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By email: [redacted]

Our reference: 6055/DO/
Date: 8th June 2015

Dear James,

RICARDO VERC – ENVIRONMENTAL NOISE TEST

Further to our site visit to the Vehicle Emissions Research Centre at Ricardo Shoreham I comment as follows on the noise emission from the development as it affects the nearby residential dwellings to discharge a planning condition.

1. Planning Condition

The wording of the planning condition is as follows:

"The external louvres shall be as specified in application AWDM/1189/13 and they shall be installed in accordance with the approved details before the building hereby approved is first occupied and thereafter maintained as such. Within one month of implementation a test shall be carried out and the results submitted to the Local Planning Authority to demonstrate that the existing background noise levels at the nearest noise sensitive property are no worse than they were before the new plant/equipment was installed and operated. In the event that background noise levels are worse, a scheme of attenuation works capable of achieving the same noise levels as existed pre-occupation shall be installed within three months of the installation of the plant/equipment and thereafter retained."

The expectation is that operations could take place at night according to demand and the previous planning assessment was based on this operation.

2. Noise Monitoring

Noise monitoring was undertaken around the site on the evening of the 4th June 2015 whilst the test cell building was in operation. The cell was not operating at night at the time of the survey.

Noise measurements were undertaken with a Type 1 Sound Level Meter. The equipment information and calibration status is as follows:

ADUR & WORTHING
PLANNING SERVICES

PLAN	AWDM/ 1189/13
DATE VALID	30 JUN 2015

[redacted]

Table 1: Monitoring Equipment

Equipment Description / Manufacturer / Type	Serial number	Date of calibration	Calibration Certification Number
Real Time Analyser, CEL, Type 593	0271040	21/10/14	K112061
Pre-Amplifier, CEL, Type 527	3/0221937	21/10/14	K112061
Microphone, CEL, Type 250	4951	21/10/14	K112061
Calibrator, CEL, Type 110/1	045169	21/10/14	K112062

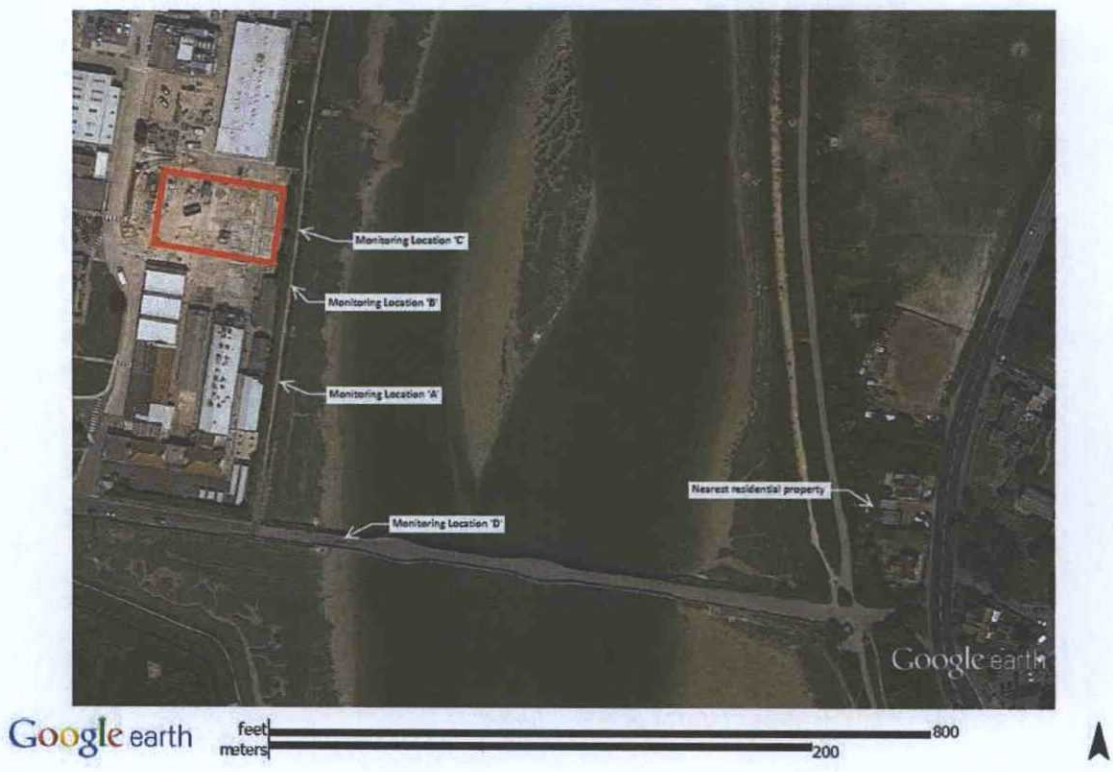
The sound level meter was checked before and after use with the calibrator and no drift was detected.

During the monitoring period the air temperature was 21 degrees Centigrade and the conditions were clear and calm with no noticeable breeze.

3. Measured Noise Levels

Noise measurements were undertaken between 18:49 and 18: 55 hours at monitoring locations A, B, C and D. as shown on figure 1 below.

Figure 1: Monitoring Locations



Monitoring location 'A' was located on the footpath to the east of the Ricardo site and 45 metres from the south of the VERC building. Noise from the VERC was not audible at this

location, the main noise source was road traffic along the elevated A27 Shoreham By-Pass to the North.

Monitoring location 'B' was located 10 metres to the south east of the VERC building. The noise level at this location was determined by road traffic along the elevated A27 Shoreham By-Pass to the North and noise from VERC which had a different character.

Monitoring location 'C' was located 10 metres to the east of the VERC building. The noise level at this location was determined by road traffic along the elevated A27 Shoreham By-Pass to the North and noise from VERC which had a different character.

Monitoring location 'D' was located on the bridge to the south of the Ricardo site 110 metres from the VERC building. Noise from the VERC was not audible at this location, the main noise source was road traffic along the elevated A27 Shoreham By-Pass to the North.

Observations were also made on the eastern bank of the River Adur, close to the residential properties. Noise from the VERC was not audible at this location.

The measured noise levels at each location were as follows:

Table 2: Measured Noise Levels

Monitoring Location	$L_{Aeq(T)}$, dB	$L_{A90(T)}$, dB	VERC noise audible
A	55	54	No
B	58	57	Yes
C	58	57	Yes
D	55	54	No

4. Noise Predictions

The planning condition requires that the background noise level due to the VERC is assessed at the nearest residential property. The background noise level is a statistical parameter for noise present for 90% of the time, this would be a sensible parameter for plant which operates continuously over a specific time and does not appear to vary noticeably in level or frequency content over time.

VERC noise was audible at locations 'B' and 'C'. The measured noise levels included contributions from the A27 and from VERC plant. For simplicity the measured noise level at these monitoring locations is considered representative of the VERC plant, however in reality the plant noise will be lower than that measured as the measured noise level includes road traffic noise.

The measurements at locations 'B' and 'C' are 10 metres from the VERC building. The nearest residential property is 240 metres from the VERC building.

Correcting for distance from 10 metres to 240 metres results in a reduction of 28 decibels.

Therefore the predicted plant noise level at the nearest residential property is 29 $L_{A90(T)}$ decibels.

5. Noise Assessment

The planning condition states:

"a test shall be carried out and the results submitted to the Local Planning Authority to demonstrate that the existing background noise levels at the nearest noise sensitive property are no worse than they were before the new plant/equipment was installed and operated."

Therefore, where the existing background noise level plus noise from the VERC does not exceed the existing Background noise level the planning condition criteria is achieved.

The VERC could potentially operate at any time day or night. The original environmental noise assessment (Acoustic Consultants Limited reference 5344/DO/sm) determined representative background noise levels. It states:

"For operations over a twenty-four hour period the most sensitive time is the night-time period (23:00 hours to 07:00 hours). British Standard 4142:1997 required that the lowest 5 minute LA90 be determined during the time of night-time operations. From the measured data a background noise level of 41 LA90 (5 minutes) decibels (free-field) has been determined."

Based on the measured noise levels and corrections due to the distance between the VERC and nearby houses the predicted plant noise level at the nearest residential property is 29 $L_{A90(T)}$ decibels.

Logarithmically adding 29 dB(A) to 41 dB(A) and does not result in an increase in noise and therefore the planning condition criteria is achieved.

6. Limitations

The report limits itself to addressing solely on the road traffic noise aspects as included in this report. We provide advice only in relation to noise and acoustics. It is recommended that appropriate expert advice is sought on all the ramifications (e.g., CDM, structural, condensation, fire, legal, etc.) associated with any proposals in this report or as advised and concerning the appointment.

The report has been prepared in good faith, with all reasonable skill, care and diligence, based on information provided or available at the time of its preparation and within the scope of work agreement with the client. We disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above.

The report is provided for the sole use of the named Client and is confidential to them and their professional advisors. No responsibility is accepted to other parties.

It should be noted that noise predictions are based on the current information as we understand it and on the performances noted in this report. Any modification to these parameters can alter the predicted level. All predictions are in any event, subject to a degree of tolerance of normally plus or minus three decibels. If this tolerance is not acceptable, then it would be necessary to consider further measures.

7. Summary

Horiba UK Limited appointed Acoustic Consultants Limited to carry out a site noise monitoring survey to determine noise emission from the Vehicle Emission Research Centre development as it affects the nearby residential dwellings to discharge a planning condition.

Where the existing background noise level plus noise from the VERC does not exceed the existing Background noise level the planning condition criteria is achieved.

Plant noise from the VERC was measured at a distance of 10 metres from the building on the evening of the 4th June 2014.

Plant noise was not audible at a distance of 45 metres from the building or on the eastern bank of the River Adur close to the residential properties.

The VERC could potentially operate at any time day or night. The original environmental noise assessment (Acoustic Consultants Limited reference 5344/DO/sm) determined representative background noise levels at night of 41 $L_{A90(5\ minutes)}$.

Based on the measured noise levels and corrections due to the distance between the VERC and nearby houses the predicted plant noise level at the nearest residential property is 29 $L_{A90(T)}$ decibels.

Logarithmically adding 29 dB(A) to 41 dB(A) and does not result in an increase in noise and therefore the planning condition criteria is achieved.

I trust this is of assistance. Please do not hesitate to contact me if you require anything further.

Yours sincerely,

[redacted]

Daniel Oldaker BSc. (Hons) MIOA
Director
For Acoustic Consultants Limited

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