



NOISE AND VIBRATION PARTNERSHIP

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PROJECT NO: 1466

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CLIENT:

Brackley Investments Ltd.
Unit 6 Lower Farm Barns
Bainton Road
Bucknell, Bicester, OX27 7LT

PROJECT

ENVIRONMENTAL NOISE ASSESSMENT FOR
PROPOSED NEW CARE HOME AT CROOKTHORN LANE
CLIMPING, LITTLEHAMPTON

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1. INTRODUCTION

- 1.1 NVP has been commissioned by Brackley Investments Ltd to undertake an environmental noise assessment at the site of a proposed new care home at Crookthorn Lane Climping. The site plan appended to the report shows the proposed development.
- 1.2 The purpose of the assessment was to determine the effect of existing environmental noise on the new development and to propose suitable remedial treatments, if necessary, to ensure internal noise levels within the project comply with current standards.
- 1.3 NVP have conducted environmental noise measurements at the site to establish the pre – existing noise climate. Measurements were made over a 24 hour period.
- 1.4 Recommendations for sound insulation of the building fabric are included in the report.

2. NOISE CRITERIA AND ASSESSMENT METHODS

Environmental noise affecting new residential projects is assessed using internal and external noise criteria outlined in BS8233 (Ref 1).

Appropriate Criteria for internal and external noise levels are as follows:

Bedrooms 30dBA $L_{eq,t}$

Living Rooms (daytime) 35dBA $L_{eq,t}$

Dining Rooms 40dBA $L_{eq,t}$

External noise 55dBA $L_{eq,t}$

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3. NOISE SURVEY

Noise measurements were made at the development site on 14th/15th December 2016. The weather was dry with minimal wind.

Measurements were made using a Norsonics type 140 precision sound level meter. Equipment was calibrated before and after use with an electronic calibrator having an accuracy of $\pm 0.3\text{dB}$. The equipment measured LA_{eq} , LA_{90} and LA_{max} values.

Continuous measurements were made at a selected point at the location of the nearest facade to the main road. Measurements are shown graphically in the chart appended to the report. Additional measurements were made at selected points on the site to assess the reduction of noise with distance from the main road.

4. APPRAISAL OF ACOUSTIC CLIMATE ON SITE

The site is a field to the rear of Bairds Farm Shop. The Farm Shop is to remain.

The A259 main road to Littlehampton runs to the North of the site. This is the principal noise source in the vicinity. Road traffic is constant during the daytime and gives steady noise exposure to the site except at times in the early rush hour when traffic in the Easterly direction towards Littlehampton is slow moving or stationary.

The computed daytime and night-time noise levels $LA_{eq,t}$ are as follows at location 1.

Daytime 60.4dB $LA_{eq,t}$

Night-time 54.1dB $LA_{eq,t}$

There is a reduction of approximately 6dBA to the rear of the site, Location 2, (See appended site plan), and a reduction of approximately 10dBA to Location 3. Noise levels at location 4 were comparable with Location 1 indicating similar noise exposure along the Northern boundary of the site. There is marginal screening from the existing building structure of the Farm Shop.

A bakery extract fan is situated on the rear wall of the farm shop and this gives a noise level of 58dBA at 10m.

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5. ASSESSMENT AND CONCLUSIONS

The main noise source affecting the project is the A259 to the North which gives a fairly constant daytime noise level.

To meet an internal noise level of 30dB LA_{eq,i} at night, and 35dB LA_{eq,i} during the daytime, an overall facade sound insulation of approximately 24dBA will be required. The approximate sound insulation offered by a part-open window is 15dBA so it will be necessary to provide acoustic ventilation for bedrooms on the Northern, Western and Eastern facades to enable window closure. The extent of the treatment is shown in the appended site plan.

Acoustic ventilation can be provided using undersill acoustic ventilators or passive acoustic window ventilators. Details of suitable systems are appended to the report. Acoustic ventilators or acoustic trickle vents should have an acoustic performance of at least 38dB D_{n,ew}.

A popular ventilation solution for care homes is the use of passive acoustic window ventilators in combination with permanent bathroom extract ventilation with air transfer grilles in the bathroom door. Sketch 1 appended indicates the system. An alternative is whole project ventilation, which has the possibility of energy reclaim.

It is assumed that the building will be conventional brick/block construction. The weakest noise transmission paths will be via the windows.

Conventional thermal double glazing employing 6mm or 4mm glass with 10-12mm airspace will be appropriate for all windows of the project.

The project plans indicate that the main gardens for residents will be located on the Southern and Western areas of the site. The Southern gardens will be fully screened from the main road by the building structure itself and calculations indicate that garden noise levels will be well below the proposed criteria.

The Western Gardens will be only partially screened from the main road and it is recommended that a screening fence be provided on the Northern and Western boundaries.

It is recommended that close boarded timber fencing of 1.8m height be provided on these facades. The extent of the treatment is indicated in the site plan.

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If residents will have access to gardens on the Eastern facade it would be appropriate to provide similar screening to the Eastern Boundary as indicated in the Site Plan.

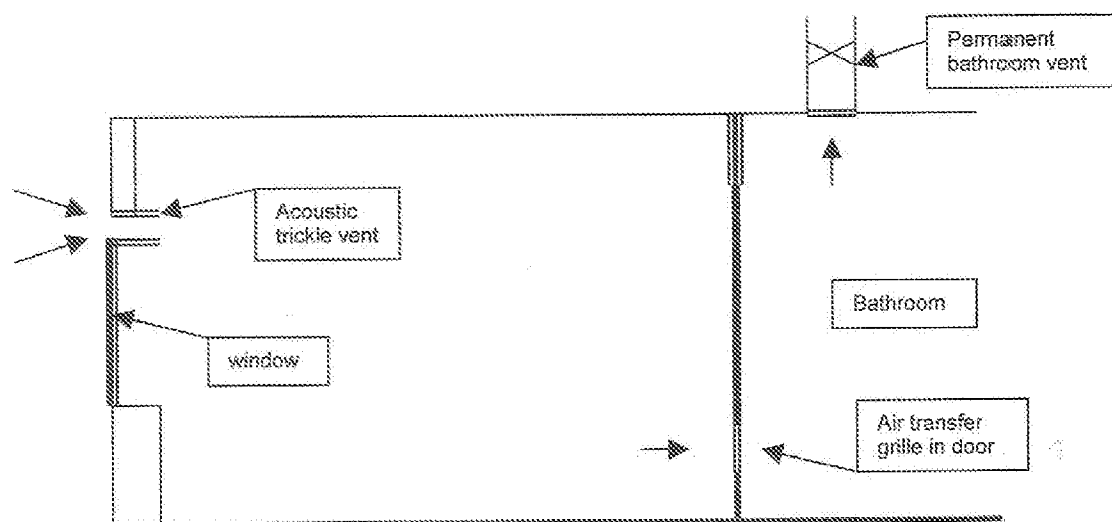
It is recommended that close boarded timber fencing be provided for the Northern boundary of the site to give marginal screening from noise from the Farm Shop. This would also give privacy to the site grounds.

The full extent of timber fence screening and acoustic ventilation treatment is shown in the appended Site Plan

6. REFERENCES

- 1) BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings'.

Sketch 1 Possible vent treatment for rooms on Northern, Western and Eastern facades



VENTILATOR SYSTEMS - OPTIONS

Option	Details	Description	Comments
1	Wall mounted mechanically assisted ventilator for each affected room	Part of the standard 'noise insulation' package as supplied under the Noise Insulation Regulations.	Approx cost: £200-£300 per unit. Positive venting to all rooms in all weather conditions
2	Whole house heat recovery and ventilation systems	Loft or void mounted system, with small ceiling vent to each room. Intake for system in gable end or other suitable wall or through vent in roof.	Positive benefits, ie energy saving Positive vent to all rooms in all weather conditions. Approx cost £500 per dwelling plus ducting and grilles. Separate fans to kitchen and bathroom not required.
3	Passive stack system for whole house ventilation	System of vents and ducting from each room to 'chimney' type stack to small vent in roof.	Energy efficiency unknown - passive system but draws warm air from the house and replaces with cold from outside. Relies on temperature/pressure differences to work. Prone to failure if intake vents are blocked by householders 'stopping draughts'
4	Acoustically lined passive ventilator for each affected room.	'Acoustic airbrick'	Usually employed with permanently running kitchen or bathroom vent fans and relying on air transfer from noise affected rooms. A popular solution where kitchens and bathrooms are without natural ventilation. Two units may be required to meet Building Regs requirement of 8000mm ² of ventilation.
5	Single room heat reclaim units	Through the wall unit with fans and heat exchanger	Positive benefit of energy saving.

**Supplier List:
Domestic noise attenuated
Ventilation systems**

1. Greenwood Airvac Ventilation Ltd



Various products, including whole house ventilation/heat recovery systems.

2. Rytons Ltd



Wall acoustic vents

3. Passivent Ltd



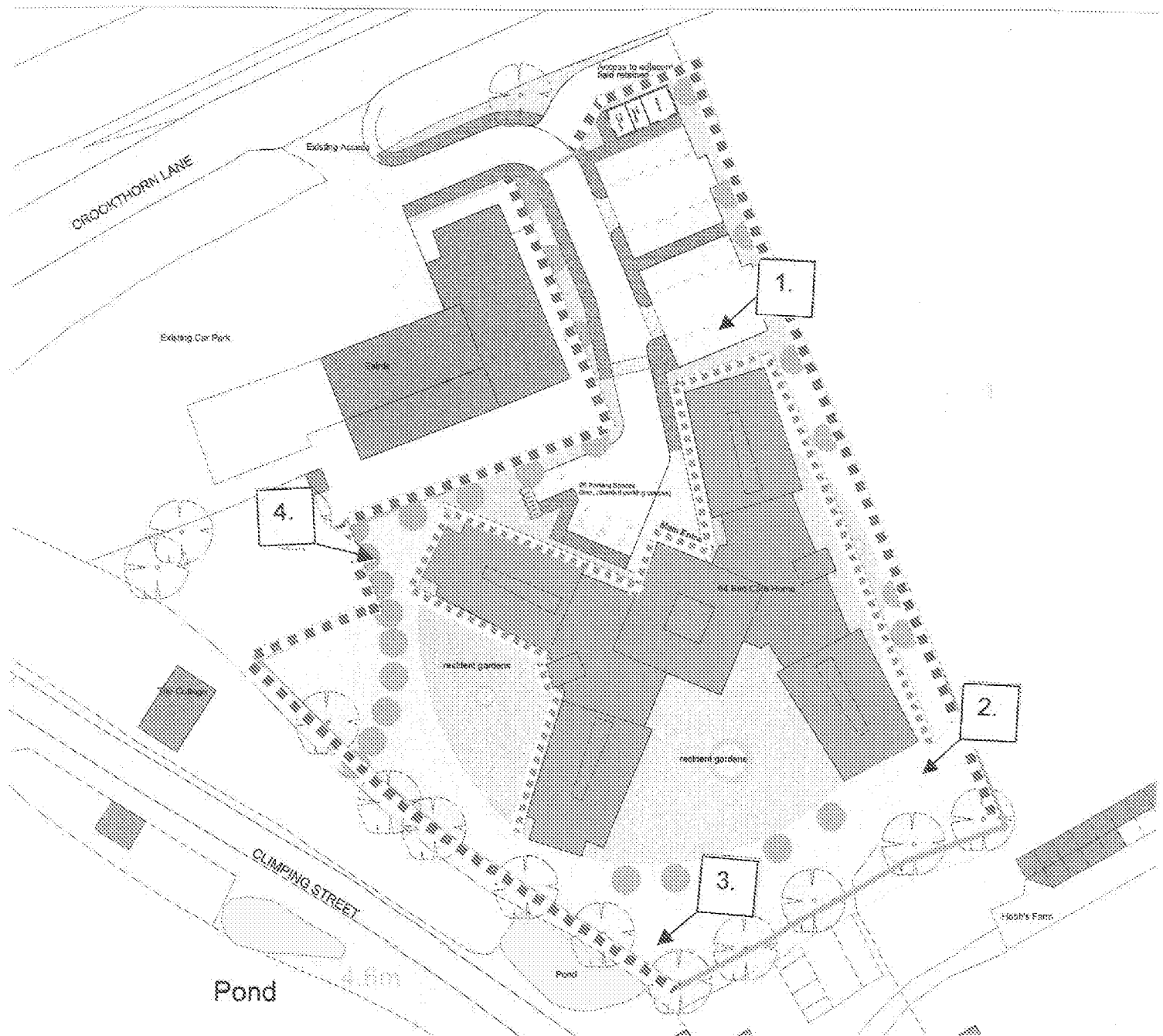
Acoustic trickle ventilators and wall vents

4. Titon Ltd



Acoustic trickle ventilators

Crookthorne Lane Climping. Location of measurements and extent of acoustic treatment



Acoustic Ventilation

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Timber fence

Appendix 1 Crookthorn Lane Clipping, Littlehampton. Noise levels at location 1

