

### NRW Monitoring 16 – 17 May 2019 (Ambient Sound Level - Cement Works Operational)

All measurements were taken outside, free field and tripod mounted. All monitoring locations had a direct line of site to the cement works with the exception of location G where the site is obscured from view by houses. All measurements taken with a calibrated B&K 2250 sound level meter. Field calibrations completed as required.

Weather Conditions – generally very little to no wind (occasional light easterly breeze), 60% cloud cover, 12 degrees Celsius

N.B Plant operations – Cement Mills 1 and 2 off throughout (effectively mothballed), Cement Mill 4 off - no longer capable of operation. Information on operations during the monitoring exercise provided by Castle Cement Ltd (refer table below).

Location Reference	Description of monitoring location	Date & Time	LAeq dB(A)	LA90 dB(A)	Plant Operations	NRW Observations
A	Private dwelling off Padeswood Lake Road	16/05/19 23:39 – 23:57	47	46	Kiln (On) Raw Mill (On) Coal Mill (On) Cement Mill 3 (On) Cement Mill 5 (On)	Cement works dominant noise source, steady fan / motor noise with prominent intermittent and impulsive sound (air cannon / pulse air). Repetitive ‘chirping’ noise – possibly from rotating plant. System alarms, front loading shovel (?) - engine noise and bucket scraping on yard. Very little other noise audible (e.g. road traffic). No prominent tones notable (subjective assessment).
B	Private dwelling off Padeswood Lake Road	16/05/19 23:09 – 23:24	43	41	Kiln (On) Raw Mill (On) Coal Mill (On) Cement Mill 3 (On) Cement Mill 5 (On)	Cement works dominant noise source, steady fan / motor noise with prominent intermittent and impulsive sound (air cannon / pulse air). Constant repetitive ‘chirping’ noise – possibly from rotating plant. System alarms, front loading shovel (?) - engine noise and bucket scraping on yard. Occasional ‘thud’ from works. Occasional distant (quiet) road traffic and one distant aircraft. No prominent tones notable (subjective assessment).
C	Private dwelling off Padeswood Lake Road	17/05/19 00:33 – 00:48)	42	41	Kiln (On) Raw Mill (On) Coal Mill (On) Cement Mill 3 (On) Cement Mill 5 (On)	Cement works dominant noise source, steady fan / motor noise with prominent intermittent and impulsive sound (air cannon / pulse air / compressed air discharge). Constant repetitive ‘chirping’ noise – possibly from rotating plant. System alarms. Occasional thuds – mobile plant? Occasional distant (quiet) road traffic noise with odd loud exhaust from motor bike or car. One distant aircraft. Distant road traffic (loud car or motorbike exhaust). No prominent tones notable (subjective assessment).
D	Field gateway (Padeswood Lake Road close to junction with A5104)	16/05/19 22:47 – 22:58	44	40	Kiln (On) Raw Mill (On) Coal Mill (On) Cement Mill 3 (On) Cement Mill 5 (On)	Significant contribution from local road traffic noise particularly the A5104. Cement works audible, distant fan type noise and notable constant whine/drone (highly perceptible tones identified at 250 and 268.8 Hz). Intermittent air cannon clearly audible.

E	Spon Green (direct line of site to works)	17/05/19 01:02 – 01:17	34*	32*	Kiln (On) Raw Mill (On) Coal Mill (On) Cement Mill 3 (On) Cement Mill 5 (On)	<p>Cement works barely audible, distant low-level rumble with occasional air cannon or pulse air.</p> <p>LAeq 15 minutes 45.6, LA90 31.7.</p> <p>*Three cars passed in close proximity of the monitoring location, when the contribution from these cars is excluded from the data an LAeq of 34 and an LA90 of 32 is achieved.</p>
F	Field gateway (Bannel Lane – East of works)	17/05/19 01:33 – 00:16	37	33	Kiln (On) Raw Mill (On) Coal Mill (On) Cement Mill 3 (On) Cement Mill 5 (On)	<p>Constant relatively quiet low frequency fan / motor type sound from cement works, possibly mill 3 or 5. No tones identified and very little intermittent sound (e.g. no air cannon notable). Occasional cyclical washing machine / type noise e.g. stones in a drum. Road traffic noise on local roads and possibly A55 generally audible throughout. Two Lorries passing along the A5118 loudest sources. During lulls in traffic noise the sound level is stable at around 35 dB LAeq with the main contribution being the cement works. Some leaf rustle as wind speed occasionally increased towards end of the recording. No prominent tones notable (subjective assessment).</p>
G	Chester Road, Penyffordd	17/05/19 02:02 – 02:18	33*	30*	Kiln (On) Raw Mill (On) Coal Mill (On) Cement Mill 3 (On) Cement Mill 5 (On)	<p>Cement works not audible. Distant road traffic noise (A55) dominant. Vehicle passed in close proximity to sound level meter. No generator or low frequency sound identified as was previously reported by member of the public at this location.</p> <p>LAeq 15 minutes 44.4, LA90 29.6.</p> <p>*When the contribution from this car is excluded from the data an LAeq of 33 and an LA90 of 30 is achieved.</p>

### **NRW Monitoring 06 – 07 June 2019 (Attempted Background Measurement)**

All measurements free field and tripod mounted. All monitoring locations had a direct line of site to the cement works with the exception of location G where the site is obscured from view by houses. All measurements taken with a calibrated B&K 2250 sound level meter. Field calibrations completed as required.

Weather Conditions – generally very little to no wind, 50% cloud cover, 5 – 10 degrees Celsius

N.B Plant operations – Cement Mills 1 and 2 off throughout (effectively mothballed), Cement Mill 4 off - no longer capable of operation. Information on operations during the monitoring exercise provided by Castle Cement Ltd (refer table below). As detailed below, even with the majority of the site plant off, the site was still contributing to the sound level at the majority of the monitoring locations during this exercise.

Location Reference (refer map)	Description of monitoring location	Date & Time	LAeq dB(A)	LA90 dB(A)	Plant Operations	NRW Observations
A	Private dwelling off Padeswood Lake Road	06/06/19 23:25 – 23:40	36	32	All plant off except; Cement Mill 3 Cement Mill 5 Packing Plant	Low level (relatively quiet) constant whirring sound from cement works - dominant contribution at this location. Intermittent and prominent air cannon / pulse air (?) – one example LAF 52.3 dB. Distant road noise. Wild life (occasional bird call)
A	Private dwelling off Padeswood Lake Road	07/06/19 00:01 – 00:16	35	31	All plant off except; Cement Mill 5 (sealing air fan) Packing Plant	Barely perceptible reduction in sound level with mill 3 and 5 off.  Low level (relatively quiet) constant whirring sound from cement works - Intermittent and prominent air cannon / pulse air (?). Distant road noise. Wild life (occasional Owl screech call), occasional dog barking. Reversing beeper and banging noise (fork lift or loading shovel?) at cement works noted on several occasions.
C	Private dwelling off Padeswood Lake Road	07/06/19 00:34 – 00:49	32	28	All plant off except; Cement Mill 5 (sealing air fan) Packing Plant	Low level (quiet) constant whirring sound from cement works - Intermittent and prominent air cannon / pulse air (?) once approximately every 3 minutes. Distant road noise. Wild life (occasional Owl screech). One distant passing aircraft
D	Field gateway (Padeswood Lake Road)	06/07/19 23:00 – 23:05			All plant off except; Cement Mill 3 Cement Mill 5 (in start-up following trip?) Packing plant.	Cement works not audible. Road traffic noise dominant. No sound level measurements taken.

F	Field gateway (Bannel Lane – East of works)	07/06/19 01:06 – 01:21	38	35	All plant off except; Cement Mill 5 sealing air fan. Packing Plant	Low level (quiet) constant and steady whirring sound from cement works - Intermittent air cannon / pulse air (?) audible but quieter than at locations A and C. Occasional road traffic noise on A5118. One passing aircraft
F	Field gateway (Bannel Lane – East of works)	07/06/19 02:07 – 02:22	42	41	All plant off except; Cement Mill 3 Cement Mill 5 Packing Plant	Low level (quiet) constant and steady whirring sound from cement works. Distant alarm from direction of cement works sounding for approximately 90 seconds at start of measurement. Intermittent air cannon / pulse air audible but much less prominent with mills in operation. Occasional road traffic noise on A5118 or possibly further afield (A55?).
H	Chester Road, Penyffordd	07/06/19 13:30 – 13:40			All plant off except; Cement Mill 3 Cement Mill 5 Packing Plant	Distinctive low frequency whine noticed when sat in parked vehicle and on street. Source appeared to originate from the direction of the Cement Works. Local electricity substation checked, and it was not the sound source. Hanson shift manager contacted by NRW and through series of actions it was identified that the whine was linked to Cement Mill 3 operations. No sound level measurements taken.