



EfW CHP Facility, Devonport

Non-Destructive Testing
Noise Report

20th November 2013

Prepared for:



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EXECUTIVE SUMMARY

On Wednesday 20th November 2013 noise monitoring was undertaken for MVV Environment Devonport Ltd (MVV) at three sensitive residential receptors close to the site boundary, to determine the noise levels during Non-Destructive Testing (NDT).

The following noise levels were recorded:

- At R3 (Savage Road): 52 dB $L_{Aeq,35min}$ (façade): 1 dB above the baseline;
- At R15 (Talbot Gardens): 50 dB $L_{Aeq,50min}$ (façade): 7 dB above the baseline; and
- At Cardinal Ave: 50 dB $L_{Aeq,50min}$ (free-field)/ 50 dB $L_{Aeq,50min}$ (façade): 1 dB below the baseline.

Noise levels recorded were within the Plymouth City Council's Code of Construction Practice noise limits for weekday evening work and within 1dB of baseline noise levels except for Talbot Gardens which was 7dB above the baseline noise level. It was noted that the 7dB difference in noise results from the baseline at Talbot Gardens was not caused by NDT works; and was instead as a result of external factors such as of rustling of trees and leaves during high wind, the presence of a dog near the site and a car with a loud exhaust.

Noise was dominated by road traffic and resident noise. No site noise was noticeable at Savage Road and Cardinal Ave and only very occasional instantaneous noises were recorded at Talbot Gardens, which took the form of quiet individual clangs– this was noted as not being louder than other background noises, and potentially unnoticeable to those unaware that NDT was occurring.

1. INTRODUCTION

MVV Environment Devonport Ltd (MVV) undertook Non-Destructive Testing (NDT) outside usual working hours on 20th November 2013, between 18:00 and 21:00. MVV commissioned URS to undertake noise monitoring at three sensitive residential receptors close to the site boundary.

This report describes the methodology and findings of the noise survey undertaken on this day.

1.1 Baseline Noise Limits

Baseline noise levels were monitored prior to NDT works commencing; with noise limits set based on Plymouth City Council's Code of Construction Practice. Table 1 shows baseline noise levels and the noise limits.

TABLE 1: BASELINE NOISE LEVELS AND NOISE LIMITS FOR NDT					
Location	Time	Ambient L _{Aeq,4hr} (dB)		Noise Limits (based on façade measurement)	
		Free Field	Façade	L _{Aeq,4hr} *1 dB	L _{Aeq,1hr} dB
R3 (Savage Road)	Weekend	-	54	64	67
	Weekday	-	51	61	64
R15 (Talbot Gardens)	Weekend	-	45	60	63
	Weekday	-	43	58	61
Cardinal Ave	Weekend	51	54	64	67
	Weekday	48	51	61	64

*1 The L_{Aeq,4hr} noise limit shall be applied to both the 3 hour and 4 hour noise measurements of NDT

2. SITE DESCRIPTION

The EfW CHP facility is currently being constructed in the North Yard of Her Majesty’s Naval Base (HMNB), beside Camels Head junction (the junction between the A3064 and Wolseley Road). The development is located close to a number residential properties, most noticeably those in Barne Barton to the north of the site, as well as on Cardinal Ave to the north-east.

3. METHODOLOGY AND ASSESSMENT CRITERIA

The monitoring procedure conformed to BS 7445: 2003 ‘Description and Measurement of Environmental Noise’, with measurements at Savage Road and Talbot Gardens taken 1 metre from the façade of residential receptors at a height of 1.5 metres. At Cardinal Ave, the measurement was taken free-field, over 3.5 metres from the façade. Average wind speeds were below 5 ms⁻¹.

4. NON-DESTRUCTIVE TESTING NOISE SURVEY

4.1 Protocol

Due to the lack of secure monitoring locations, it was not possible to leave equipment unattended. Consequently, manned noise monitoring has been undertaken.

Monitoring was undertaken for a 50 minute period at each of the three locations representative of the closest receptors to the site. The measurements at the three locations were carried out consecutively, therefore covering the whole period of NDT works occurring on site; logging L_{Aeq} and L_{AFmax} levels in contiguous 5-minute periods. Table 1 lists the noise monitoring locations as well as the time monitoring was undertaken.

Table 1 lists the noise monitoring locations as well as the time monitoring was undertaken.

TABLE 2: NOISE MONITORING LOCATION AND TIMINGS				
Location*	Road	Details	Date	Time
R3	Savage Road	Representative of the closest noise sensitive properties to the north west (approx. 100 metres from the Site).	Wednesday 20 th November 2013 (weekday)	19:00 – 19:50
R15	Talbot Gardens	Representative of the closest noise sensitive properties to the north (approx. 60 metres from the Site).	Wednesday 20 th November 2013 (weekday)	18:00 – 18:50
-	Cardinal Ave	Representative of the closest noise sensitive properties to the north-east (approx. 200 metres from the Site).	Wednesday 20 th November 2013 (weekday)	20:00 – 20:50

* Correlates with residential receptors for the Environmental Statement for the EfW CHP facility (11/00750/FUL)

4.2 Instrumentation

The sound level meter utilised for the monitoring:

- A B&K 2238 sound level meter, serial number 2562627 was used

Full calibration details are available upon request.

The calibration levels were checked prior to and following the measurements with a:

- B&K 4231 field calibrator, serial number 3005464 and no significant drift was noted (+/- 0.1 dB).

4.3 Meteorological Conditions

Weather conditions during the measurements were as shown below in Table 3.

TABLE 3: WEATHER CONDITIONS DURING NOISE MONITORING					
Location	Date/Time	Max Wind Speed (m/s)	Wind Direction	Temperature	Precipitation
R3	20/11/2013 19:00 – 19:50	< 0.3	N	6°C	None
R15	20/11/2013 18:00 – 18:50	< 1	N	6°C	Light Rainfall
Cardinal Ave	20/11/2013 20:00 – 20:50	< 3	N	5°C	None

4.4 Commentary

The following observations of local noise sources were made whilst at the site during monitoring:

- At R3 (Savage Road) the noise climate was dominated by local road traffic noise on Savage Road (vehicles and motorbikes) and other surrounding roads (particularly Wolseley Road); trains; noise from residents parking up and walking past; as well as noise from within the residential properties. The resident noise was high at this site when at one point a child was shouting at passers-by from an upper window to street level.
- At R15 (Talbot Gardens) the noise climate was dominated by a mixture of noise from: road traffic from surrounding roads (particularly Savage Road and Wolseley Road) and passing trains. Also present was occasional noise from vehicles passing on Talbot Gardens. Occasional clanging noises were also noted by the surveyor, which were presumed to originate from site. It was noted that these site noises were not louder than other background noise, and potentially unnoticeable to those unaware that NDT was occurring. It was also noted that a dog was heard barking from an unknown location, which echoed through the site during a portion of the monitoring. While the R15 monitoring location is sheltered from the wind, the overall wind speed was approximately 4ms^{-1} , which caused rustling of nearby trees throughout the survey.
- At Cardinal Ave the noise climate was dominated by a mixture of noise from: road traffic on Cardinal Ave (cars manoeuvring, parking and passing etc...); as well as from surrounding roads (particularly Wolseley Road); and passing trains. No site noise was noticeable at Cardinal Ave.

4.5 Results

The results of noise monitoring undertaken on 20th November 2013 are given below in Table 4.

The full noise survey data for all three sites are provided in Appendix A, Tables A1 to A3.

TABLE 4: BASELINE NOISE LEVELS AND NOISE LIMITS FOR NDT

Location	Date & Time	NDT Noise Level L _{Aeq,50min} (dB)		NDT Noise Level L _{AFmax} (dB)	Baseline Noise Level L _{Aeq,4hr} (dB)		Noise Limits (based on façade measurement) L _{Aeq,4hr} dB	Difference between NDT Noise Level (L _{Aeq,50min}) and Baseline (L _{Aeq,4hr}) (dB)
		Free Field	Façade		Free Field	Façade		
R3	20/11/2013 19:00 – 19:50	-	52	77	-	51	61	1
R15	20/11/2013 18:00 – 18:50	-	50	66	-	43	58	7
Cardinal Ave	20/11/2013 20:00 – 20:50	47	50	74	48	51	61	-1

The recorded noise levels at all three receptors were below the adopted noise limits. While the noise level at Savage Road and Cardinal Ave were within 1dB of the baseline level, the noise level at Talbot Gardens was 7 dB over the baseline level. This difference from the baseline at R15 is unattributable to NDT works on site, and instead a result of rustling of trees and leaves during high wind and other non NDT activities such as the presence of a dog near the site and a car with a loud exhaust. The L_{AFmax} events included in Table 4 were not a result of NDT testing, but instead due to off-site noises.

It was noted by the surveyor that NDT works were not the dominant noise source at any location; in particular at Cardinal Ave and Savage Road, where no NDT works noise was picked up by the surveyor. The only site noise that was noted, was Talbot Gardens, where there was the occasional clang, these were all recorded by the surveyor and included in Appendix A, Table A2. The noises were not intrusive and unlikely to be heard by residents.

It was noted by surveyors that if residents were unaware of NDT occurring, they would unlikely have noticed these minor site noises.

APPENDIX A: FULL NOISE MONITORING RESULTS

Tables A1 to A3 list the full suite of measured noise data.

TABLE A1: SAVAGE ROAD MEASURED NOISE LEVELS					
Date & Start time	Duration	L _{Aeq} (dB)	L _{AFmax} (dB)	L _{AF90} (dB)	Notes
20/11/2013 19:00	05:00.0	50.4	65.9	41.5	Multiple Cars Passing
20/11/2013 19:05	05:00.0	52.7	65.1	42	Delivery Driver Dropping Off Take-Away
20/11/2013 19:10	05:00.0	54.3	66.4	44	Car Passing
20/11/2013 19:15	05:00.0	50	62.6	43	Train
20/11/2013 19:20	05:00.0	51.7	65	42	Residents Walking on Savage Road Talking Loudly
20/11/2013 19:25	05:00.0	48.7	63.6	41.5	Train
20/11/2013 19:30	05:00.0	51.1	64.9	42	Van parking directly in front of SLM location
20/11/2013 19:35	05:00.0	53.8	76.7	42	Child Shouting Through window for 1 minute
20/11/2013 19:40	05:00.0	50.1	65.8	42.5	Car passing with loud music
20/11/2013 19:45	05:00.0	51	63.4	43.5	Car Passing

TABLE A2: TALBOT GARDENS MEASURED NOISE LEVELS

Date & Start time	Duration	L _{Aeq} (dB)	L _{AFmax} (dB)	L _{AF90} (dB)	Notes
20/11/2013 18:00	05:00.0	47.9	56.9	46	
20/11/2013 18:05	05:00.0	46.8	63.5	44	Train
20/11/2013 18:10	05:00.0	46	58.5	43.5	
20/11/2013 18:15	05:00.0	54.8	65.4	45	Train Passing, plus clanging from site.
20/11/2013 18:20	05:00.0	47.6	58.3	45	
20/11/2013 18:25	05:00.0	49.9	57.2	47	Dog Barking from unknown location, echoing through the site
20/11/2013 18:30	05:00.0	52.2	65.8	47.5	Dog Barking from unknown location, echoing through the site
20/11/2013 18:35	05:00.0	47.5	60.6	45	Clanging from site
20/11/2013 18:40	05:00.0	46.8	55.6	44.5	
20/11/2013 18:45	05:00.0	48	60.8	44.5	Car with loud exhaust passes.

TABLE A3: CARDINAL AVENUE MEASURED NOISE LEVELS

Date & Start time	Duration	L _{Aeq} (dB)	L _{AFmax} (dB)	L _{AF90} (dB)	Notes
20/11/2013 20:00	05:00.0	55	72.1	48	Car Passing
20/11/2013 20:05	05:00.0	50.6	67.9	42	
20/11/2013 20:20	05:00.0	47.8	62.2	42	
20/11/2013 20:25	05:00.0	46.7	65	41	
20/11/2013 20:30	05:00.0	44.4	61.5	41.5	
20/11/2013 20:35	05:00.0	44.7	63.5	40.5	
20/11/2013 20:40	05:00.0	45.6	74.4	40	Door Slamming Shut close to SLM
20/11/2013 20:45	05:00.0	49.8	68.2	41	Car Passing
20/11/2013 20:50	05:00.0	50.5	65.3	41	
20/11/2013 20:55	05:00.0	48.8	67.2	40	