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Measurement of airborne noise around the Osman Khan Powership, Ghana

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P292R1101	*08/09/2022*	*T I Mason*	*S East*	*M Gopaul (Triplo4)*
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This report is a controlled document. The report documentation page lists the version number, record of changes, referencing information, abstract and other documentation details.

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Declaration of Independence

Underwater Noise Impact Assessment

I, Tim Mason, declare that I and my co-authors are independent consultants and have no business, financial, personal, or other interest in the proposed Powership Projects in South Africa, application or appeal in respect of which I was appointed other than fair remuneration for work performed in connection with the activity, application, or appeal. There are no circumstances that compromise the objectivity of my performing such work.

Tim Mason

Principal Consultant, Subacoustech Environmental Limited

Suggested citation:

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1 Introduction

As part of the EIA process, Karpowership SA (Pty) Ltd seeks to investigate the environmental impacts associated with the installation and operation of new Powerships, proposed for three ports in South Africa. There is a requirement to understand the noise output from these Powerships and the consequential impact within the context of the respective South African ports. Specifically, this requirement arises out of the Minister's Appeal decisions dated 1 August 2022, whereby Karpowershio was instructed to address various gaps in the previous EIA, notably, in relation to this report, regarding ambient noise. The most effective way of predicting this is to undertake measurements of the noise at an existing Powership of a similar class.

This report has been prepared by Subacoustech Environmental Ltd for Triplo4 Sustainable Solutions. It presents the methodology and results of the airborne environmental noise survey undertaken during the survey at the Khan Class Powership, the Osman Khan, in Sekondi-Takoradi, Ghana, in September 2022. Based on the power output of the Osman Khan (470 MW) and the harbour design, it was decided that this powership would be the most appropriate Powership to study in order to provide relevant information for the South African Project.

1.1 Study overview

The primary focus of this study was to observe and measure the levels of noise produced while the Powership was operating at various power outputs. Noise levels were sampled using a sound level meter (SLM) on a survey vessel on the surrounding water as well as some additional measurements on the adjacent jetty. The SLM on the survey vessel allowed noise levels to be captured at various distances surrounding the Powership. Measurements were taken inside and outside of the harbour, and different locations relative to wind direction.

1.2 Site description and ship operating conditions

The Powership from which most measurements were sampled can be seen in Figure 1-1.

Figure 1-1 Powership Osman Khan and harbour, Sekondi-Takoradi, Ghana

The Powership is adjacent to a quay separating the harbour from open water and its position in the harbour can be seen in the satellite image below. The harbour is approximately 1000 m long and 650 m across.

The Powership is located at the entrance to the Naval Base, against a seawall jetty into the coastal waters. This jetty extends the full length of the ship, and just over 50 m into the sea behind it.

Figure 1-2 Overview location of Powership Osman Khan, Sekondi-Takoradi, Ghana, ©Google Earth

The Osman Khan Powership is docked at the Naval Base in Sekondi-Takoradi, on the Ghanaian coast. It is a Khan Class Powership, the largest of the Powership classes. The ship is approximately 300 m long and has a maximum operating capacity up to 470 MW. The Powership operates 24 engines rated to operate at up to 18.3 MW and two steam turbines. It is powered by natural gas, fed to the ship by pipeline.

The Powership itself utilises a variety of noise control measures for attenuation, for example silencers are fitted to the exhaust stacks, pipelines use flexible connectors and the engines are mounted on isolators which substantially reduce the noise transmitted to the hull and surroundings.

The number of engines operating varied depending on the time of survey, and so there was a change in the type of sound source: where a single engine operates, there will be a few noise source locations, such as the engine air intake and air exhaust. Where multiple engines are operating, they tend to be distributed down the length of the ship (rather than run in blocks), becoming a much more complex area sound source.

1.3 Scope of work

Subacoustech attended the Powership in Ghana to sample noise levels around the Powership to characterise its noise output, to inform an Environmental Impact Assessment of similar or smaller Powerships to be installed in South Africa.

Noise measurements were to be taken under different loads and distances from the Powership to demonstrate how these noise levels attenuate with range, and how they could affect the local environment. This assessment is the subject of the Ambient Noise Assessment (Safetech), report reference C2, Ambient Noise, Oct 2022.

This report describes the results obtained from the noise monitoring survey, covering the methodology and equipment used, and the results of the monitoring in various Powership operating scenarios and environmental conditions. This report is produced as part of a polycentric, integrated approach, whereby its results and conclusions will inform other assessments, including ambient noise (South African context) and socio-economic impacts.

2 Methodology

This section presents the methodology for the airborne noise surveys on and around the Osman Khan Powership, in Ghana. The equipment used is described, along with survey locations.

2.1 Measurement equipment

The Sound Level Meter (SLM) used is a Svantek 979 Class 1 SLM (serial number 46161) with suitable SV 17 preamp (serial number 57804) and wind shield.

The SLM was field calibration checked at intervals throughout the survey using an SV 33 acoustic calibrator. Calibration certification for the equipment is provided in Appendix A, for the complete frequency range of the SLM.

All noise measurements are presented in decibels re 20 µPa.

2.2 Measurement procedure

Measurements of noise around the Powership were sampled on 3rd, 4th and 5th September 2022. Environmental and meteorological conditions were noted during the survey, including air temperature, wind speed and direction, precipitation, cloud cover, and sea state. Sea conditions during all measurements were at sea state 1-2, with waves <0.5 m.

2.2.1 Offshore measurement procedure

Airborne sound monitoring equipment was set up on the survey vessel Matthew Quashi, operated by the Ghanaian Navy, shown in Figure 2-1. Measurements were taken on the back deck at approximately 1 above the deck; the deck was approximately 1 m above the water surface.

Figure 2-1 Survey boat, Matthew Quashi, used as the survey vessel for all waterborne measurements

The survey vessel's engines and other equipment were turned off to prevent acoustic interference with the measurements, and the boat was allowed to drift temporarily while measurements were taken.

The surveyors took measurements on two lines roughly perpendicular to the Powership, at increasing distance. The transects were chosen coincident with the upwind or downwind direction. Transects began at the vessel, and continued out until the Powership was audible above background noise. Measurements started at around 50 m and doubled in distance (50 m, 100 m, 200 m, 400 m), or at 50 m intervals where possible. Sound data was acquired on the computer, together with details of the

boat's position and other relevant information. The boat's position relative to the Powership was identified using a laser range-finder. Approximate transects are shown in Figure 2-2

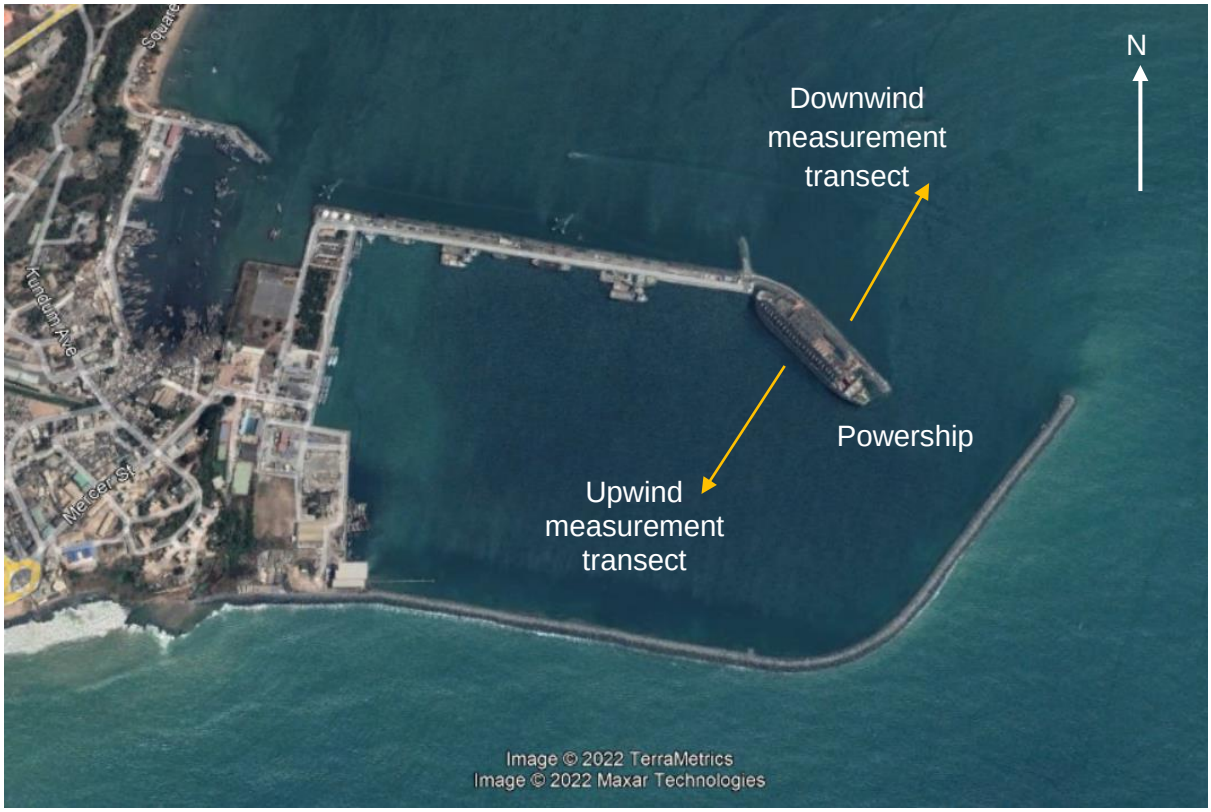


Figure 2-2 Noise measurement procedure around Powership Osman Khan, Ghana, ©Google Earth

Measurements were sampled with the Powership operating at low output (1 engine running, approximately 16 MW), 14 engines (approximately 250 MW) and maximum available power, 23 engines[1] (approximately 420 MW). Where a single engine was operating, measurements were taken approximately in line with that engine. Where multiple engines were operating, the measurements were taken in line with the centre of the ship.

As a result of the jetty along which the Powership was moored, it was not possible to obtain any measurements on the water closer than 100 m, so measurements in the upwind transects were able to start closer than anything in the downwind transects. Downwind measurements were taken outside the port boundaries beyond the jetty where the Powership was moored.

All measurements offshore were in dry conditions, with minimal movement of the vessel from waves leading to no significant effect of extraneous noise on the hull.

2.2.2 Onshore Sound Monitoring

A short survey of noise measured on the adjacent quay was also undertaken. The SLM was fixed to a tripod facing the Powership, approximately 35 m from the hull. Wind was negligible this close to the Powership. There was light drizzle during this part of the survey, which did not affect the measurements in any way.

One additional sample was taken in the vicinity of the air outlet vents on the upper deck of the ship.

[1] One engine was offline for maintenance

3 Results of noise measurements

3.1 Overview

The vessel was audible at all times during measurements, although at the greater distances, only marginally above background.

Measurements were generally taken over 30 seconds within 200 m, and 60 seconds at 200 m or more. This means that measurements less than 200 m were generally ±10 m, and at 200 m or more were ±20 m from the stated distance due to the necessity to drift the vessel upon which measurements were taken in order to eliminate noise measurement interference.

For operational reasons it was not always possible to acquire measurements at some distances and wind conditions, especially at higher power outputs, thus priority was given to downwind conditions, as this would lead to the highest noise levels.

A-weighted results are provided in Appendix B. These are presented graphically in Figure 3-2, with frequency analysis in section 3.4.

3.2 Description of the noise from the Powership

The noise from the Powership came from two clear source types. On the water in the harbour, low elevation air intakes produced noise from the ducts linked to operating engines. At high level, heat exhaust outlets behind a louvre are a significant source of noise. A sample noise measurement was taken on the ship at 3 m from this position (1 engine operating). There was no obvious noise audible from the chimney stacks, suggesting that the primary noise sources were the air intake and exhaust duct openings, although the hull itself is likely to radiate to some extent. Built-in noise attenuation such as silencers in the stacks and machinery vibration isolation will help to reduce the escape of noise.

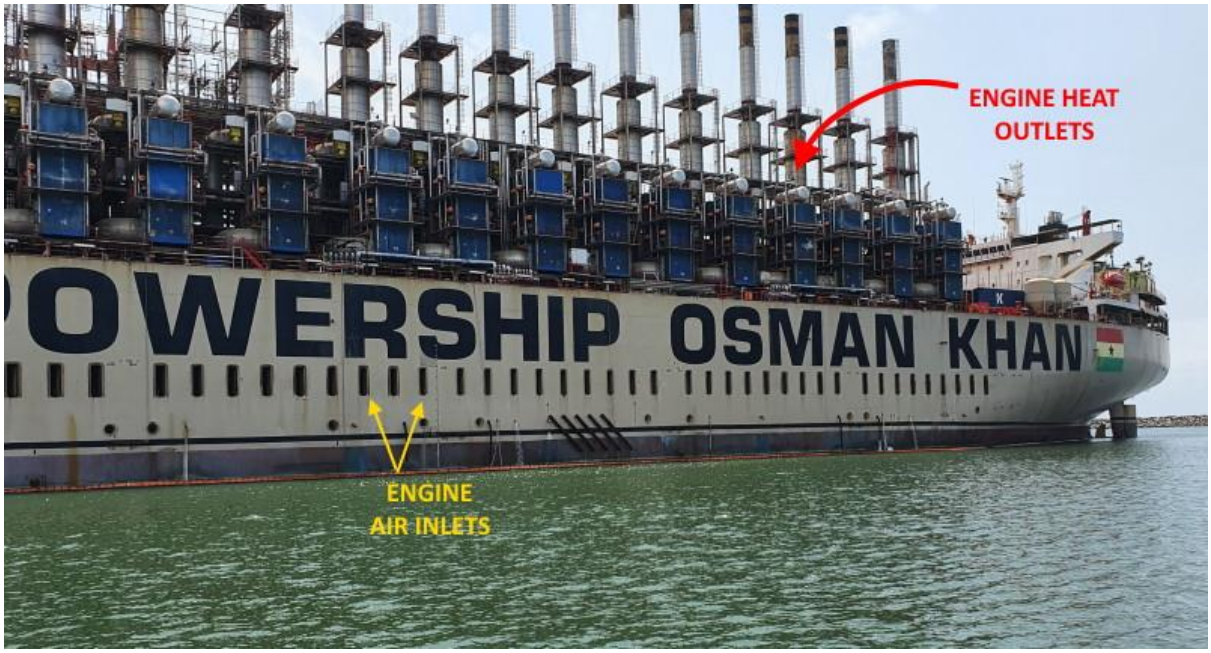


Figure 3-1 Powership photograph showing the primary noise sources

The noise measurement taken at 3 m from the exhaust louvre was 91.0 dB L_{Aeq}. Detailed data are provided in Appendix B.

3.3 Combined measurements of level-vs-range

The following chart has been created to demonstrate graphically the effect of the various Powership power outputs, distance from the ship, and relative wind conditions.

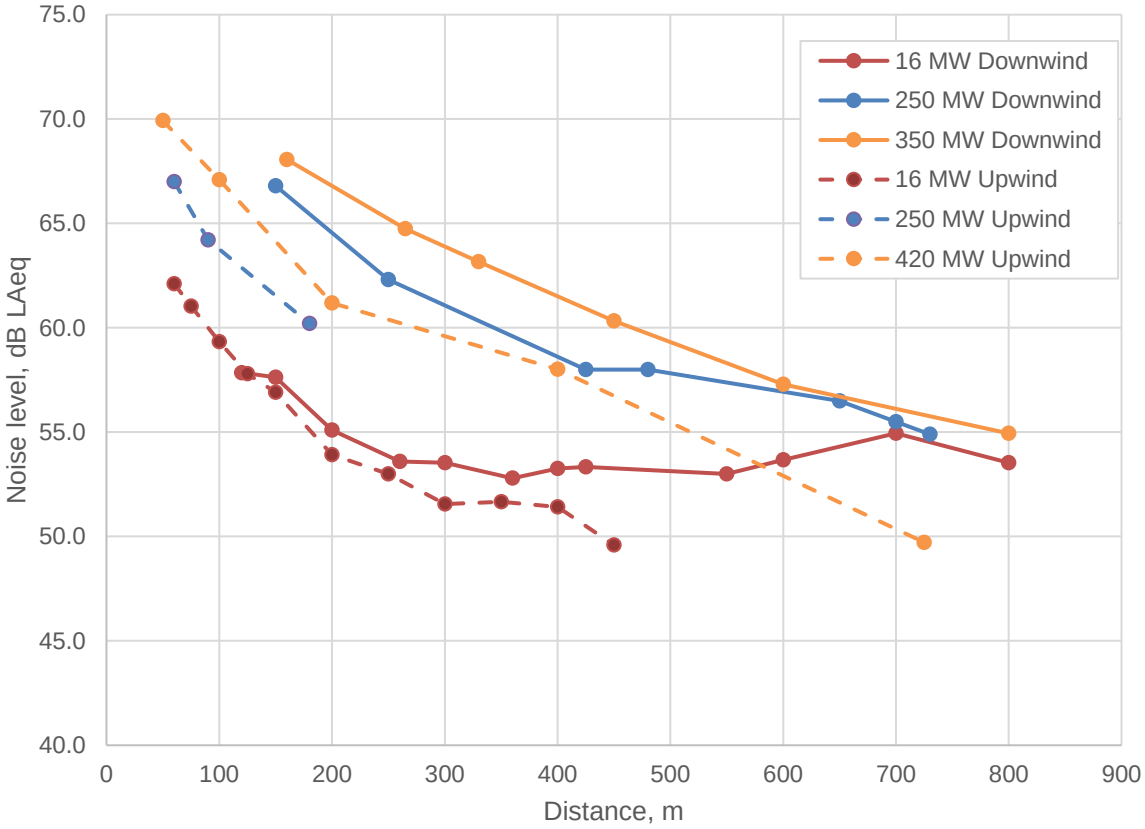


Figure 3-2 Level-vs-range plots of noise attenuating under various conditions

This chart shows clearly the attenuation of the noise with distance, where the noise levels increase with power output. For the same power output, the upwind condition (dashed lines) is much lower than downwind. Only a selection of measurements has been presented to aid readability. More detailed data is provided in Appendix B.

It is worth noting again that due to the presence of the seawall jetty, it was not possible to obtain measurements closer than 100 m on the water downwind of the ship.

The increase in noise level for the 16 MW Downwind dataset beyond 400 m is almost entirely driven by wind noise.

Noise propagation over water will tend to attenuate more slowly than noise propagation over land. This is because water, especially relatively calm water such as that present during this survey, is acoustically 'hard' whereas land of most types (other than rock or concrete) tends to be softer and more acoustically absorbent. Therefore, noise levels at greater distances measured on this survey, propagating over water, are likely to represent the worst case (i.e. loudest) noise levels when compared with a situation where most of the noise propagation towards any sensitive receptor is over land.

As this report is intended only to present results of the survey, no detailed modelling or assessment has been undertaken.

3.4 Frequency analysis

A brief analysis of the 1/3rd octave band noise levels measured around the Powership has been undertaken. The chart below shows the frequency spectra for the noise levels measured at approximately 450 m downwind, and 400 m upwind at 420 MW. The measurements were taken approximately an hour apart.

It was not possible to sample at identical distances due to the movement of the vessel in the water, although the difference between 400 m and 450 m will be negligible. This distance was chosen to be far enough that the whole vessel will appear to radiate as one source (rather than being close enough to identify many individual sources).

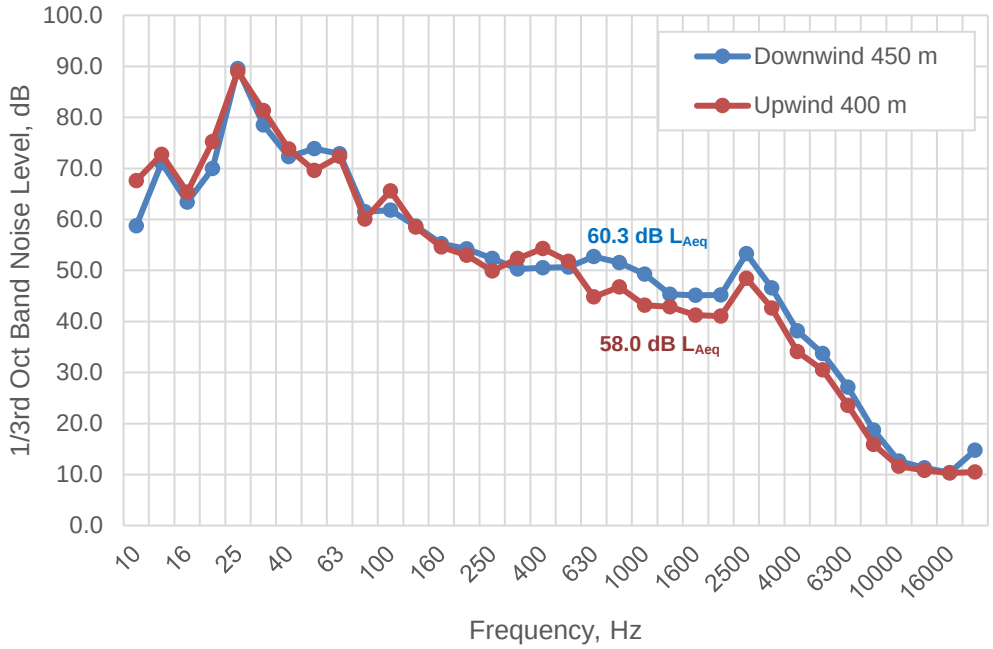


Figure 3-3 1/3rd octave band noise levels measured under 420 MW operation

It is worth noting that the noise from the Powership is tonal at 2.5 kHz. The tonal peak at 25 Hz is at a low enough frequency to be effectively inaudible.

4 Conclusions

Airborne noise levels have been sampled during the operation of the Osman Khan Powership at Sekondi-Takoradi, Ghana, in September 2022. Measurements were taken on a mobile survey vessel that transited on transects around the ship.

A total of eight datasets were sampled, at three power outputs each under downwind and upwind conditions. Conditions during the surveys were ideal for environmental noise measurement, clear and dry, with temperatures around 24-27°C and relative humidity above 80% remaining fairly consistent day to day. Wind direction was south westerly and typically remained between 1 and 3 m/s. The wave height was less than 0.5 m at all times.

Noise levels were sampled on the survey vessel at various distances from the ship, between 50 m at the closest point and 800 m at the furthest. Noise from the Powership was audible at all distances. The noise level was 70.0 dB L_{Aeq} at the closest measured position on the water, 50 m, at 420 MW. On the adjacent quayside, 35 m away from the hull, a higher noise level was recorded at 71.3 dB L_{Aeq} (and 74.3 dB under significant venting from the ship a condition which was not noted at any other time).

At the furthest location, 800 m downwind from the ship and at full power, the measured noise was 55.0 dB L_{Aeq}. Due to the lack of other noise sources in the vicinity, no noise other than the Powership contributed significantly to the survey environment.

The effect on the noise at lower electrical power outputs was as would be expected, where a reduction in power output led to a commensurately lower noise level, and noise attenuated more quickly with distance upwind, compared to downwind.

Polycentric Approach

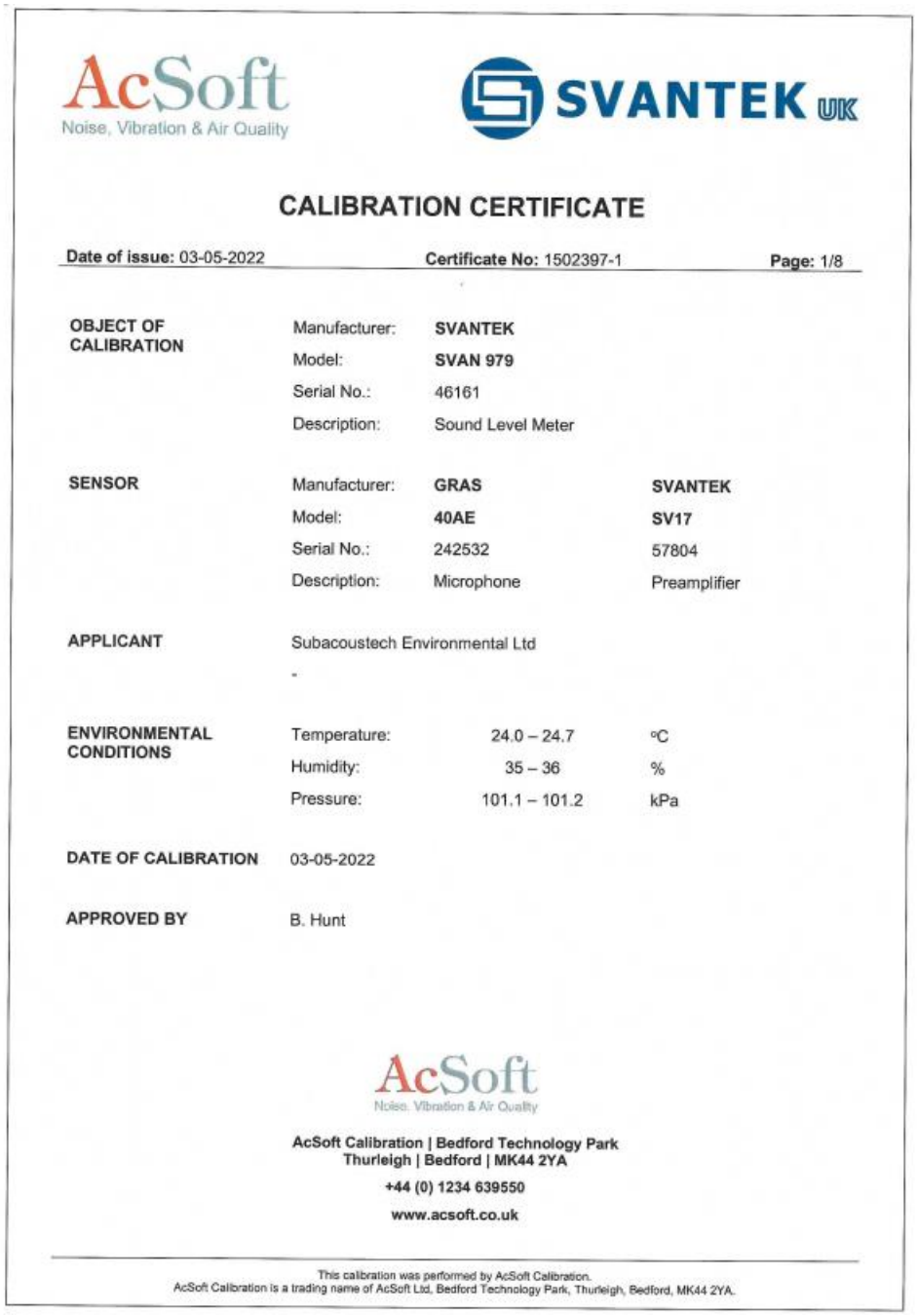
A specialist integrative workshop and weekly meetings were held to consider specialist requirements, eliminate potential gaps between the various specialist assessments and ensure a holistic assessment of environmental and socio-economic impacts with appropriate mitigations based on the significance of assessed impacts.

This report provides further context on the airborne noise monitored in and around the terrestrial environment.

The underwater noise assessment was provided to all Specialists conducting assessments for the proposed Gas to Power Powership project at the Port of Saldanha. This report was specifically highlighted, for consideration, to the Specialists conducting the following studies:

- Ambient Noise (South-African Context).

Appendix A Calibration certificate



AcSoft
Noise, Vibration & Air Quality

SVANTEK UK

CALIBRATION CERTIFICATE

Date of issue: 03-05-2022 **Certificate No:** 1502397-1 **Page:** 1/8

OBJECT OF CALIBRATION	Manufacturer:	**SVANTEK**	
	Model:	**SVAN 979**	
	Serial No.:	46161	
	Description:	Sound Level Meter	
SENSOR	Manufacturer:	**GRAS**	**SVANTEK**
	Model:	**40AE**	**SV17**
	Serial No.:	242532	57804
	Description:	Microphone	Preamplifier
APPLICANT	Subacoustech Environmental Ltd		
	-		
ENVIRONMENTAL CONDITIONS	Temperature:	24.0 – 24.7	°C
	Humidity:	35 – 36	%
	Pressure:	101.1 – 101.2	kPa
DATE OF CALIBRATION	03-05-2022		
APPROVED BY	B. Hunt		

AcSoft
Noise, Vibration & Air Quality

AcSoft Calibration | Bedford Technology Park
Thurleigh | Bedford | MK44 2YA
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This calibration was performed by AcSoft Calibration.
AcSoft Calibration is a trading name of AcSoft Ltd, Bedford Technology Park, Thurleigh, Bedford, MK44 2YA.

Appendix B Detailed measurement data

B.1 1 engine operating, 16 MW, Downwind

Range, m	L_{AFmax} dB	L_{AFmin} dB	**L_{Aeq} dB**	L_{A90} dB
120	59.9	55.8	**57.9**	56.5
150	59.6	55.0	**57.6**	56.2
200	57.7	53.1	**55.1**	54.0
260	57.7	51.8	**53.6**	52.2
300	56.0	51.3	**53.5**	52.1
360	57.3	50.5	**52.8**	51.2
400	58.6	50.9	**53.3**	51.5
425	57.1	51.6	**53.3**	52.0
550	55.9	50.8	**53.0**	51.4
600	60.2	48.2	**53.7**	52.1
700	61.1	51.4	**55.0**	52.5
800	59.5	51.3	**53.5**	52.1

Table B-1 Noise measurements taken downwind with 1 engine running

B.2 1 engine operating, 16 MW, Upwind

Range, m	L_{AFmax} dB	L_{AFmin} dB	**L_{Aeq} dB**	L_{A90} dB
60	63.6	60.7	**62.1**	61.1
75	64.2	59.8	**61.0**	60.0
100	63.5	57.5	**59.3**	58.0
125	61.0	55.7	**57.8**	56.4
150	61.7	54.5	**56.9**	55.1
200	58.5	51.6	**53.9**	52.3
250	61.1	50.4	**53.0**	51.1
300	56.4	48.9	**51.6**	49.8
350	57.8	49.2	**51.7**	50.1
400	58.1	48.9	**51.4**	49.5
450	54.9	46.3	**49.6**	47.5

Table B-2 Noise measurements taken upwind with 1 engine running

B.3 14 engines operating, 250 MW, Downwind

Range, m	L_{AFmax} dB	L_{AFmin} dB	**L_{Aeq} dB**	L_{A90} dB
80	68.1	63.8	**65.4**	64.2
150	68.7	64.8	**66.8**	65.6
250	63.8	60.7	**62.3**	61.1
425	63.3	56.5	**58.0**	57.0
480	60.0	56.4	**58.0**	57.0
650	59.0	54.5	**56.5**	55.1
700	60.8	53.7	**55.5**	54.1
730	57.4	53.5	**54.9**	54.0

Table B-3 Noise measurements taken downwind with 14 engines running

B.4 14 engines operating, 250 MW, Upwind

Range, m	L_{AFmax} dB	L_{AFmin} dB	**L_{Aeq} dB**	L_{A90} dB
60	68.2	66.0	**67.0**	66.1
90	66.1	62.6	**64.2**	63.1
180	62.0	59.1	**60.2**	59.2

Table B-4 Noise measurements taken upwind with 14 engines running

B.5 20 engines operating, 350 MW, Downwind

Range, m	L_{AFmax} dB	L_{AFmin} dB	**L_{Aeq} dB**	L_{A90} dB
160	78.0	66.2	**68.1**	66.7
265	71.5	62.7	**64.8**	63.3
330	64.8	62.1	**63.2**	62.2
450	62.4	55.8	**60.3**	59.2
600	62.6	55.6	**57.3**	56.1
800	60.7	52.7	**54.9**	53.5

Table B-5 Noise measurements taken downwind with 20 engines running

B.6 23 engines operating, 420 MW, Upwind

Range, m	L_{AFmax} dB	L_{AFmin} dB	**L_{Aeq} dB**	L_{A90} dB
50	83.4	68.1	**69.9**	68.2
100	68.1	66.3	**67.1**	66.2
200	62.5	60.1	**61.2**	60.2
400	59.6	53.8	**58.0**	57.1
725	53.5	48.4	**49.7**	49.0

Table B-6 Noise measurements taken upwind with 23 engines running

B.7 10 engines operating, 172 MW, Quayside, 35 m

Measurements were taken along the quayside, down the length of the Powership at a fixed distance of 35 m from the ship's hull.

Position	L_{AFmax} dB	L_{AFmin} dB	**L_{Aeq} dB**	L_{A90} dB
Engine 1	72.4	68.9	**70.2**	69.1
Engine 6*	79.4	72.2	**74.3**	72.2
Engine 12	74.0	68.9	**71.3**	70.1
Engine 18	70.4	67.5	**68.6**	67.5
Engine 24	70.9	67.3	**68.8**	67.7
Accom. block	63.7	58.4	**61.8**	60.6

Table B-7 Noise measurements taken on quayside with 10 engines running

* Significant venting occurred during this measurement. This was not noted at any other time.

B.8 1 engine operating, 18.3 MW, external Powership platform by high level exhaust louvre

This measurement was taken adjacent to one of the exhaust outlets, one engine operating from a cluster space of three engine outlets.

Position	L_{AFmax} dB	L_{AFmin} dB	**L_{Aeq} dB**	L_{A90} dB
3m from exhaust	94.5	88.8	**91.0**	89.2

Table B-8 Noise measurements taken on ship by exhaust

Appendix C Specialist Report Requirements

Table C-1 outlines the requirements of the Specialist Reports as per the NEMA EIA Regulations, 2014 (as amended). According to Appendix 6 (1) "A specialist report prepared in terms of these Regulations must contain …" the information outlined in Table D-1 below.

Table C-1 Prescribed contents of the Specialist Reports (Appendix 6 of the EIA Regulations, 2014)

Relevant section in GNR. 982	**Requirement description**	**Relevant section in this report**
(a) details of—	(i) the specialist who prepared the report; and	Appendix D
	(ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Appendix D
(b)	a declaration that the specialist is independent in a form as may be specified by the competent authority;	p2
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 1
(cA)	an indication of the quality and age of base data used for the specialist report;	Section 2
(cB)	a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	n/a
(d)	the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 1
(e)	a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 2
(f)	details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	n/a
(g)	an identification of any areas to be avoided, including buffers;	n/a
(h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	n/a
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 3.2
(k)	any mitigation measures for inclusion in the EMPr;	n/a
(l)	any conditions for inclusion in the environmental authorisation;	n/a
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation;	n/a
(n) a reasoned opinion—	(i) whether the proposed activity, activities or portions thereof should be authorised;	n/a
	(iA) regarding the acceptability of the proposed activity or activities; and	n/a
	(ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	n/a
(o)	a description of any consultation process that was undertaken during the course of preparing the specialist report;	n/a
(p)	a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	n/a

(q)	any other information requested by the competent authority.	n/a
(2)	Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	n/a

Appendix D Specialist Credentials

Mr Timothy I Mason *BEng (Hons.) MIOA*	
Project Role:	**Underwater Acoustics - Project Manager and Principal Acoustician**
Personal Information	
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Position:	Principal Acoustic Consultant
Address:	Unit 2 Muira Industrial Estate, William Street, Southampton, Hants. SO14 5QH, UK
Telephone:	+44 (0) 2380 236330
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Qualifications/Professional Memberships

Degree: BEng(Hons) Engineering Acoustics and Vibration
Institute of Sound and Vibration Research, University of Southampton (2001), UK
Member of the Institute of Acoustics (MIOA), UK

Experience

Continuous post-graduate acoustic consultancy experience since 2001 in design and impact assessment of both underwater and traditional airborne noise situations. Joined Subacoustech Environmental in 2011. Responsible for project management and QA in addition to technical consultancy and reporting. Acts as an expert witness for planning enquiries with respect to underwater noise and its effects on marine life. Experienced in a wide range of acoustic disciplines in addition to underwater noise modelling and monitoring; other disciplines includes road, rail and construction noise impacts, industrial noise mapping and control, planning and architectural acoustics, vibration and noise nuisance. Delivered presentations on underwater noise impacts at national and international conferences and has been invited to speak on underwater noise at the Royal Society.

Relevant Project Experience

Client: RWE, Ørsted, SPR, Innogy, Royal Haskoning, GoBe, others

Environmental Impact Assessments and Regulatory Enquiries for Offshore Wind Farms, Technical lead

Leading the underwater noise EIAs for the majority of offshore wind farm projects in UK waters, including Seagreen Alpha, Inch Cape and Moray Firth, Awel y Môr, Hornsea Projects 1 to 4, East Anglia 3, 2 and 1 North, Rampion 2, Sofia, Galloper, Dogger Bank A&B, Triton Knoll, Norfolk Boreas and Norfolk Vanguard, and many others.

Client: Blue Gem Wind/Total, MarineSpace

Environmental Impact Assessments for Erebus Floating Offshore Wind Farm, Technical lead

Undertaking the underwater noise assessment for the Erebus Offshore Wind Farm, in Welsh waters, one of the few floating turbine wind farms in the UK. Multiple turbine foundation types were under consideration requiring innovative use of modelling for an unusual EIA report.

Client: Royal Haskoning, Arcadis, Buro Happold

Underwater noise assessments of river and coastal redevelopment projects: container terminals, military docks

Conducted the assessments, including underwater noise modelling, for impact on species of fish and marine mammal in river and coastal waters for multiple types of projects with a variety of noise sources, including foundation impact and vibro piling, land based breaking, and operational noise.

Client: Bureau of Ocean Energy Management, USA – RODEO project

Monitoring and analysis of noise from the Block Island wind farm and Coastal Virginia Demonstrator, USA

Planned and led simultaneous airborne and underwater, onshore and offshore, noise and vibration monitoring

surveys during construction and operation of the Block Island Offshore Windfarm and Coastal Virginia Offshore Wind, USA. The study is thought to be the most comprehensive of its kind in the world.

Client: Royal Haskoning, GoBe, Ørsted

Estimation of UXO clearance, underwater noise impact

As part of offshore development, calculation of the underwater noise transmission and its potential impact on marine wildlife as a result of detonation from clearance of unexploded ordnance in UK waters.

Client: RWE Innogy, Ørsted

Monitoring of piling, Gwynt y Môr OWF, Wales; Burbo Bank Extension, Liverpool Bay

Carried out measurement surveys and assessment of underwater noise propagation at two offshore wind farms in Liverpool Bay during the installation of foundation piles off the north coast of Wales.

Supplementary training/information

SAMSA Medical Certificate (exp. November 2023)

BOSIET/FOET (expires July 2024)

Certificate of Compressed Air Emergency Breathing System (exp. July 2024)

CSCS card: Professional Qualified Person (valid until February 2025)

Report documentation page

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Document No.	Draft	Date	Details of change
P292R1100	02	08/09/2022	Initial writing and internal review
P292R1101	-	08/09/2022	First issue for comment and project team distribution
P292R1102	-	09/09/2022	Additions of subjective noise description and exhaust measurement result.
P292R1103	-	05/10/2022	Minor changes, clarity
P292R1104	-	11/10/2022	Referencing updates

Originator’s current report number	P292R1104
Originator’s name and location	T Mason; Subacoustech Environmental Ltd.
Contract number and period covered	P292; November 2021-October 2022
Sponsor’s name and location	Hantie Plomp, Triplo4
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Date written	September-October 2022
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Report title	Measurement of airborne noise around the Osman Khan Powership, Ghana
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Title classification	Unclassified
Author(s)	Tim Mason, Fergus Midforth
Descriptors/keywords	
Abstract	
Abstract classification	Unclassified; Unlimited distribution

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/14/12/16/3/3/2007
Date Received:	02 November 2020

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

The Proposed Gas to Power Powership Project at the Port of Richards Bay, Umhlathuze Local Municipality, King Cetshwayo District, Kwazulu-Natal.

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	Subacoustech Environmental Limited			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	n/a (UK based)	Percentage Procurement recognition	n/a (UK based)
Specialist name:	Tim Mason			
Specialist Qualifications:	BEng(Hons) Acoustic Engineering			
Professional affiliation/registration:	Member of the Institute of Acoustics (UK) (MIOA)			
Physical address:	Unit 2 Muira Industrial Estate, William Street, Southampton, Hampshire, UK			
Postal address:	Unit 2 Muira Industrial Estate, William Street, Southampton, Hampshire, UK			
Postal code:	SO14 5QH	Cell:	n/a	
Telephone:	+44 2380 236330	Fax:	n/a	
E-mail:	tim.mason@subacoustech.com			

2. DECLARATION BY THE SPECIALIST

I, Tim Mason, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

Subacoustech Environmental Limited

Name of Company:

31/10/2022

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Tim Mason, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

Subacoustech Environmental Limited

Name of Company

31/10/2022

Date

Signature of the Commissioner of Oaths FIONA WOOLFE

31st October 2022.

Date

Signed before me, Fiona Woolfe, notary public of England and Wales, having an office at 39 Granadier Road, Winchester, Hants, SO22 6GH by Timothy Mason, whose identity I verified by sight of his original UK passport with number 542493480, on this 31st October 2022.