

# URS

## EfW CHP Facility, Devonport

Non-Destructive Testing  
Noise Report

4<sup>th</sup> December 2013

Prepared for:



UNITED  
KINGDOM &  
IRELAND



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**EXECUTIVE SUMMARY**

On Wednesday 4<sup>th</sup> December 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): 44 dB  $L_{Aeq,50min}$  (façade): 1 dB above the baseline; and
- At Cardinal Ave: 45 dB  $L_{Aeq,50min}$  (free-field)/ 48 dB  $L_{Aeq,50min}$  (façade): 3 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 levels at Savage Road and Talbot Gardens were both 1dB over the baseline, while the noise level at Cardinal Ave was 3 dB below the baseline.

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– 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 4<sup>th</sup> December 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<br>L <sub>Aeq,4hr</sub> (dB) |        | Noise Limits<br>(based on façade measurement) |                         |
|                                                         |         | Free Field                           | Façade | L <sub>Aeq,4hr</sub> *1 dB                    | L <sub>Aeq,1hr</sub> dB |
| R3<br>(Savage Road)                                     | Weekend | -                                    | 54     | 64                                            | 67                      |
|                                                         | Weekday | -                                    | 51     | 61                                            | 64                      |
| R15<br>(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<sub>Aeq,4hr</sub> 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 of 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). | Wednesday 4 <sup>th</sup> December 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).       | Wednesday 4 <sup>th</sup> December 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). | Wednesday 4 <sup>th</sup> December 2013 (weekday) | 20:01 – 20:51 |

\* 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 (+/- 0.3 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                                                  | 04/12/2013<br>18:00 – 18:50 | < 0.3                | N              | 5°C         | None          |
| R15                                                 | 04/12/2013<br>19:00 – 19:50 | < 0.3                | N              | 4°C         | None          |
| Cardinal Ave                                        | 04/12/2013<br>20:01 – 20:51 | < 0.3                | N              | 4°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 property closest to the SLM. 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 a range of noises from HMNB, including a continuous whirring/humming noise, music and a barking dog. Also present was occasional noise from vehicles and pedestrians passing on Talbot Gardens; and noise from within the residential properties. 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 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 4<sup>th</sup> December 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<br>L <sub>Aeq,50min</sub> (dB) |        | NDT Noise Level<br>L <sub>AFmax</sub> (dB) | Baseline Noise Level<br>L <sub>Aeq,4hr</sub> (dB) |        | Noise Limits (based<br>on façade<br>measurement) | Difference between<br>NDT Noise Level<br>(L <sub>Aeq,50min</sub> ) and<br>Baseline (L <sub>Aeq,4hr</sub> )<br>(dB) |
|-----------------|-----------------------------|------------------------------------------------|--------|--------------------------------------------|---------------------------------------------------|--------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|                 |                             | Free Field                                     | Façade | Façade                                     | Free Field                                        | Façade | L <sub>Aeq,4hr</sub> dB                          |                                                                                                                    |
| R3              | 04/12/2013<br>18:00 – 18:50 | -                                              | 52     | 74                                         | -                                                 | 51     | 61                                               | 1                                                                                                                  |
| R15             | 04/12/2013<br>19:00 – 19:50 | -                                              | 44     | 67                                         | -                                                 | 43     | 58                                               | 1                                                                                                                  |
| Cardinal<br>Ave | 04/12/2013<br>20:01 – 20:51 | 45                                             | 48     | 64                                         | 48                                                | 51     | 61                                               | -3                                                                                                                 |

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 1 dB above the baseline at R3 (Savage Road) and R15 (Talbot Gardens), and 3 dB below the baseline at both Cardinal Ave.

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, 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                                                                                                              |
| 04/12/2013 18:00                            | 05:00.0  | 53                    | 67.1                    | 46.5                   | Train (x2); Pedestrian walking past; Taxi idling below SLM                                                         |
| 04/12/2013 18:05                            | 05:00.0  | 52.2                  | 65.3                    | 46.5                   |                                                                                                                    |
| 04/12/2013 18:10                            | 05:00.0  | 52.1                  | 64.8                    | 44.5                   | Train                                                                                                              |
| 04/12/2013 18:15                            | 05:00.0  | 49.1                  | 64.9                    | 42.5                   | Clang on site (x2); Pedestrians walking past                                                                       |
| 04/12/2013 18:20                            | 05:00.0  | 54.3                  | 70.9                    | 42.5                   | Clang on site; a few cars with loud exhausts pass simultaneously. Loud talking in residential property besides SLM |
| 04/12/2013 18:25                            | 05:00.0  | 54.9                  | 74.4                    | 40.5                   | Loud talking in residential property besides SLM; Train; Clang on site (x2)                                        |
| 04/12/2013 18:30                            | 05:00.0  | 49.8                  | 63.9                    | 40.5                   | Pedestrian walking by; Clang on site (x2); Train                                                                   |
| 04/12/2013 18:35                            | 05:00.0  | 52.6                  | 65.3                    | 39                     | Pedestrian walking by; a few cars with pass simultaneously, one with loud music; Train; Distant motorbike.         |
| 04/12/2013 18:40                            | 05:00.0  | 47.5                  | 60.3                    | 39.5                   | Clang on site (x2)                                                                                                 |
| 04/12/2013 18:45                            | 05:00.0  | 51.7                  | 64.4                    | 39.5                   | Pedestrian passing; Train                                                                                          |

**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                                                                                      |
|-------------------|----------|-----------------------|-------------------------|------------------------|--------------------------------------------------------------------------------------------|
| 04/12/2013 19:00  | 05:00.0  | 42.6                  | 52.5                    | 40                     |                                                                                            |
| 04/12/2013 19:05  | 05:00.0  | 43.2                  | 52                      | 39.5                   | Clang on site; Dog barking; Loud music on HMNB (can hear the words)                        |
| 04/12/2013 19:10  | 05:00.0  | 42.1                  | 51.1                    | 40                     | Loud music on HMNB (can hear the words); Trains (x2)                                       |
| 04/12/2013 19:15  | 05:00.0  | 44.6                  | 59.1                    | 39.5                   | Dog barking in HMNB; music on HMNB (quieter than before)                                   |
| 04/12/2013 19:20  | 05:00.0  | 45                    | 67                      | 39.5                   | Resident on balcony close to SLM; Dog barking in HMNB; Family talking on Talbot Gardens    |
| 04/12/2013 19:25  | 05:00.0  | 46.2                  | 58.8                    | 39                     | Loud train                                                                                 |
| 04/12/2013 19:30  | 05:00.0  | 40.4                  | 47.6                    | 39                     |                                                                                            |
| 04/12/2013 19:35  | 05:00.0  | 42.7                  | 50.7                    | 39                     |                                                                                            |
| 04/12/2013 19:40  | 05:00.0  | 45.6                  | 57.7                    | 37.5                   |                                                                                            |
| 04/12/2013 19:45  | 05:00.0  | 41.6                  | 54.2                    | 37.5                   | Child playing/screaming in a residential property close to SLM; Dog barking in HMNB; 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                                      |
|-------------------|----------|-----------------------|-------------------------|------------------------|--------------------------------------------|
| 04/12/2013 20:01  | 05:00.0  |                       |                         |                        | Surveyor made noise which affected reading |
| 04/12/2013 20:06  | 05:00.0  | 45                    | 56                      | 40.5                   |                                            |
| 04/12/2013 20:11  | 05:00.0  | 44.4                  | 56                      | 40                     |                                            |
| 04/12/2013 20:16  | 05:00.0  | 46.2                  | 63.6                    | 39                     |                                            |
| 04/12/2013 20:21  | 05:00.0  | 41.1                  | 49.2                    | 38.5                   |                                            |
| 04/12/2013 20:26  | 05:00.0  | 48.6                  | 63.9                    | 40.5                   |                                            |
| 04/12/2013 20:31  | 05:00.0  | 43.5                  | 55                      | 40.5                   | Train                                      |
| 04/12/2013 20:36  | 05:00.0  | 47.6                  | 60.4                    | 40                     |                                            |
| 04/12/2013 20:41  | 05:00.0  | 44.2                  | 59.1                    | 39.5                   | Train                                      |
| 04/12/2013 20:46  | 05:00.0  | 41.2                  | 50.9                    | 38.5                   | Two child cycling past SLM talking         |