Noise Impact Assessment Addendum for West Newton A Exploration, Appraisal and Production Development

West Newton, East Riding of Yorkshire

For Rathlin Energy (UK) Limited

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Quality Management

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Revision History

Rev	Date	Status	Reason for revision	Comments
0	20/09/2021	Draft	-	Draft for comment
1	22/09/2021	Final Issue		

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Tables

1 Introduction

1.1 Rathlin Energy (UK) Limited intends to extend the existing West Newton A (WNA) wellsite, drill, test, appraise and produce from the two existing wells and drill, test, appraise and produce from up to six new wells.

1.2 RPS Group was commissioned by Rathlin Energy (UK) Limited to undertake a noise assessment for the proposed wellsite. This report is an addendum to the report previously submitted (ref: JAT2106-REPT-03-R5-Rathlin-WNA, dated 17/06/2021) and it addresses the comments from the Environmental Agency (EA) that were received on 04/08/2021.

1.3 Section 2 of this addendum presents the updated production phase assessment and responds to the EA's comments.

2 Operational Noise BS 4142 Assessment Update

2.1 The EA comments requested a noise emissions profile for the generator and associated equipment. The EA has also requested an assessment of low frequency noise and tonal noise outputs and impacts and in-detail consideration of mitigation.

2.2 For the updated production phase assessment, the following equipment has been assessed:

- An enclosed flare (incinerator);
- A Jenbacher JMS 624 GS-N.L generator;
- 8 x Beam pumps;
- A crude oil heater, and
- A transfer pump.

Spectral Noise Emission Sound Power Levels

2.3 The noise emissions profile of the above equipment is shown in Table 2.1 below. It should be noted that at this stage of the project the exact equipment models are not selected yet. For this reason, the noise emission profiles presented in the table below are based on worst-case similar plant from the RPS noise emissions library. Particularly for the JMS 624 GS-N.L generator, the noise emissions profiles of the aggregate and exhaust are taken from the equipment technical datasheet.

Table 2.1: Equipment Sound Power Levels in Octave Bands

Plant item	Octave frequency bands (Hz)									dBA
	31.5	63	125	250	500	1000	2000	4000	8000	
Enclosed flare (incinerator)	82	81	76	68	67	68	64	55	40	72
JMS 624 GS-N.L generator aggregate	113	120	126	124	119	118	117	119	120	126
JMS 624 GS-N.L generator exhaust	117	119	129	124	125	121	121	128	111	131
Beam pump	94	100	99	94	88	84	78	74	69	91
Crude oil heater	98	99	95	85	80	82	74	69	66	86
Transfer pump	79	87	82	85	84	85	85	78	71	90

2.4 The updated assessment provides sound power level noise limits for the generator and beam pump to ensure that the specific noise levels from the wellsite production do not exceed the background noise levels at the nearest noise sensitive receptor, i.e., Caley Cottage, during daytime, evening and night-time periods.

2.5 The generator noise emissions should be mitigated following the principles described in Section 11 on potential in-design mitigation to meet the sound power level limits presented in Table 2.2 below.

2.6 The beam pumps that will be selected during detailed design stage should meet the sound power level limits given in Table 2.2. If it is not possible to select equipment that meets these criteria, enclosures or acoustic barriers can be considered to mitigate their noise emission levels, depending on the beam pump type.

Table 2.2: Source Sound Power Level Limits Used in Assessment, dB re 1 pW

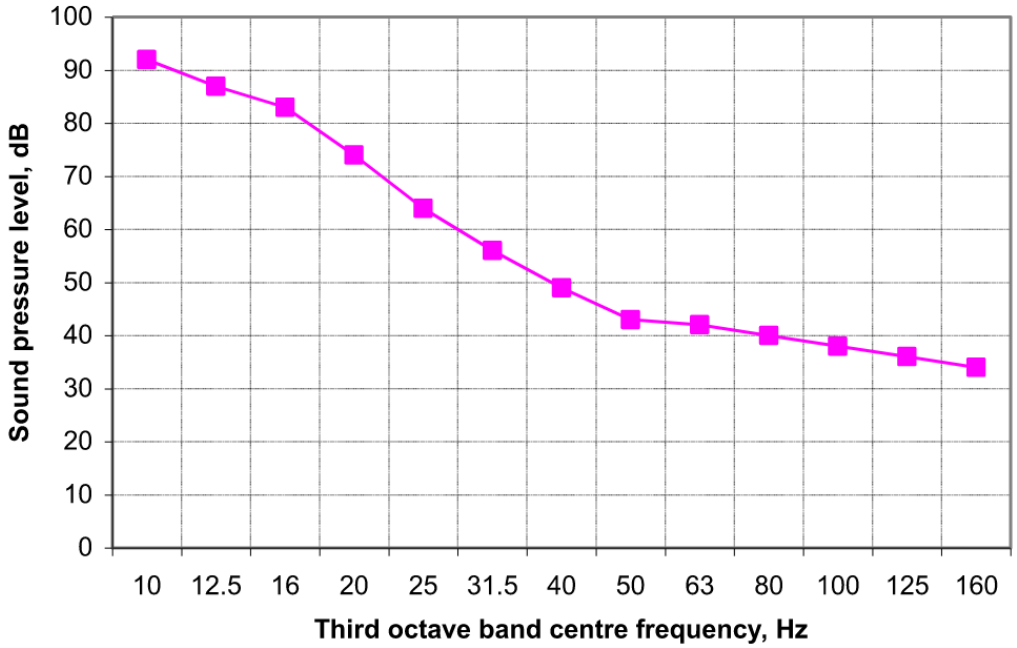
Plant item	Overall sound power level, dB re 1 pW
JMS 624 GS-N.L generator aggregate	87 dBA
JMS 624 GS-N.L generator exhaust	87 dBA
Beam pumps	81 dBA per beam pump

Tonal and Low Frequency Noise

2.7 As stated above, at this stage of the project there is no information available on the exact plant models that will be selected. Therefore, the assessment has been based on spectral information on similar plant.

2.8 In order to assess the tonality of noise one-third octave band information should be available for the plant as stated in Annex C of BS 4142:2014+A1:2019 “Methods for rating and assessing industrial and commercial sound”.

2.9 In order to assess low frequency noise at the noise sensitive receptors the procedure indicated in the NANR45 “Procedure for the assessment of low frequency noise complaint” should be followed: The predicted noise levels at the nearest noise sensitive receptors in one-third octave bands should be compared to the criterion curve shown in Figure 1 of the NANR45 which is reproduced below.



2.10 At this stage of the project the one-third octave band information and information down to 10 Hz is not available, therefore it is not possible to assess the plant for tonality or assess the low frequency noise at the noise sensitive receptors. Therefore, a qualitative assessment of the tonal and low frequency noise has been undertaken.

2.11 Based on experience from similar plant types the enclosed flare (incinerator), beam pumps, crude oil heater, transfer pumps and generator aggregate are not expected to contain any significant tones or low frequency noise. The generator exhaust might contain tones at lower frequencies; however, this is dependent on the exact type of generator that will be selected during the design stage.

2.12 As a conclusion it expected that the proposed equipment is not expected to be tonal or emit low frequency noise. However, this is subject to verification during the detailed design of the development.