offshore Cable Area of Search (OCAS) (**Figure 1.2: Offshore Project Location, Volume 1b**). Further detailed information is provided in **Chapter 3, Volume 1a**.

1.1.2.3 The Offshore Project is situated off the northwest coast of Isle of Lewis/*Eilean Leòdhais* and the Array Area is located approximately 5-13 km offshore and is approximately 161 km² in size. It will

comprise WTGs, foundations, Offshore Cables, Offshore Substation Platform (OSP) (if required), and Landfall. The Array Area combined with the OCAS is defined as the Offshore Project Boundary. The water depths across the Turbine Area range from 37 m-67 m with the southwest corner of the Array Area reaching 72 m. The proposed WTGs and fixed foundations will be located within a Turbine Area of approximately 140 km², within the Array Area.

1.2 PURPOSE OF THIS APPENDIX

1.2.1.1 This appendix describes the following:

- Comparison of background noise curves (polynomial lines of best fit) determined for Option 1 (hub height 175.8 m) and Option 2 (hub height 198.4 m);
- Comparisons are made for each measurement location and for quiet daytime and night-time periods;
- A minimal difference has been identified between the background noise curves of Option 1 and Option 2;
- The similarity between noise curves is attributable to the marginal variation in wind shear between 175.8 m and 198.4 m, as measured above sea level;
- Given the close similarity between the background noise curves for Option 1 and Option 2, the following assessments adopt the Option 2 (higher hub height) background noise curves.

2 ALL DATA ANALYSIS

2.1 MEASUREMENT LOCATION LT1

Plate 2-1: LT1 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison

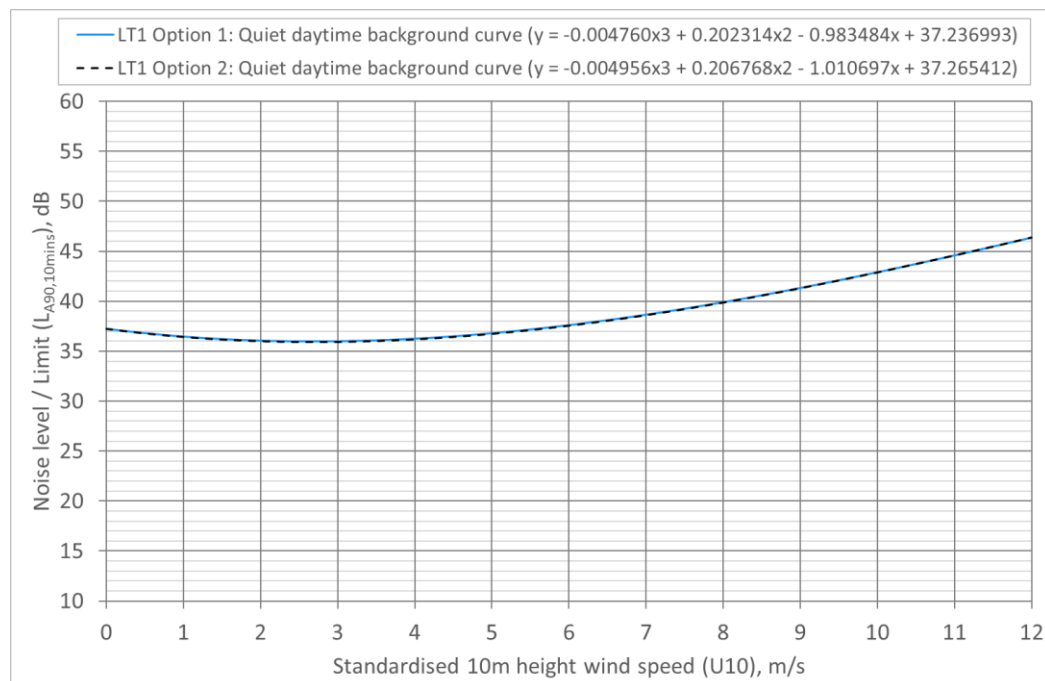
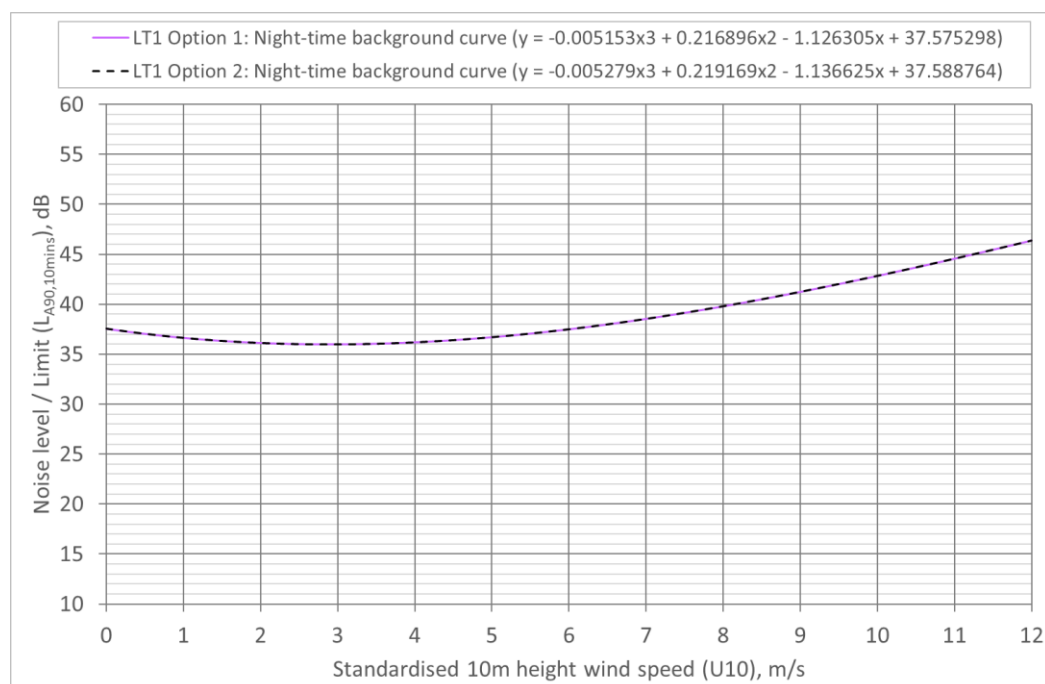


Plate 2-2: LT1 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison



2.2 MEASUREMENT LOCATION LT2

Plate 2-3: LT2 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison

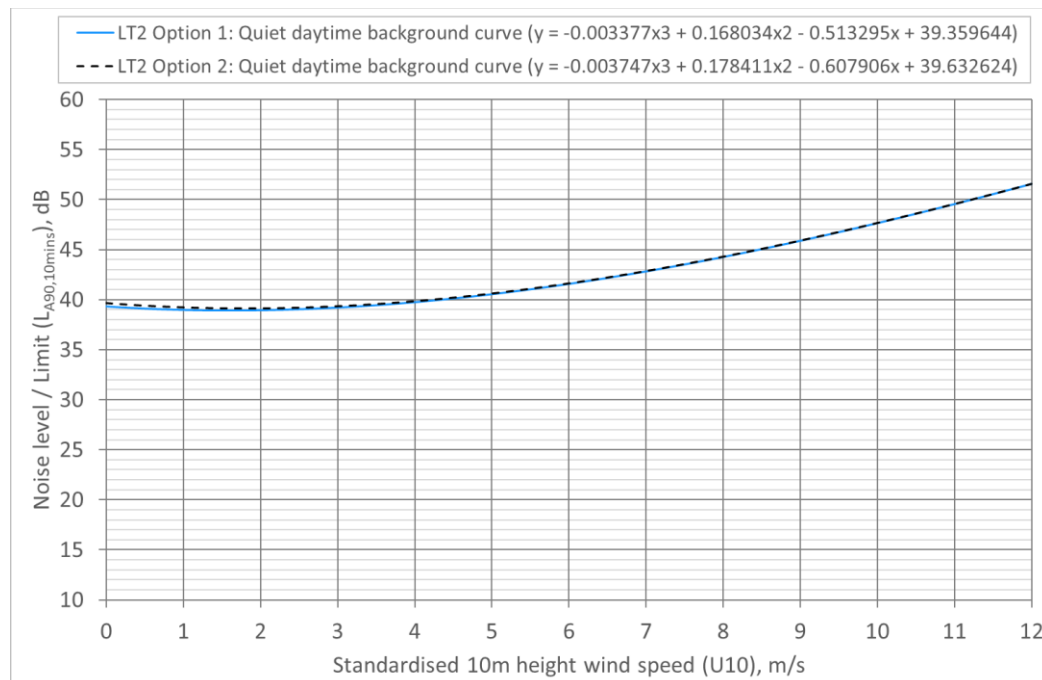
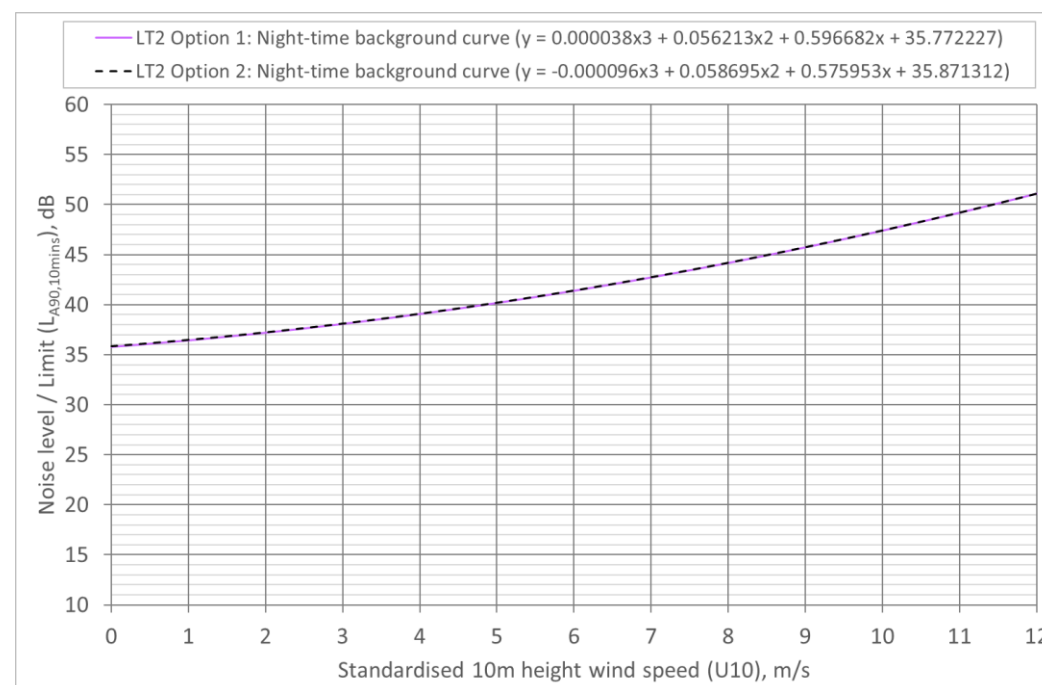


Plate 2-4: LT2 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison



2.3 MEASUREMENT LOCATION LT3

Plate 2-5: LT3 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison

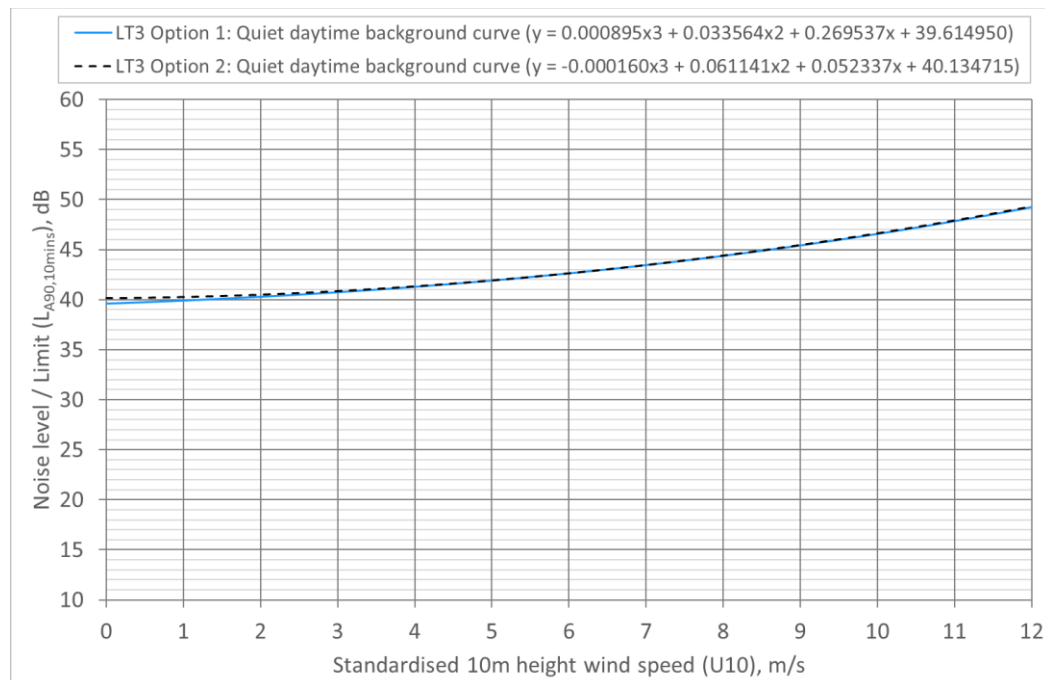
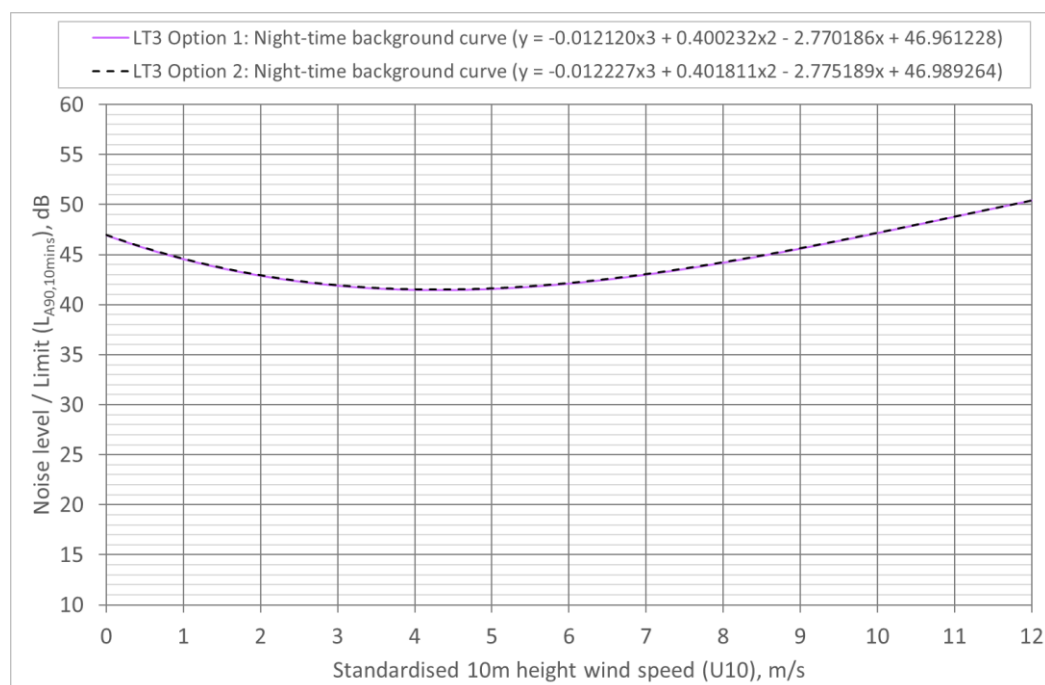


Plate 2-6: LT3 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison



2.4 MEASUREMENT LOCATION LT4

Plate 2-7: LT4 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison

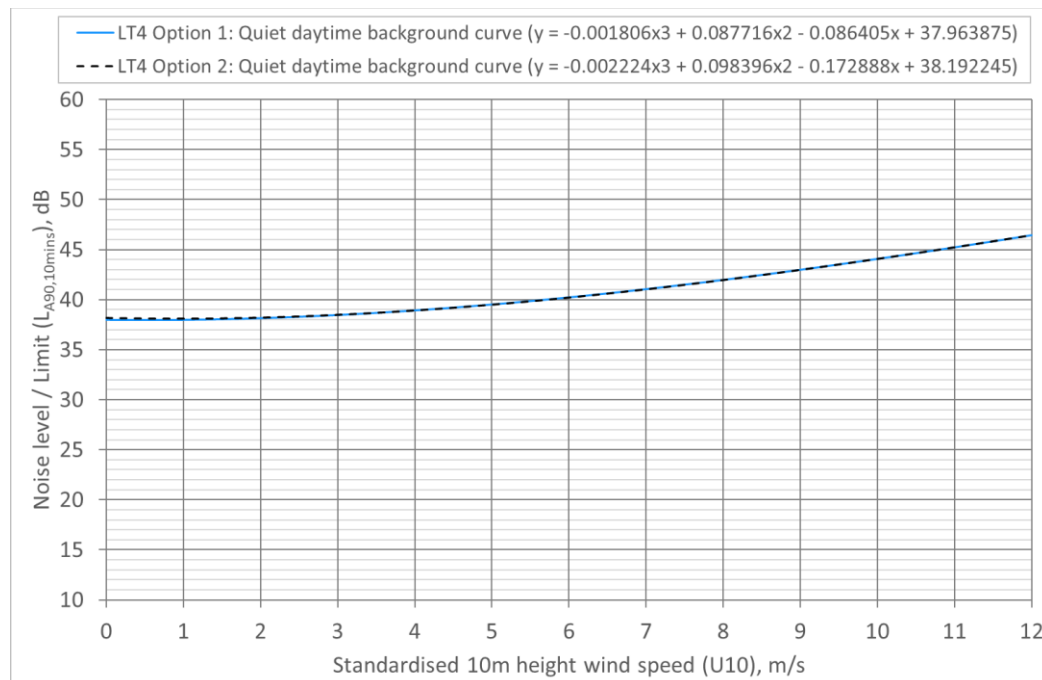
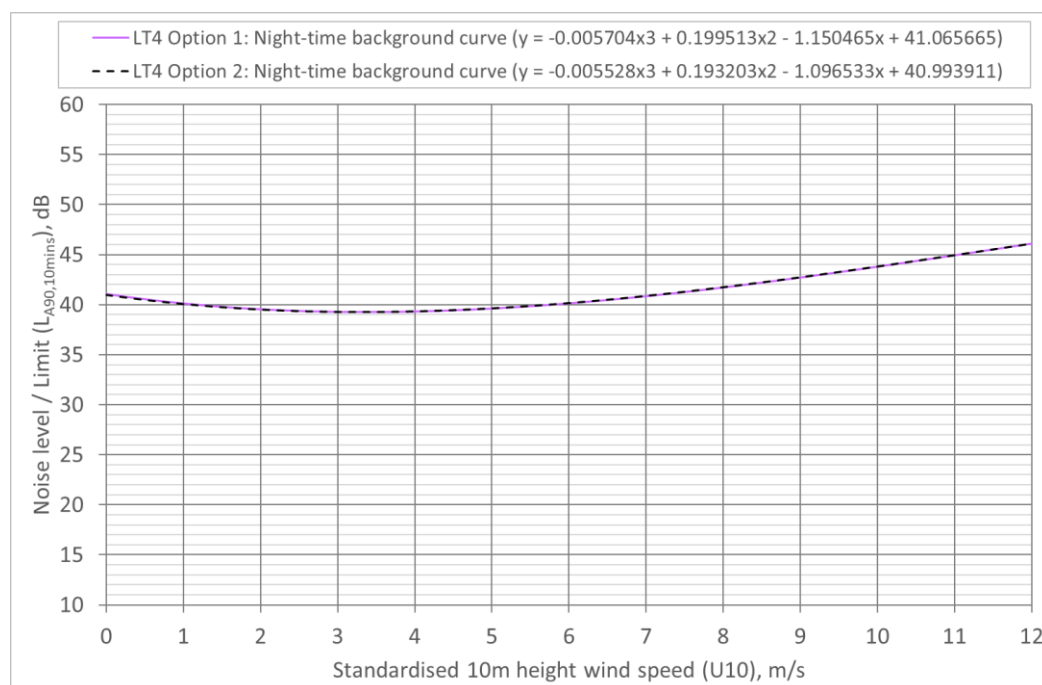


Plate 2-8: LT4 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison



2.5 MEASUREMENT LOCATION LT5

Plate 2-9: LT5 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison

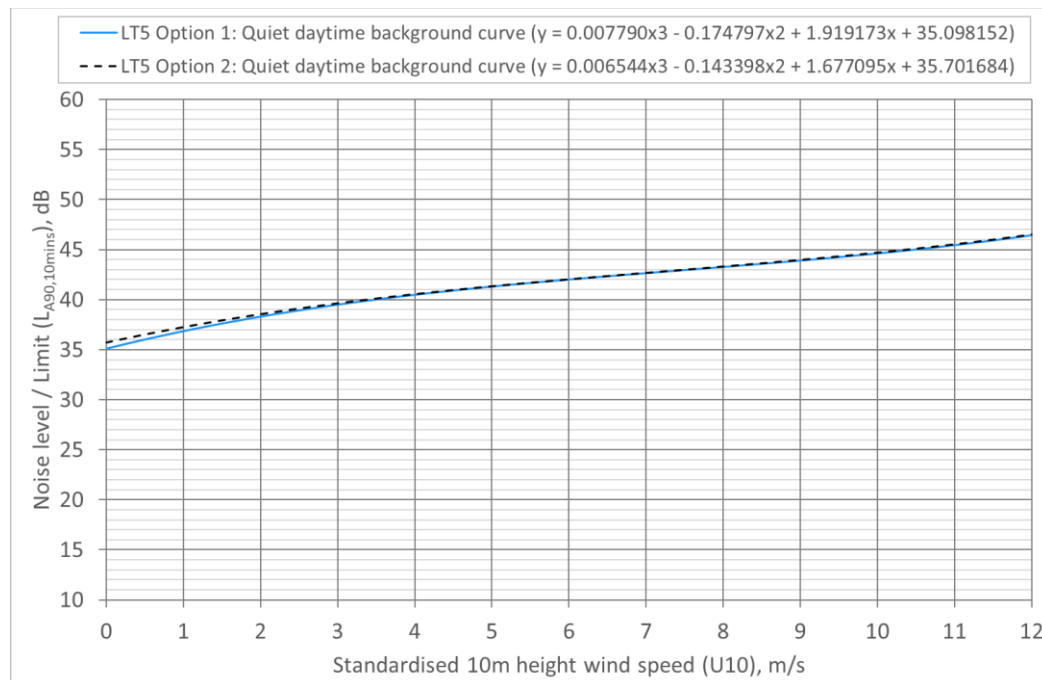
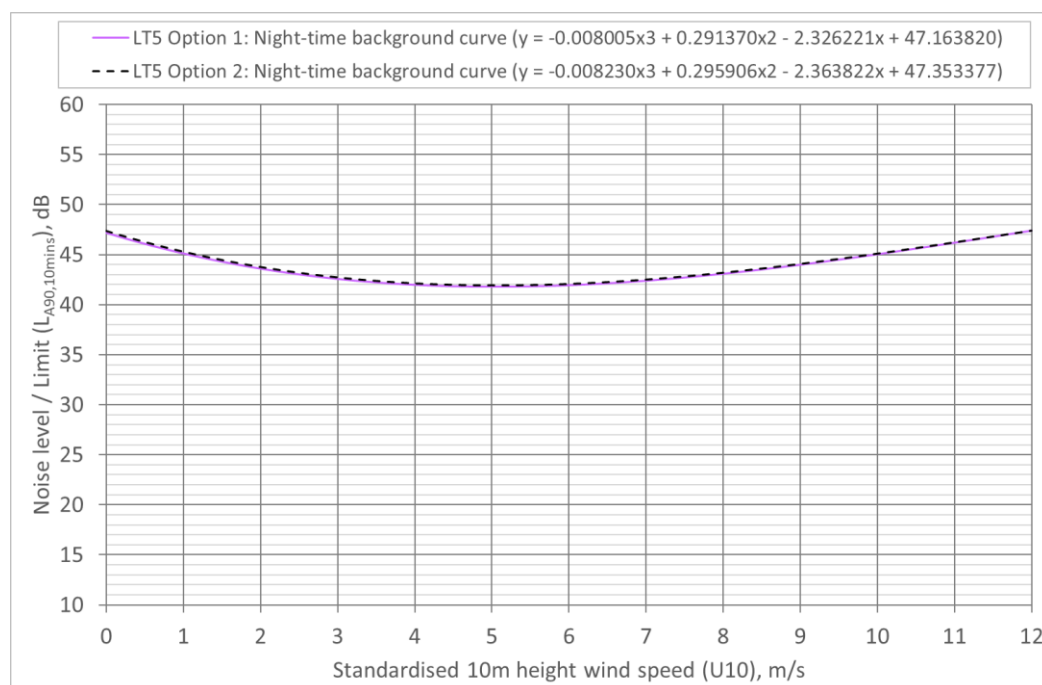


Plate 2-10: LT5 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison



2.6 MEASUREMENT LOCATION LT6

Plate 2-11: LT6 Quiet Daytime Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison

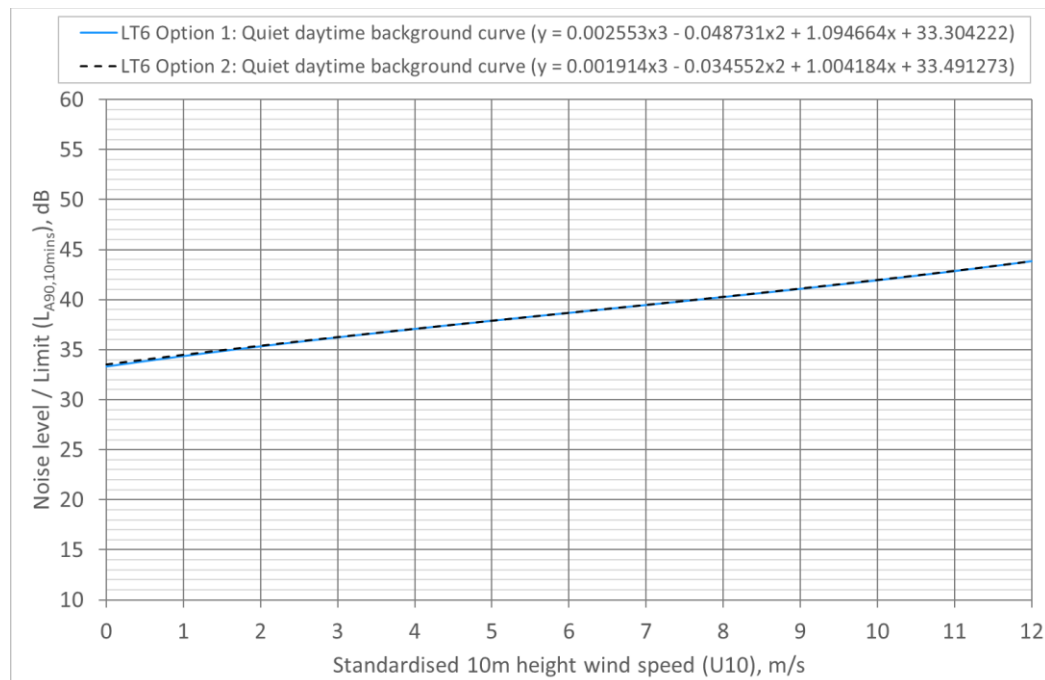
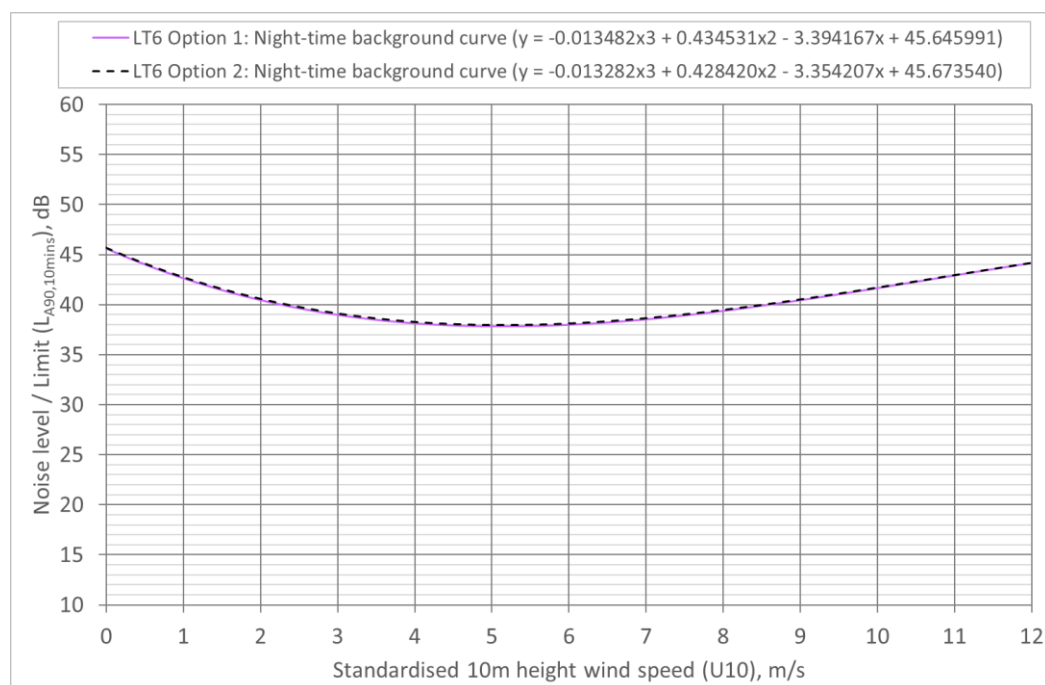


Plate 2-12: LT6 Night-time Background Curves: Option 1 (175.8 m hub) vs. Option 2 (198.4 m hub) for Baseline Noise Analysis Comparison



3 GLOSSARY OF TERMS AND ABBREVIATIONS

3.1.1.1 A list of key terms and acronyms used in this appendix are provided in **Table 3-1** and **Table 3-2**.

Table 3-1 Acronyms and abbreviations

Term	Definition
dB	Decibel
dB(A)	A-weighted decibel
EIAR	Environmental Impact Assessment Report
m	metres
m/s	metres per second
MHWS	Mean High Water Springs
OCAS	Offshore Cable Area of Search
OSP	Offshore Substation Platform
OWF	Offshore Wind Farm
WTG	Wind turbine generator

Table 3-2 Glossary

Term	Meaning
A-weighting	Frequency weighted sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
$L_{A90,T}$	A statistical noise index defined as the level that is exceeded for 90% of the time over the measurement time period T. The 'A' denotes that the level is determined with 'A-weighting' applied.
U_{10}	Wind speed at standardised 10 m height

This page is left intentionally blank