

Technical Memorandum

To: Dale Williams (Randall Parker)
From: Mike Potts (Echo Acoustics Ltd)
CC: Julia Frost (NRW)
Date: 12 July 2016
Re: Boundary noise measurements at Randall Parker Foods, Llanidloes

Introduction, objectives and methodology

The following presents the results of noise measurement surveys undertaken at the north western site boundary of the Randall Parker Foods Group facility at Llanidloes, Powys. This report is a stand-alone document and does not follow from any previous report issued by Echo Acoustics Ltd.

The purpose of the work was to determine the quantitative noise levels, at the site boundary, arising from the operation of the facility, in the context of the protection of residential amenity for the nearest residential property located immediately adjacent to the facility's north western boundary.

The survey was undertaken between 15:30 on Wednesday 22 June and 09:00 on Thursday 23 June 2016. Measurements were made at two locations, as indicated in Figures 1 to 5.

Figure 1: Noise measurement locations - plan view



Figure 2: Meter in place at location 1



Figure 3: View of RP facility from Location 1



Figure 4: View from facility towards measurement locations (Location 2 behind brick sub-station)



Figure 5: Location 2 at rear of brick sub-station building



Measurement location 1 was at the site's north western boundary, in a direct line between the process building and the nearest neighbouring residential property beyond the site boundary. This position had a clear and unobstructed view of the facility, as can be seen in Figure 3.

Location 2 was selected as a position in which it was hoped to obtain an indication of the background noise level in the absence of facility noise due to the screening provided by the intervening brick sub-station building.

Measurements consisted of continuous, consecutive 15-minute noise data as well as 1-second noise data throughout the entire survey period. The meter at location 1 was additionally set to record the 15-minute 1/3 octave band acoustic frequency spectrum data for each measurement and both meters were set to capture audio recordings of noise events exceeding 60 dB L_{Aeq} for more than 2 seconds.

The quantitative noise measurement data were supplemented by qualitative observation of the noise situation during the afternoon, between 15:30 and 16:30, at night time between 23:30 and 00:15 and in the morning between 09:00 and 09:30.

Measurements were undertaken using Class 1 Casella 633 sound level meters, each placed in a locked weatherproof enclosure and attached to a microphone mounted on a tripod at a height of approximately 1.5 metres above ground level. The microphones were protected by proprietary wind shields. The meters were field-calibrated before and after the surveys and no significant variation in calibration tone was observed. Both meters are within their annual laboratory calibration period; UKAS-traceable calibration certificates are presented at the end of this report.

Weather during the survey period was dry, cool (13 to 15 Celsius) and with negligible winds.

The survey and assessment have been undertaken by Mike Potts, Director and Principal Acoustic Consultant at Echo Acoustics Ltd. Mike is a full corporate Member of the Institute of Acoustics (MIOA) with over 16 years employment in both regulatory and private industry roles.

Results and observations

The recorded measurement data are summarised in Table 1; the data between 04:00 and 06:00 were adversely affected by bird song so, in discussion with Natural Resources Wales (NRW), it was agreed that the data between 04:00 and 06:00 could be reasonably excluded from the data set as a whole. It was also agreed that the remaining data would be presented as 3-hour consecutive blocks for the operational afternoon period between 15:30 and 23:00, the night time between 23:00 and 04:00 and the operational day time period 06:00 to 09:00. Figures 6 and 7 present the 1-second measurement profiles, in chart format, at each location, encompassing the full measurement period.

Figure 8 presents the 1/3 octave band frequency spectra for each of the three 'blocks' of time identified in Table 1, as measured at location 1 on the site boundary.

Table 1: Summarised noise measurement data

Location	Time period	Measured noise (dB)				
		L _{Amin}	L _{A90}	L _{Aeq}	L _{A10}	L _{AFmax}
Boundary	17:00 - 20:00	43.9	47.3	53.5	53.3	78.9
	00:00 - 03:00	41.5	44.3	46.2	46.8	54.9
	06:00 - 09:00	48.9	51.5	54.7	54.5	80.2
Background	17:00 - 20:00	37.1	41.3	50.6	51.5	77.5
	00:00 - 03:00	36.9	38.5	39.4	40.0	53.2
	06:00 - 09:00	36.9	45.5	51.3	51.3	78.5

The noise arising from the facility comes from a wide variety of activities; a steady background of plant equipment noise is emitted by fixed plant and HGV trailer refrigeration units.

During the afternoon period, the noise generated was observed to include the movement of fork-lift trucks as well as a number of livestock deliveries were made in both large rigid-bodies livestock trucks and in trailers pulled by 4x4 vehicles. It is assumed that these activities continue into the evening until around 21:00 to 21:30, after which time, noise levels reduce, as indicated in Figures 6 and 7.

During the night, the steady plant equipment noise is added to by the occasional arrivals of livestock and, from on-site observations, the occasional movement of cars at high speed on the minor road adjacent to the facility (Trefeglwys Rd?). Very little noise-generating activity occurs in the outdoor area of the facility during the late evening and through the night.

In the morning, the commencement of site full activities at 06:00 leads to an evident increase in noise on the charts, associated with the movement of fork-lift trucks, an increase in the number of livestock vehicle arrivals and departures, and a variety of staff activities in the external area associated with general clearing up after the night shift activities. Of note, although the very early morning data wasn't used in the quantitative assessment, examination of the data and audio recordings showed the departure of a heavy goods vehicle from the adjoining commercial site, on the facility's northern boundary, at around 04:00.

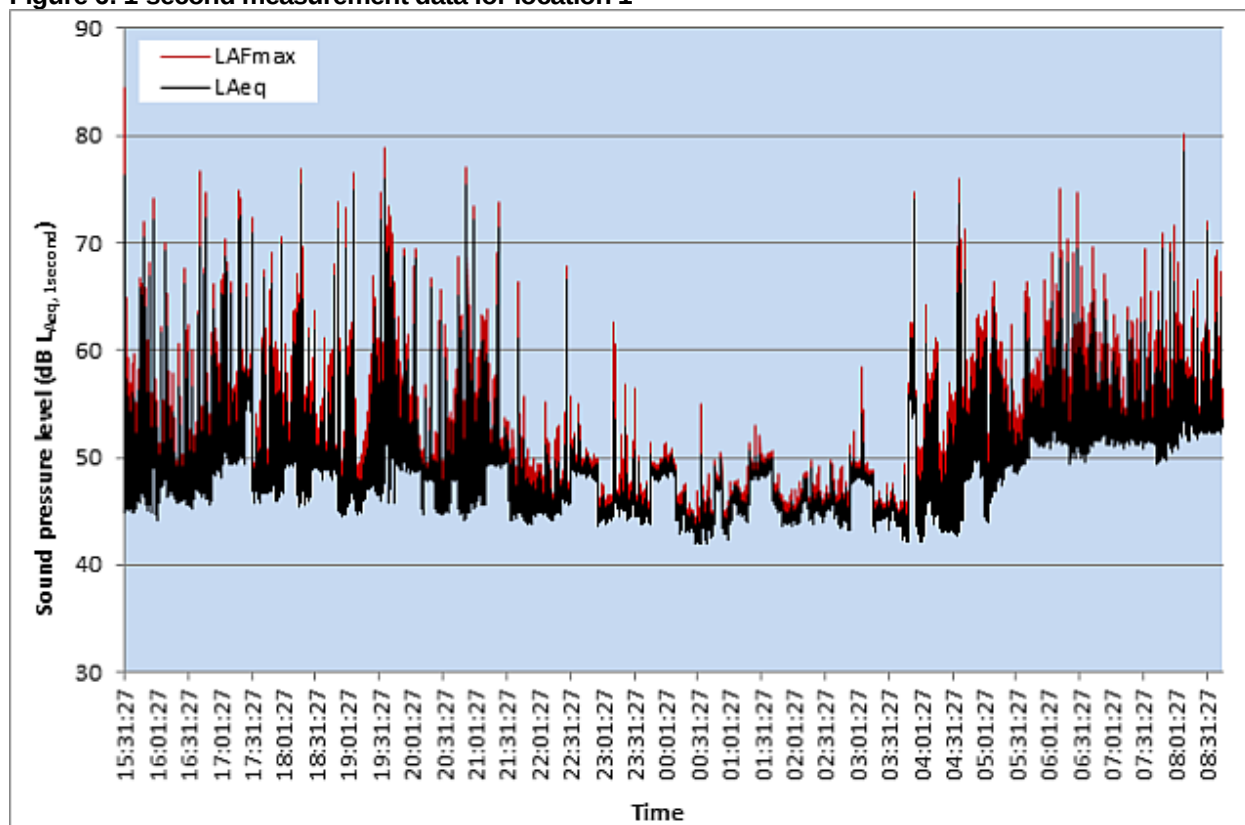
Figure 6: 1-second measurement data for location 1

Figure 7: 1-second measurement data at location 2

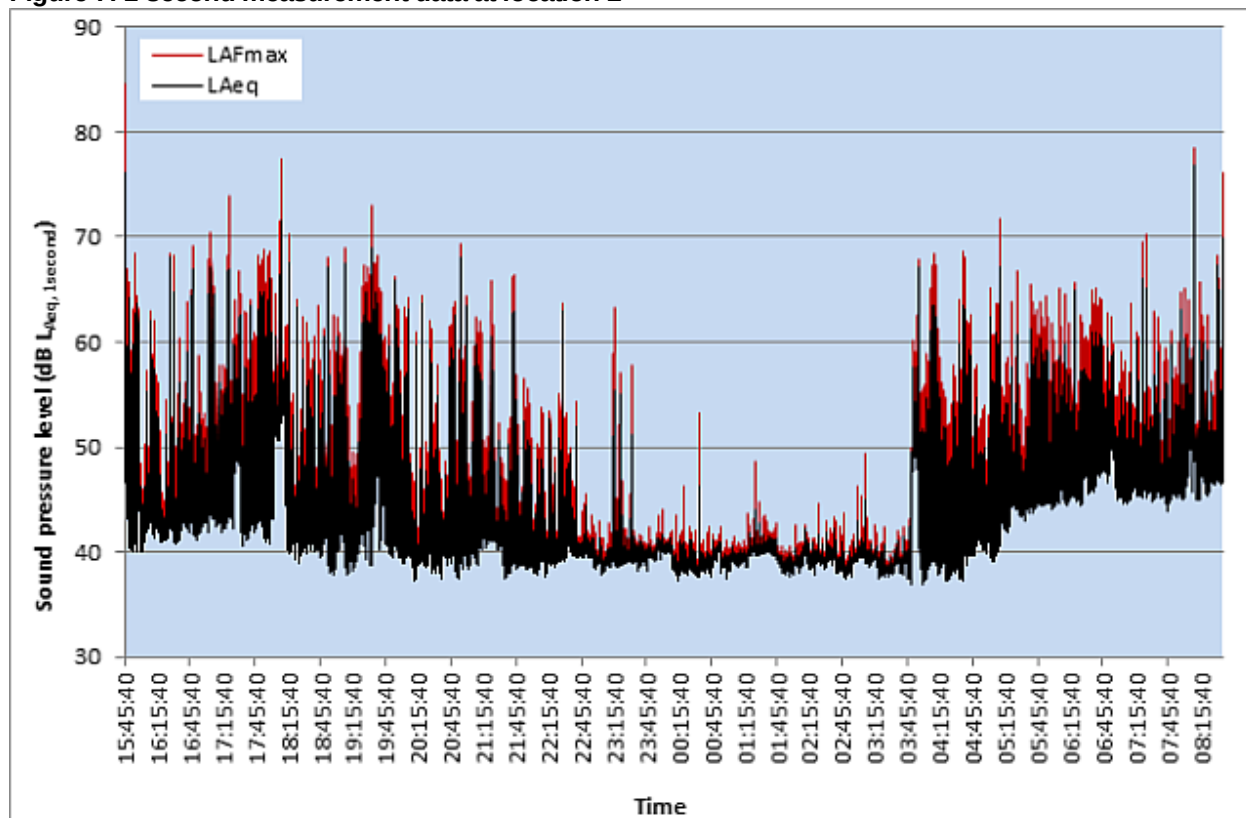
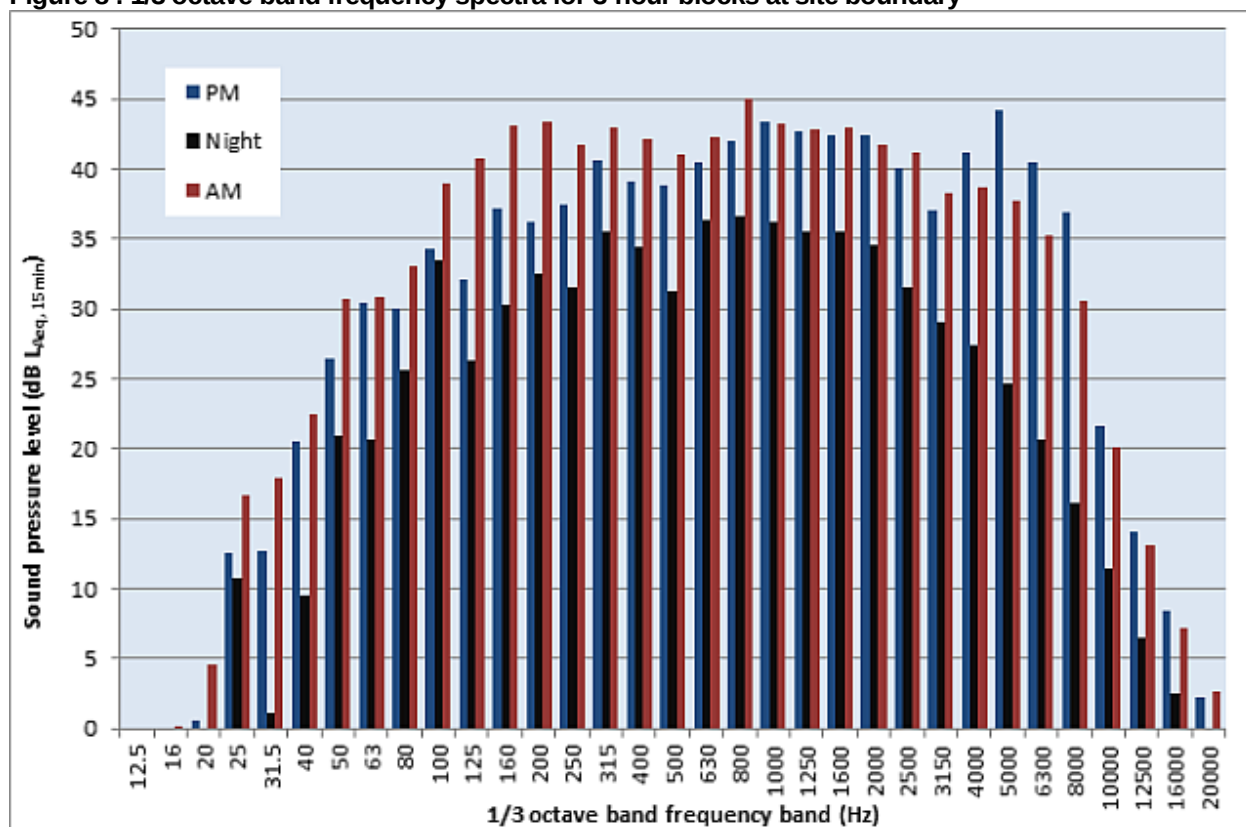


Figure 8 : 1/3 octave band frequency spectra for 3-hour blocks at site boundary



The data in Table 1 indicate that site noise levels average 53.5 to 54.7 dB LAeq during the day and 46.2 dB LAeq,8h during the night. Figure 6 shows intermittent plant equipment noise during the night with possibly a few vehicle passes as livestock are brought on-site overnight. The intermittent maximum noise

level occurrences are most likely associated with clattering noise from vehicle trailers, fork lift trucks and the occasional movement of equipment around the site external area; these are very much reduced during the night time period.

After 21:30 there is a noticeable reduction in noise levels associate with a general reduction in site activities, including deliveries of livestock. The onset of the 'dawn chorus' (bird song) at or around 4:00 am is very evident in Figures 1 and 2 and was supported by the numerous early-morning automatic audio recordings, all but one of which were triggered by bird song (these are numerous but are available on demand). The bird song is likely to have affected the time-averaged data; without this, it is likely the night time noise, associated with Randall Parker's operations, would have been in the region of 45 dB L_{Aeq}. The one exception to the triggered audio-events was the movement of a heavy goods vehicle shortly before 4:00 am; there are no records on the site log of any vehicle movements to or from Randall Parker at that time. I understand that vehicles associated with the adjacent commercial/haulage business typically depart at this time so it can be reasonably inferred that this activity is directly related to the adjacent commercial operation rather than Randall Parker's operations.

I understand that it has been suggested that the cutting back of the trees under the electricity cables, at the site boundary, has given rise to an increase in noise at neighbouring properties. This is highly unlikely as vegetation, unless very dense and of considerable thickness, generally provides very little quantitative sound attenuation. Additionally, the trees involved are a species of pine with sparse vegetation and are present in a single row; their presence will not previously have provided any significant sound attenuation.

More likely is that the increased visibility of the facility has led to a perceived increase in noise; this is supported by a significant body of research data showing that complaints of noise are more likely where a noise source is visible to the person receiving the noise.

The site is Regulated by Natural Resources Wales (NRW) which, in 2013, took over various functions of the Countryside Council for Wales, Forestry Commission Wales and the Environment Agency in Wales. The site has a Pollution prevention and Control (PPC) Permit (reference: YP3539SX, issued September 2005). There are no boundary noise level conditions and, with respect to noise, the controls contained within the Permit are an Improvement Condition, set in 2006, requiring the submission of a written Noise Management Plan and a requirement, at section 2.9 of the Permit, that the Operator apply Best Available Techniques (BAT) to all operations. Further to this, a relatively new generator has been sited on the process building's southern side so as to prevent disturbance to the property adjacent the site's north western boundary, and all refrigerated trailer units are now powered by electric hook-up thus negating the need for diesel engines to run through the night.

My understanding is that NRW are satisfied that the site is being operated according to BAT at this time and no enforcement action is underway.

I have also been provided with a list of complaints relating to a variety of activities at the site including fixed plant noise and vehicle movement noise.

Undoubtedly, the arrival and departure of noise during the day gives rise to noise from the site; during the night, livestock is most often brought to site in small trailers by farmers, rather than in large vehicles.

Conclusions

From examination of the data and on-site observations, it can be concluded that the operation of the site gives rise to relatively 'typical' day time noise levels for an operation of this nature, with reduced noise at night. Whilst the movement of vehicles bringing livestock to site does occur overnight, the vehicles tend to drive very slowly and do not normally give rise to particularly elevated levels of noise. Other than bird song, the noisiest night time activity recorded at the north western site boundary was the movement of a heavy goods vehicle associated with the adjacent commercial /haulage business.

The cutting back of the trees at the site boundary is unlikely to have had any effect whatsoever to the quantitative levels of noise experienced beyond the site boundary.

The operator has invested a significant amount of money on improvements to reduce noise and will continue to apply the principles of BAT to all operations.