

URS

EfW CHP Facility, Devonport

Non-Destructive Testing
Noise Report

28th November 2013

Prepared for:



UNITED
KINGDOM &
IRELAND



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EXECUTIVE SUMMARY

On Thursday 28th 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): 53 dB $L_{Aeq,35min}$ (façade): 2 dB above the baseline;
- At R15 (Talbot Gardens): 42 dB $L_{Aeq,50min}$ (façade): 1 dB below the baseline; and
- At Cardinal Ave: 47 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 5dB of the baseline noise level.

Noise was dominated by road traffic. No site noise was noticeable at Talbot Gardens and Cardinal Ave and only very occasional instantaneous noises were recorded at Savage Road, 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 28th 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 all 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).	Thursday 28 th November 2013 (weekday)	18:00 – 18:50
R15	Talbot Gardens	Representative of the closest noise sensitive properties to the north (approx. 60 metres from the Site).	Thursday 28 th November 2013 (weekday)	19:00 – 19:50
-	Cardinal Ave	Representative of the closest noise sensitive properties to the north-east (approx. 200 metres from the Site).	Thursday 28 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	28/11/2013 18:00 – 18:50	< 0.3	N	8°C	None
R15	28/11/2013 19:00 – 19:50	< 0.3	N	8°C	None
Cardinal Ave	28/11/2013 20:00 – 20:50	< 0.3	N	8°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 and pedestrians parking up and/or walking past; as well as noise from within the residential properties. There was also a delivery van below the SLM, which was idling and being loaded/unloaded for some of the measurement duration (18:07 – 18:17). Occasional clang 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.
- 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); passing trains; and raised voices from the Sports Pitch on HMNB. Also present was occasional noise from vehicles and pedestrians passing on Talbot Gardens; and noise from within the residential properties. No site noise was noticeable at Talbot Gardens.
- 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. Also there was occasional noise from pedestrians and residents walking past the SLM. No site noise was noticeable at Cardinal Ave.

4.5 Results

The results of noise monitoring undertaken on 28th 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)	Difference between NDT Noise Level (L _{Aeq,50min}) and Baseline (L _{Aeq,4hr}) (dB)
		Free Field	Façade	Façade	Free Field	Façade	L _{Aeq,4hr} dB	
R3	28/11/2013 18:00 – 18:50	-	53	71	-	51	61	2
R15	28/11/2013 19:00 – 19:50	-	42	61	-	43	58	-1
Cardinal Ave	28/11/2013 20:00 – 20:50	47	50	75	48	51	61	-1

The recorded noise levels at all three receptors were below the adopted noise limits and within 5dB of the baseline level. The L_{AFmax} events included in Table 4 were not a result of NDT testing, but instead due to off-site noises.

The recorded noise levels were comparable to baseline noise levels, being only 2 dB above the baseline at R3 (Savage Road), and 1 dB below the baseline at both R15 (Talbot Gardens) and Cardinal Ave.

It was noted by the surveyor that NDT works were not the dominant noise source at any location; in particular at Talbot Gardens and Cardinal Ave no NDT works noise was picked up by the surveyor. The only site noise that was noted at Savage Road, was the occasional clang, these were all recorded by the surveyor and included in Appendix A, Table A1. 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
28/11/2013 18:00	05:00.0	53.5	67.7	43.5	
28/11/2013 18:05	05:00.0	54	67.1	44	Delivery van pulls up below SLM, engine idling and unloading; Pedestrians walking past on roadside talking
28/11/2013 18:10	05:00.0	51.9	68.2	43.5	Delivery van reloaded; Pedestrians walking past on roadside talking; Train
28/11/2013 18:15	05:00.0	52.9	64.7	44	Delivery van engine idling and pulls away; Clang on site
28/11/2013 18:20	05:00.0	52.2	64.9	44	Clang on site; Train; Resident walking past SLM
28/11/2013 18:25	05:00.0	48.2	61.7	43.5	Man walking in Blackie Woods rustling; Clang on site
28/11/2013 18:30	05:00.0	53.8	65.1	43.5	Man walking in Blackie Woods rustling; Train
28/11/2013 18:35	05:00.0	53.6	71.3	43	Man walking in Blackie Woods rustling
28/11/2013 18:40	05:00.0	52.8	65.1	45.5	
28/11/2013 18:45	05:00.0	50.8	65.3	44	Train; Clang on site

TABLE A2: TALBOT GARDENS MEASURED NOISE LEVELS

Date & Start time	Duration	L _{Aeq} (dB)	L _{AFmax} (dB)	L _{AF90} (dB)	Notes
28/11/2013 19:00	05:00.0	39	48.8	37	
28/11/2013 19:05	05:00.0	42.6	56.9	38	Train
28/11/2013 19:10	05:00.0	42.1	60.5	37	Pedestrians walking past on Talbot Gardens talking loudly
28/11/2013 19:15	05:00.0	41.9	52.4	38	Distant car horn going off a few times
28/11/2013 19:20	05:00.0	39.4	48.9	37	
28/11/2013 19:25	05:00.0	40.6	51.2	37.5	
28/11/2013 19:30	05:00.0	40.9	52.1	38	
28/11/2013 19:35	05:00.0	43.4	50.7	39.5	
28/11/2013 19:40	05:00.0	45.3	56.7	37.5	Train
28/11/2013 19:45	05:00.0	41.7	53.1	37	Train

TABLE A3: CARDINAL AVENUE MEASURED NOISE LEVELS

Date & Start time	Duration	L _{Aeq} (dB)	L _{AFmax} (dB)	L _{AF90} (dB)	Notes
28/11/2013 20:00	05:00.0	53.2	72.4	39.5	Train; Pedestrian walking past SLM with dog; Car idling quite loudly (for 2 mins); another car starting up and leaving (older car)
28/11/2013 20:05	05:00.0	42.7	59.9	38.5	Unknown noise from behind SLM (3mins); Distant motorbike
28/11/2013 20:10	05:00.0	39.1	50.4	36	
28/11/2013 20:15	05:00.0	39.5	50.6	37	Noise from residential properties
28/11/2013 20:20	05:00.0	48.9	66.8	37	Noise from residential properties; Pedestrian walking past SLM; Loud car passing at speed
28/11/2013 20:25	05:00.0	48.8	68.9	36	
28/11/2013 20:30	05:00.0	44.6	57.5	37	Train
28/11/2013 20:35	05:00.0	39.8	48.3	37.5	Pedestrian walking past SLM
28/11/2013 20:40	05:00.0	49.8	65.4	38	Train; Pedestrian walking past SLM
28/11/2013 20:45	05:00.0	44.4	63.4	36.5	