

Description	Grimsby B Reserve Site: Addendum to report reference PJ3979/16440/V1. <i>Environmental Noise Assessment to inform potential impacts of proposals</i>
Date	30 November 2021
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Ref No	PJ4120/16440

1. INTRODUCTION

The Grimsby B development consists of ten gas-engines delivering 20MW electrical output, utilising existing electrical and gas infrastructure on site. The existing planning permission, renewed in January 2020, is based on 500 hours of operation per year.

The environmental noise assessment, to inform the potential impact of the proposals applicable to the existing planning permission was covered in report reference PJ3979/16440/V1: *Grimsby B Environmental Noise Assessment, to inform potential impacts of proposals (GBENA)*.

Following re-evaluation of this proposed development, including the prevailing and anticipated longer-term market conditions within which a continued growth in renewable power generation will maintain the need for reliable and dispatchable companion forms of power generation such as that proposed by the Grimsby B development, RWE is now seeking to optimise the 20MW gas engine opportunity by increasing the annual operating hours from 500 to 1500.

This addendum report provides a review of any potential change to the noise impact of the development, due to the proposed increase to annual operating hours.

2. RESERVE SITE OPERATION

The original noise impact assessment did not provide significant weight to the total operating hours, more so the most likely periods and times of operation, that were estimated as follows:

- The Reserve Site would only operate for short periods at times of peak demand or to rapidly fill a temporary shortfall of generation, while an alternative conventional power station is being brought on-line.
- When called upon to operate, runs would most often be between October and March and would typically be less than 3 hours in duration, most likely occurring during the morning (07:00-10:00) and early evening (17:00-20:00) demand peaks.
- Night-time running would not normally occur and it is anticipated that the site would only be called upon to run at night under emergency conditions, such as a major grid failure.

It is anticipated that the increase in operating hours from 500 to 1500 could result in demand for generation during the following extended time periods:

Extra Peak running for wholesale market:	07:00 to 23:00.
Balancing services:	06:00 to 23:00.

There would be no change anticipated to the potential for night time operation, with this remaining as not normally required other than to respond to a specific network scenario.

Accordingly, the increase in operating hours would be reasonably anticipated to have the potential to provide additional noise impact during the time periods of 06:00 to 07:00 in the morning and 20:00 to 23:00 in the evening.

3. AMBIENT SOUND LEVELS

As part of the original noise assessment process, included in the GBENA, ambient sound levels were measured at the closest residential receptor positions, to cover the peak demand periods of 07:00-10:00 and 17:00-20:00. Measurements were completed over the period 8 - 9 February 2017, by an attended survey with samples recorded in rotation during the noted morning and evening time periods.

An unattended noise monitor was also set up at the CHP northern boundary (Position R6), recording ambient sound levels across a 20-hour period from 15:00 to 11:00, thus taking in the extended early morning (06:00 to 07:00) and late evening (20:00 to 23:00) periods, requiring review of potential impact.

Whilst the long-term measurements were not recorded at a specific residential receptor position, they do provide a good representation of the diurnal pattern of ambient sound in the locality, as affected by the prominence of road traffic on both local roads and the busy A180. The measurements recorded as part of the original GBENA are shown in Chart 1.

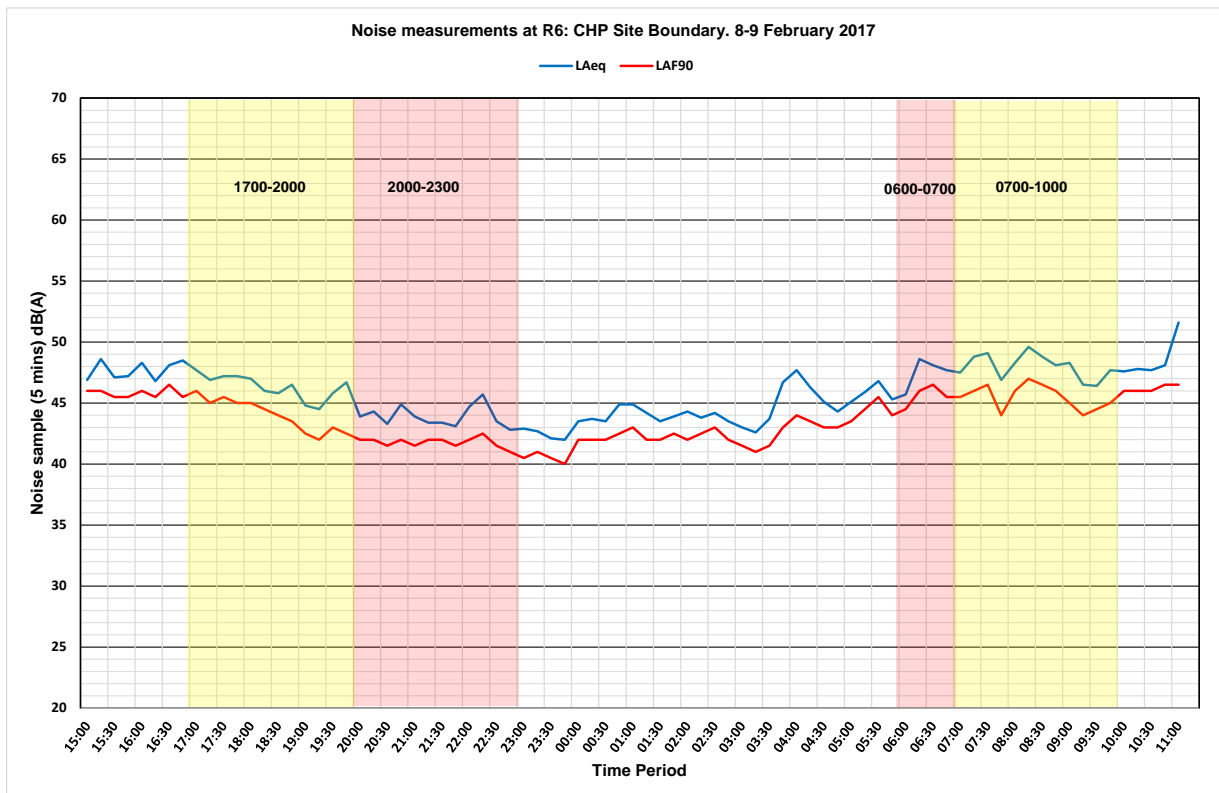


Chart 1: Ambient sound measurements at Position R6: CHP northern site boundary

The trend applicable to the background $L_{A90,T}$ data shows that during the later evening hours (22:30-23:00), the background level is around 3dB(A) lower than the average level between 18:30 – 19:30. During the early morning hours (06:00 – 06:30), the background level is similarly around 3dB(A) lower than the average level between 07:00 – 09:00.

Table 1 reproduces the background $L_{A90,15min}$ results taken from the February 2017 survey at the residential receptor positions and as included in the GBENA. A -3dB(A) correction has then been applied to the measured morning (07:00 – 09:00) and evening (18:00 – 20:00) values, to determine the background level during the later evening (22:30-23:00) and earlier morning (06:00-06:30) assessment periods.

Receptor Position	Start time	Noise sample (15 mins)		Description of Noise
		Measured $L_{A90,15 min}$	Corrected $L_{A90,T}$	
R1 Premier Inn Appian Way	19:30	49	46	Road traffic: local & A180.
	07:20	54	51	Road traffic: local & A180
R2 Haven Gardens Great Coates	18:30	44	41	Road traffic: local & A180.
	08:50	49	46	Road traffic: local & A180
R3 Woad Lane Grimsby	18:00	61	58	Road traffic local & A180.
	08:35	63	60	Road traffic: local & A180

Table 1: Ambient sound measurement results recorded during 2017 survey with -3dB(A) correction applied

The corrected $L_{A90,15min}$ data (bold font) will be subsequently used in the BS4142¹ assessment, to determine the potential impact of operations during the extended early morning and late evening operating periods.

Figure 1 illustrates the position of the closest noise sensitive receptor positions of residential use.

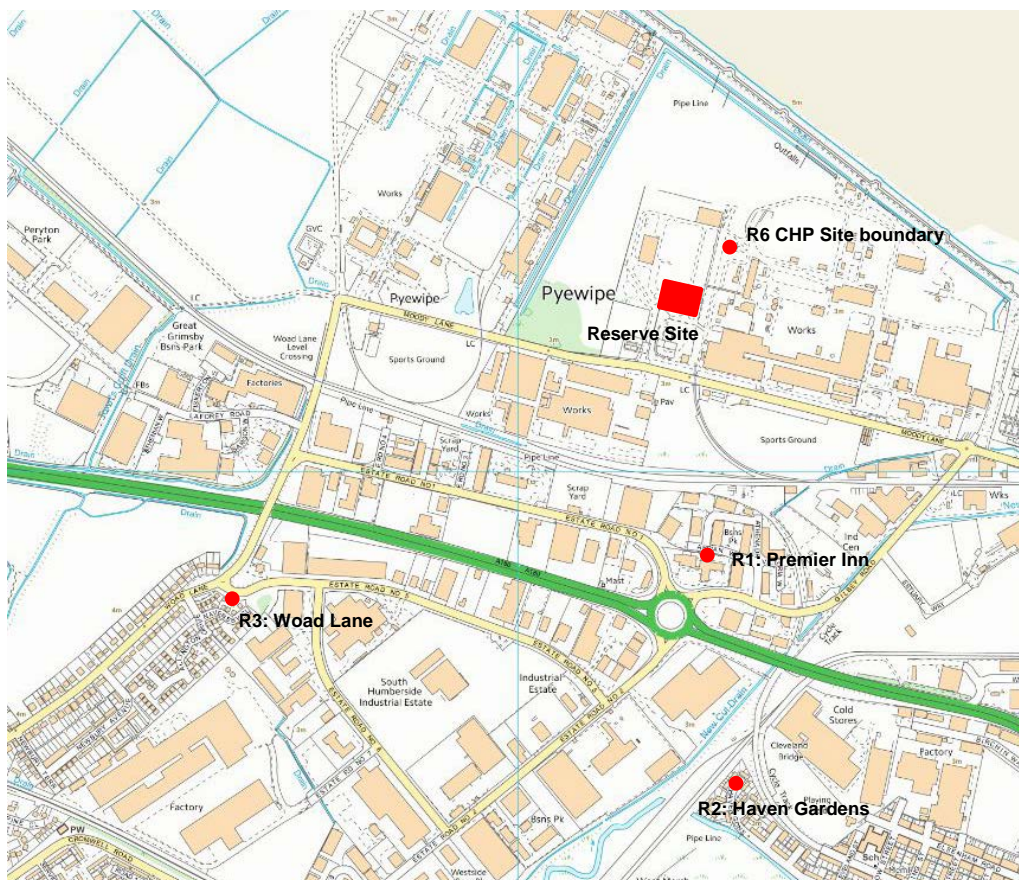


Figure 1: Plan showing Grimsby Reserve Site and noise sensitive receptor positions

¹ BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound

4. PREDICTION OF OPERATIONAL SOUND

The proposed change to the annual operating hours from 500 to 1500, would not affect the sound emission from the operation of the plant, so this would remain as predicted in the GBENA and as reproduced in Table 2.

Receptor Position	dB(A)	A-weighted octave band sound pressure Levels (dB)							
		63	125	250	500	1k	2k	4k	8k
R1 Premier Inn, Appian Way	34	27	33	24	18	-	-	-	-
R2 Haven Gardens, Grimsby	33	24	32	25	21	17	-	-	-
R3 Woad Lane, Great Coates	31	22	29	22	16	-	-	-	-

Table 2: Predicted specific $L_{Aeq,T}$ sound level from Reserve Site operation (A & B sites) at closest sensitive receptor positions

5. ASSESSMENT OF OPERATIONAL SOUND

Table 3 provides a comparison of predicted Reserve Site operational sound, with the $L_{A90,T}$ background sound level, as determined for the early morning (06:00-07:00) and late evening (22:00-23:00) time extension periods.

Receptor Position	Specific sound level $L_{Aeq,T}$ (dB)	Background sound level $L_{A90,T}$ (dB)		BS4142 Assessment Level (dB)	
		0600-07:00	2200-2300	0600-07:00	2200-2300
		R1 Premier Inn, Appian Way	34	51	46
R2 Haven Gardens, Grimsby	33	46	41	-13	-8
R3 Woad Lane, Great Coates	31	60	58	-29	-27

Table 3: Predicted specific $L_{Aeq,T}$ sound level from Reserve Site operation, at the closest residential receptor positions, compared with background $L_{A90,T}$ sound level.

As shown in Table 3, the projected specific sound level from the Reserve Site operation, at the closest residential receptor positions, is between $L_{Aeq,T}$ 31-34dB. Projected sound levels are low, due to the significant separation distance and also the screening benefit provided by other intervening industrial and commercial buildings.

The specific sound level from operation of the Gas Engines would be steady and expected to provide no tonal, or impulsive, character at the distant receptor positions. The rating level would therefore be the same as the specific sound level, resulting in a negative BS 4142 assessment level for each time period at each receptor position.

BS 4142 states ‘the lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound level will have an adverse impact, or significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact’.

With the rating level for operational sound being below background sound by a significant margin this would be a positive indication that operational sound from the Reserve Site would provide a negligible adverse impact.

6. CONCLUDING SUMMARY

The proposal for increasing the annual operating hours from 500 to 1500, could result in plant operation during the early morning (06:00 to 07:00) and late evening (22:00-23:00) periods.

Accordingly, this addendum report has included an assessment of the potential impact resulting from operating during these periods, using the methodology described in BS 4142.

The negative assessment level applicable to each time period at each receptor position confirms the conclusion made in the GBENA, that operational sound from the Reserve Site would provide a negligible adverse impact.