



# EfW CHP Facility, Devonport

Non-Destructive Testing  
Noise Report

31<sup>st</sup> October 2013

Prepared for:



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Rev	Date	Details	Prepared by	Checked by	Approved by
0	31.10.13	Final	<b>Daniel Ellis</b> Graduate Environmental Consultant	<b>Alf Maneylaws</b> Associate Noise & Vibration	<b>Ian Roach</b> Associate Environment and Planning

URS Infrastructure & Environment UK Limited  
 Mayflower House  
 Armada Way  
 Plymouth  
 PL1 1LD

+44 (0)1752 676 700

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TABLE OF CONTENTS	EXECUTIVE SUMMARY .....	1
	1. INTRODUCTION.....	2
	1.1 Baseline Noise Limits.....	2
	2. SITE DESCRIPTION.....	3
	3. METHODOLOGY AND ASSESSMENT CRITERIA .....	3
	4. NON-DESTRUCTIVE TESTING NOISE SURVEY.....	3
	4.1 Protocol .....	3
	4.2 Instrumentation .....	4
	4.3 Meteorological Conditions.....	4
	4.4 Commentary.....	4
	4.5 Results .....	5
	APPENDIX A: FULL NOISE MONITORING RESULTS.....	

**EXECUTIVE SUMMARY**

On Thursday 31<sup>st</sup> October 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  $L_{Aeq,50min}$  (façade): 2 dB above the baseline;
- At R15 (Talbot Gardens): 45 dB  $L_{Aeq,50min}$  (façade): 2dB above the baseline; and
- At Cardinal Ave: 53 dB  $L_{Aeq,50min}$  (free-field)/ 56 dB  $L_{Aeq,50min}$  (façade): 5 dB above 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. The noise level at Cardinal Ave was 5dB above the baseline, higher than previously recorded, however, this was unrelated to NDT works on Site.

Noise was dominated by road traffic. No site noise was noticeable at Cardinal Ave and only very occasional instantaneous noises were recorded at Savage Road and Talbot Gardens, which took the form of quiet individual clangs and rattles— 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 31<sup>st</sup> October 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 <sub>Aeq,4hr</sub> (dB)		Noise Limits (based on façade measurement)	
		Free Field	Façade	L <sub>Aeq,4hr</sub> * <sup>1</sup> dB	L <sub>Aeq,1hr</sub> 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

\*<sup>1</sup> The L<sub>Aeq,4hr</sub> 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<sup>-1</sup>.

## 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<sub>Aeq</sub> and L<sub>AFmax</sub> levels in contiguous 5-minute periods. 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 31 <sup>st</sup> October 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 31 <sup>st</sup> October 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 31 <sup>st</sup> October 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 Rion NL52 sound level meter, serial number 00620802 was used

Full calibration details are available upon request.

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

- Rion NC-74 field calibrator, serial number 34672983 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	31/10/2013 18:00-18:50	1.0	SW	11°C	None
R15	31/10/2013 19:00-19:50	1.0 – 1.5	SW	11°C	None
Cardinal Ave	31/10/2013 20:00-20:50	3.0 - 4.5	SW	10°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); noise from children playing from within the residential properties (18:00-18:30); trains; noise from residents parking up and walking past; and noise from the sports pitch on HMNB (18:00-18:20). A number of louder bangs were recorded by the surveyor, which came from the direction of HMNB, these were noted as sounding like small fireworks. 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. An unidentified whirring/humming noise was noted by the surveyor, only noticeable when more dominant noise was quieter, this is presumed to originate from HMNB.

- 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 (loudest between 19:40-19:50). The surveyor also noted noise from HMNB, which was more noticeable than previous monitoring occasions. This took the form of a continuous whirring/humming noise (possibly from the loading of a ship), and intermittent banging (which was noted as sounding like a small firework). Also present was occasional noise from vehicles passing on Talbot Gardens; noise from within the residential properties (19:00-19:05); and occasional clang and rattling noises, 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 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); passing trains and raised voices from the Sports Pitch on HMNB. Also there was occasional noise from pedestrians and residents walking past the SLM. No site noise was noticeable at Cardinal Ave.

No long-term site noise was noticed at any receptor, any instantaneous noises from site were noted and are shown in Appendix A, Tables A1 to A3.

## **4.5 Results**

The results of noise monitoring undertaken on 31<sup>st</sup> October 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 <sub>Aeq,50min</sub> (dB)		NDT Noise Level L <sub>AFmax</sub> (dB)	Baseline Noise Level L <sub>Aeq,4hr</sub> (dB)		Noise Limits (based on façade measurement)	Difference between NDT Noise Level (L <sub>Aeq,50min</sub> ) and Baseline (L <sub>Aeq,4hr</sub> ) (dB)
		Free Field	Façade		Free Field	Façade	L <sub>Aeq,4hr</sub> dB	
R3	31/10/2013 18:00-18:50	-	53	76	-	51	61	2
R15	31/10/2013 19:00-19:50	-	45	63	-	43	58	2
Cardinal Ave	31/10/2013 20:00-20:50	53	56	78	48	51	61	5

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  $L_{Aeq,50min}$  at all receptors were above the recorded baseline levels, which was unrelated to site NDT works. Savage Road and Talbot Gardens were 2dB above baseline level; and Cardinal Ave was 5dB above the baseline, this is possibly due to stronger winds at this location (3.0 - 4.5 m/s). The noise from HMNB was also louder during this monitoring period, with raised voices from the Sports Pitch, occasional banging, as well as humming/whirring noises all recorded by the surveyor.

It was noted by the surveyor that NDT works were not the dominant noise source at any location; in particular at Cardinal Ave no NDT works noise was picked up by the surveyor. The only site noise that was noted, at Savage Road and Talbot Gardens, was the occasional clang and rattle, these were all recorded by the surveyor and included in Appendix A, Table A1 and 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 <sub>Aeq</sub> (dB)	L <sub>AFmax</sub> (dB)	L <sub>AF90</sub> (dB)	Notes
31/10/2013 18:00	05:00.0	52.5	65.3	45	Train (x2); Children playing further along Savage Road.
31/10/2013 18:05	05:00.0	51.3	65.2	45	
31/10/2013 18:10	05:00.0	51.5	67.1	44.5	Train
31/10/2013 18:15	05:00.0	50.3	68.9	44.7	
31/10/2013 18:20	05:00.0	53.2	66.3	44.5	Two clangs on site
31/10/2013 18:25	05:00.0	53.9	70.4	44.4	Train; Few distant banging noises (possibly from HMNB, like a small firework going off)
31/10/2013 18:30	05:00.0	52.3	65	44.8	Train; Few distant banging noises (possibly from HMNB, like a small firework going off)
31/10/2013 18:35	05:00.0	54.4	76.3	45	Car passing with loud music
31/10/2013 18:40	05:00.0	54.5	66.6	46.1	Truck passing with loud music and rattling when going over speed bumps; Train; Residents entering building; Loud car passing
31/10/2013 18:45	05:00.0	51.3	67.1	44.9	Singular bang from unknown location

**TABLE A2: TALBOT GARDENS MEASURED NOISE LEVELS**

Date & Start time	Duration	L <sub>Aeq</sub> (dB)	L <sub>AFmax</sub> (dB)	L <sub>AF90</sub> (dB)	Notes
31/10/2013 19:00	05:00.0	45.8	63.3	40.7	Residents in flat besides SLM out on balcony with door open – loud conversation dominant; Couple of distant banging noises (possibly from HMNB, like a small firework going off)
31/10/2013 19:05	05:00.0	42.5	57	39.5	Train; Rattling noise from Site (metal fencing in the wind); Couple of distant banging noises (possibly from HMNB, like a small firework going off)
31/10/2013 19:10	05:00.0	43.8	54.8	40.4	Pedestrians on Talbot Gardens; loud vehicular noise from HMNB; Train
31/10/2013 19:15	05:00.0	42.6	58.1	40.7	Distant banging noises from HMNB (possibly from the loading of a ship)
31/10/2013 19:20	05:00.0	43.2	56.4	40.9	Distant banging noises from HMNB (possibly from the loading of a ship)
31/10/2013 19:25	05:00.0	44.4	65.3	41.9	Distant banging noises from HMNB (possibly from the loading of a ship); Car horn; Loud bang from HMNB (Cannon/firework in sound)
31/10/2013 19:30	05:00.0	48.1	60.9	41.6	Car passing on Talbot Gardens; loud unknown bang; Long train passing (louder than usual)
31/10/2013 19:35	05:00.0	44	54.9	41.7	Car passing on Talbot Gardens with loud music; Rattling noise from Site (metal fencing in the wind)
31/10/2013 19:40	05:00.0	43.7	53.3	41.7	Raised voices noticeable from HMNB Sports Pitch; Distant music; Distant banging noises from HMNB
31/10/2013 19:45	05:00.0	46.7	58.7	42.9	Raised voices noticeable from HMNB Sports Pitch; Distant

TABLE A2: TALBOT GARDENS MEASURED NOISE LEVELS

Date & Start time	Duration	L <sub>Aeq</sub> (dB)	L <sub>AFmax</sub> (dB)	L <sub>AF90</sub> (dB)	Notes
					music; Distant banging noises from HMNB; Rattling noise from Site (metal fencing in the wind); Train.

**TABLE A3: CARDINAL AVENUE MEASURED NOISE LEVELS**

Date & Start time	Duration	L <sub>Aeq</sub> (dB)	L <sub>AFmax</sub> (dB)	L <sub>AF90</sub> (dB)	Notes
31/10/2013 20:02	05:00.0	52.8	69.4	45.1	Two cars pulling up close to SLM; Car horn; Distant siren; Car alarm
31/10/2013 20:07	05:00.0	53.9	72.3	45.6	Car turning around and slowing passing SLM; Two cars idling and passing SLM
31/10/2013 20:12	05:00.0	49	68.8	44.4	
31/10/2013 20:17	05:00.0	55.6	77.8	45	Resident unloading van - lots of banging noises; 4x4 vehicle turning in road loudly ~15m from SLM
31/10/2013 20:22	05:00.0	51	70.6	44.3	4x4 vehicle loudly turning in road ~15m from SLM; car passing SLM, running over kerb by SLM.
31/10/2013 20:27	05:00.0	55.1	74.1	43.8	Resident getting into car and leaving ~15m from SLM
31/10/2013 20:32	05:00.0	49	62.3	44.5	Train
31/10/2013 20:37	05:00.0	50.1	76.3	44.2	Pedestrian walking past SLM
31/10/2013 20:42	05:00.0	52.7	73.6	44.1	Loud train
31/10/2013 20:47	05:00.0	50.3	70.3	43.9	Resident getting into car and leaving, opposite SLM.