

Proposed Residential Development at 23a/23b & Land Adjoining 23 Ravenshaw Street

Noise and Vibration Survey

1. Brief

To undertake a site environmental noise survey to determine the Noise Exposure Category, NEC, under Planning Policy Guidance 24: Planning and Noise. The noise survey to define the day and night time environmental noise created by the passing road and rail traffic.

To undertake a ground-borne vibration survey with reference to BS6472:1992, to determine whether there is any significant vibration created by passing rail traffic, which would exceed the threshold vibration levels for residents of the proposed dwellings.

2. Noise Survey

Method

With reference to PPG24 measurements of L_{Aeq} would be taken over the 16-hour day and 8-hour night time periods to define typical day and night background noise levels for the site. In addition a note would be made of the maximum noise level occurring over the survey period. The measurement location was in the yard area at a position equating to the rear façade position of the proposed development building, 1.2m above yard slab level, as detailed on the attached site plans.

The instrumentation used was a Rion NL-32 precision grade sound level meter and a Rion type NC-74 precision grade acoustic calibrator. The instrumentation was calibration checked before and after the survey.

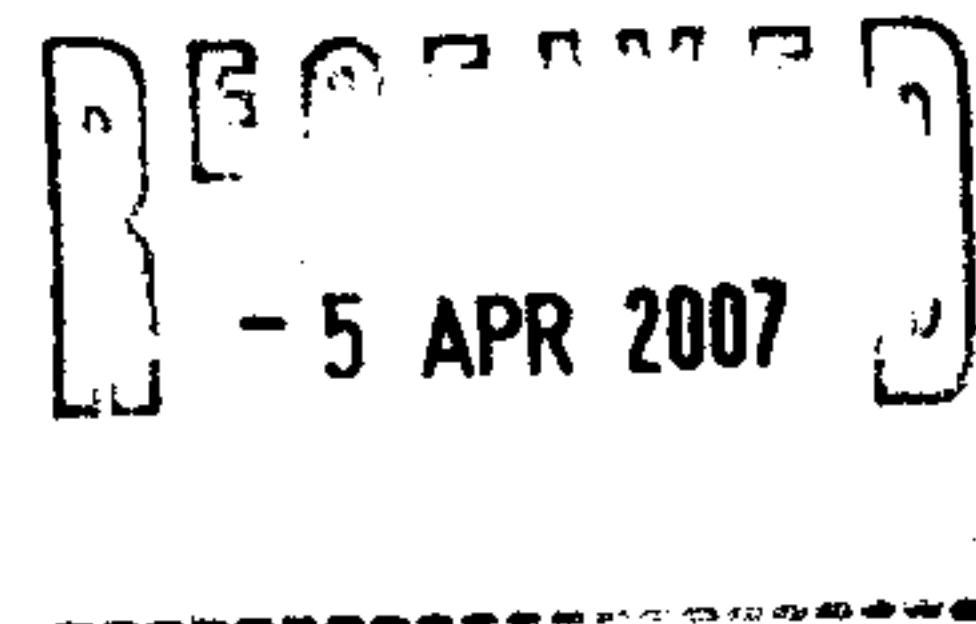
Survey Measurements

The survey commenced at 23.00hrs on 27/3/07 and ended at 23.00hrs on 28/3/07, during the survey period good weather conditions prevailed.

The night period L_{Aeq8h} level was 48.3dB.

The day period L_{Aeq16h} level was 57.1dB.

The L_{Amax} level for the 24 hour period was 75.5dB.



Comments

- (i) Given the L_{Aeq} values recorded the NEC rating for the site is B, defined by day and night time levels. The L_{Aeq} range for NEC B (rail traffic) is 55-66dB day period, 45-59db night period.
- (ii) The background noise level on site is controlled by the rail traffic to the rear of the site. The maximum level, created by passing rail traffic was below the 82dB L_{Amax} level for night time noise events in PPG24, which if exceeded would move the NEC rating from B to C.

3. Vibration Survey

Method

With reference to the threshold vibration levels advised by BS6472: 1992, an initial assessment of the ground-borne vibration created by rail traffic passing the rear of the site would be made by mounting an accelerometer on a stable concrete slab, part of the yard surface area and monitoring the r.m.s. surface acceleration of the slab created by passing rail traffic. Should the measured vibration level approach or exceed the advised threshold value, then a detailed measurement survey would be required.

The accelerometer location was on a section of concrete slab, the position as indicated on the attached site plans.

The instrumentation used was a B&K 2511 portable vibration meter with a B&K 4370 accelerometer.

Survey Measurements

During the daytime on 28/3/07 a total of twenty rail traffic events were monitored, involving a variety of trains. The measured vibration levels were all significantly below the lowest threshold value of 0.01m/s² r.m.s.

Comments

- (i) BS 6472:1992 provided data on acceptable levels for human exposure to vibration and for evaluation of building vibration, with respect to annoyance and comfort. The lowest vibration threshold value quoted for residential buildings in the standard is 0.01m/s² r.m.s.
- (ii) The measured ground-borne vibration created by the passing rail traffic monitored was safely below 0.01m/s² r.m.s.. This indicates that vibration in the proposed dwellings created by passing rail traffic will not be a source of annoyance or discomfort, as defined by BS6472:1992.

4. Manufacturers Details of Noise Output from Proposed Plant / Mechanical Equipment

The proposed undercroft car parking spaces will be served by one hydraulic vehicle platform lift. The standard noise levels for this type of equipment are taken from the control unit which is 'remote' mounted from a separate motor room adjacent to the lift shaft. We can confirm that noise levels from the lift motor, prior to sound insulation, will not be above 70db, considered to be in the decibel range of persons talking. Additionally, the motor will be heavily sound insulated and siting in an underground concrete pit towards the core of the development, some 4-5 metres below ground level, producing a considerable reduction from the original 70db level. It should be noted that the motor is active only when the platform is being raised, the platform/vehicle is lowered quickly, by gravity alone.

Mechanical noise levels and vibration arising from such a lift mechanism in operation, within the shaft, are described by the manufacturer as negligible. Such mechanisms are now common place in the residential environment and therefore, we consider that this will not have a detrimental impact on adjoining occupiers or future residents of the proposed apartments.

5. Attenuation to Ensure Compliance with Building Regulations

Appropriate wall materials and sound insulation will be used to ensure that the development to ensure compliance with Building Regulations Standards.

6. Conclusion

The noise survey has defined the site as NEC category B under PPG24 and the vibration survey has indicated that vibration from passing rail traffic is of no consequence as defined by BS6472:1992.

The planning requirement for a dwelling internal night time noise level of 35dBA, would be achievable using the intended site layout and dwelling designs.