



Preliminary Noise & Odour Assessment:

33-34 Victoria Road, Netley

Bajar Estates

26th May 2023



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This report has been prepared by Hawkins Environmental Limited for the sole purpose of assisting in gaining planning consent for the proposed development described in the introduction of this report.

This report has been prepared by Hawkins Environmental Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This assessment takes into account the prevailing conditions at the time of the report and assesses the impact of the development (if applicable) using data provided to Hawkins Environmental Limited by third parties. The report is designed to assist the developer in refining the designs for the proposed development and to demonstrate to agents of the Local Planning Authority that the proposed development is suited to its location. This should be viewed as a risk assessment and does not infer any guarantee that the site will remain suitable in future, nor that there will not be any complaints either from users of the development or from impacts emanating from the development site itself.

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1. INTRODUCTION

1.1. Overview

Hawkins Environmental Limited has been instructed by Bajar Estates to undertake a noise assessment for the redevelopment of 33-34 Victoria Road, Netley, located in the Borough of Eastleigh.

A planning application (Ref: F/23/94881) has been submitted for the “change of use and subdivision of building to create 2no. commercial units (Class E) on ground floor and 3no. one bed flats split over ground and first floor with bin and cycle storage and external alterations. The existing building contains 1no. commercial unit (Class E) on ground floor and 1no. two bed flat on first floor”.

On the 28th April 2023, Jon Pyke – an Environmental Health Officer at Eastleigh Borough Council, provided feedback in relation to the application, specifically in relation to noise and odour. Mr Pyke noted:

“The premises locate in proximity to a dry-cleaning establishment and restaurant / take away food premises. These tend to be odorous, emit fumes and noisy. But we see the upper floors are also dwellings like the planned development. It appears the polluting systems of these premises may be located on the roof or to the rear and there is no information accompanying the application on the magnitude of emissions and means of control. On the other hand, the planned front two dwellings on the first floor could be ventilated through the front façade and the rear side windows could be sound insulated. The applicant can find guidance in BS 8233 ‘Guidance on sound insulation and reduction for buildings’. I think the best way to try to solve this proportionately without risk of unnecessary conditions is for the applicant to do a site survey to qualitatively inspect the surround premises and environs for sources of noise and odour. These might be for example plant or equipment and flues or extracts. And to provide us with a subjective impression on odour”.

Consequently, this report summarises a qualitative subjective assessment of noise and odour on the site and provides recommendations to minimise the exposure for future residents to noise and odour.

1.2. Statement of Competency

The assessment has been carried out by Nick Hawkins MSc MIOA MIAQM MIEvSc PIEMA, the managing director of Hawkins Environmental Limited. Nick is an environmental consultant with over 20 years of experience working in the field of noise/acoustics, air quality/odour, daylighting and environmental impact assessment.

Nick is an alumnus of the University of East Anglia and the University of Southampton. Nick holds the Institute of Acoustics’ Certificate of Competence in Environmental Noise Measurement and became a full Member of the Institute of Acoustics in 2010, having previously been an Associate Member. Nick is also a Member of the Institution of Environmental Sciences and a Member of the Institute of Air Quality Management.

Nick has worked on a number of interesting and prestigious projects, including for Crystal Palace Football Club, Marwell Zoo, the East Rhyl Coastal Defence Scheme and the construction of lines BXD of the Luas Light Rail System in Dublin. Nick was one of the first acoustic consultants to be given access to the Crossrail tunnels to conduct vibration compliance monitoring. Typically, Nick works on small to medium sized residential and mixed use developments, but also conducts noise, air quality and daylight assessments for a range of projects including wind turbines, air conditioning units, kitchen extract fans, supermarkets, public houses and other commercial developments.

Olfactometry Standard BS 13725: 2003 provides a framework for odour assessment and the rating of the suitability of odour assessors. An assessor must have a certain sensitivity and repeatability in their responses to tests of n-butanol, the reference odorant. The assessor is required to have an average sensitivity to n-butanol in the range of 20 to 80-ppb. Nick has an average sensitivity to n-butanol of 46 ppb (tested March 2017 by Silsoe Laboratories).

1.3. Site Description

The development site is a currently vacant two storey property, previously a commercial property on the ground floor, with a flat above. The proposed development will see the conversion of the single ground floor commercial property into two separate commercial units and create three new dwellings, two on the first floor and one on the ground floor behind the commercial units.

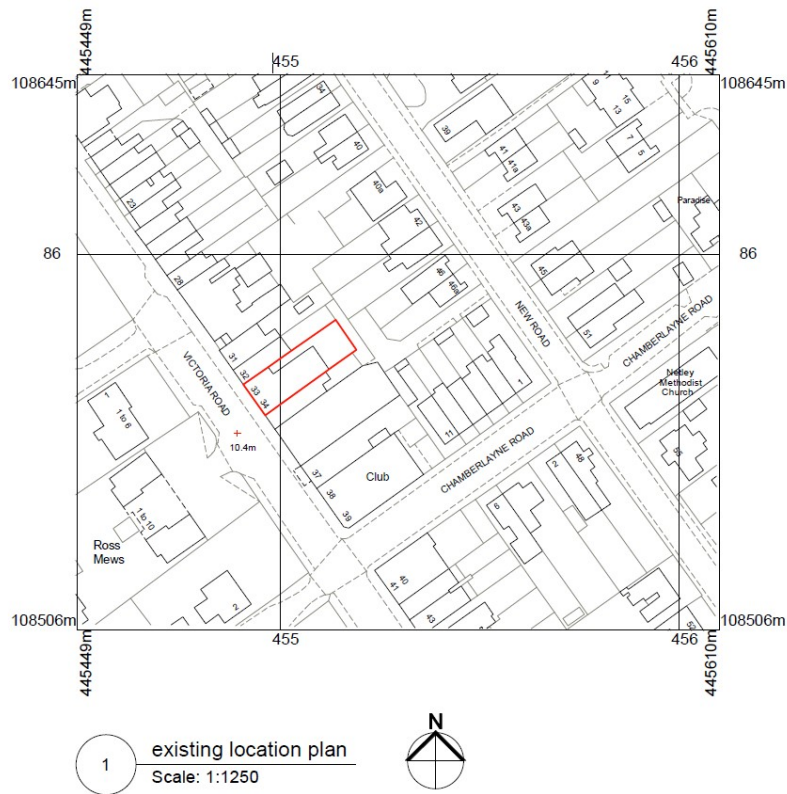
The site is located on Victoria Road, the main street in Netley. The area surrounding the site comprises a mixture of dwellings and small commercial premises. A location plan of the proposed site can be seen in **Figure 1.1**.

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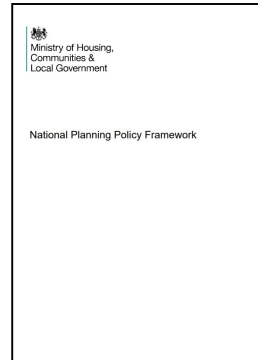
Figure 1.1: Site Location Plan



2. PLANNING POLICY

2.1. National Planning Policy Framework (2021)

The National Planning Policy Framework (NPPF) was first published on the 27th March 2012 and revised July 2018, February 2019 and again in July 2021. The NPPF outlines the Government's environmental, economic and social policies for England. The NPPF sets out a presumption in favour of sustainable development which should be delivered with three main dimensions: economic; social and environmental (Paragraphs 7, 8, 10 and 11). The NPPF aims to enable local people and their councils to produce their own distinctive local and neighbourhood plans, which should be interpreted and applied in order to meet the needs and priorities of their communities.



The NPPF states that in the planning system *"Planning policies and decisions should contribute to and enhance the natural and local environment by... e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans"* (Paragraph 174).

Paragraph 185 of the NPPF talks specifically about noise stating that *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should: a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life; b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason..."*

Specifically in relation to noise from existing commercial premises, Paragraph 187 of the NPPF notes: *"Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed".*

2.2. Noise Policy Statement for England (2010)

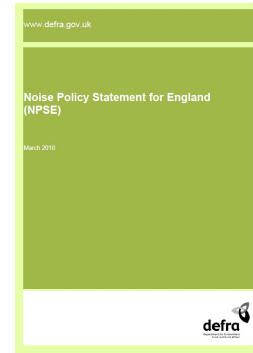
The Noise Policy Statement for England (NPSE) provides further guidance which is relevant to the policy set out in Paragraph 185 of the NPPF and states that: “*Within the context of sustainable development:*

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible contribute to the improvement of health and quality of life.”*

NPSE introduces established concepts originally from the field of toxicology that are now being applied to noise impacts. They are:

- **NOEL – No Observed Effect Level** - This is the level of noise below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to the noise.
- **LOAEL – Lowest Observed Adverse Effect Level** - This is the level of noise above which adverse effects on health and quality of life can be detected.
- **SOAEL – Significant Observed Adverse Effect Level** - This is the level above which significant adverse effects on health and quality of life occur.

NPSE goes on to state that “*it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.*”

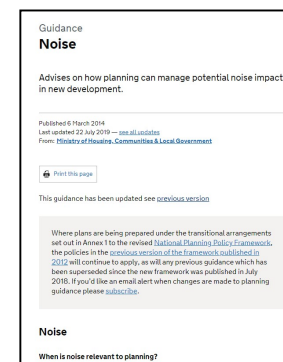


2.3. Planning Practice Guidance

The Planning Practice Guidance (PPG) was launched on 6th March 2014 and has undergone regular revision, with the most recent changes to Noise Guidance coming in July 2019. PPG provides additional guidance and interpretation to the Government’s strategic policies, outlined within the NPPF, in a web-based resource.

The NPPG provides more guidance on the assessment of noise for planning purposes and builds on the concepts of NOEL, LOAEL and SOAEL introduced in NPSE to establish whether noise is a factor that needs to be taken into account. It states: “*Local planning authorities’ plan-making and decision taking should take account of the acoustic environment and in doing so consider:*

- *whether or not a significant adverse effect is occurring or likely to occur;*
- *whether or not an adverse effect is occurring or likely to occur; and*
- *whether or not a good standard of amenity can be achieved.*



In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.”

However, it goes into more detail about the subjective nature of noise and how the results of any assessment must be treated flexibly and pragmatically. The guidance states: “*The subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation. These factors include:*

- *the source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day – this is because people tend to be more sensitive to noise at night as they are trying to sleep. The adverse effect can also be greater simply because there is less background noise at night;*
- *for a new noise making source, how the noise from it relates to the existing sound environment;*
- *for non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;*
- *the spectral content of the noise (i.e. whether or not the noise contains particular high or low frequency content) and the general character of the noise (i.e. whether or not the noise contains particular tonal characteristics or other particular features), and;*
- *the local arrangement of buildings, surfaces and green infrastructure, and the extent to which it reflects or absorbs noise.*

More specific factors to consider when relevant include:

- *the cumulative impacts of more than one source of noise;*
- *whether any adverse internal effects can be completely removed by closing windows and, in the case of new residential development, if the proposed mitigation relies on windows being kept closed most of the time (and the effect this may have on living conditions). In both cases a suitable alternative means of ventilation is likely to be necessary. Further information on ventilation can be found in the Building Regulations.*
- *In cases where existing noise sensitive locations already experience high noise levels, a development that is expected to cause even a small increase in the overall noise level may result in a significant adverse effect occurring even though little to no change in behaviour would be likely to occur.*
- *Noise Action Plans (where these exist), and, in particular the Important Areas identified through the process associated with the Environmental Noise Directive and corresponding regulations should be taken into account. Defra’s website has information on Noise Action Plans and Important Areas. Local authority environmental health departments will also be able to provide information about Important Areas.*

- *the effect of noise on wildlife. Noise can adversely affect wildlife and ecosystems. Particular consideration needs to be given to the potential effects of noisy development on international, national and locally designated sites of importance for biodiversity;*
- *where external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.*
- *some commercial developments including restaurants, hot food takeaways, night clubs and public houses can have particular impacts, not least because activities are often at their peak in the evening and late at night. Local planning authorities will wish to bear in mind not only the noise that is generated within the premises but also the noise that may be made by customers in the vicinity”.*

Table 2.1 shows examples of the noise hierarchy (adapted from the PPG) and shows that the aim is to identify where the overall effect of the noise exposure falls in relation to SOAEL, LOAEL and NOEL. The implication of the advice is only noise that is 'noticeable and very disruptive' would be considered unacceptable and therefore, should be prevented. The inference, therefore, is that all other outcomes can be acceptable, depending upon the specific circumstances and level of mitigation..

Table 2.1: Noise Exposure Hierarchy

Perception	Examples of outcomes	Increasing effect level	Action	
Not noticeable	No Effect	No Observed Effect	No specific measures required	Low Noise Level
Noticeable and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required	
Lowest Observed Adverse Effect Level				
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, eg turning up the volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. The potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum	
Significant Observed Adverse Effect Level				
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, eg avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. The potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep.	Significant Observed Adverse Effect	Avoid	High Noise Level
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate the effect of noise leading to psychological stress or physiological effects, eg regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, eg auditory and non-auditory	Unacceptable Adverse Effect	Prevent	

Increasing Noise Levels
↓

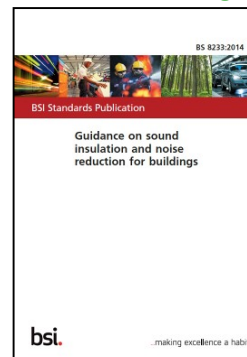
3. NOISE GUIDANCE

3.1. BS 8233: 2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'

Originally published in 1999, the 2014 edition of BS 8233, significantly updates the guidance in light of the policy changes as a result of the advent of the NPPF and the withdrawal of PPG 24. The 2014 edition of BS 8233 sees a change in the title of the Standard, moving from a 'Code of Practice' to 'Guidance', as the text '*largely comprises guidance that does not support claims of compliance*'.

BS 8233:2014 indicates that to control external noise ingress into a proposed development, a number of planning stages should occur as follows:

- "Assess the site, identify significant existing and potential noise sources, measure or estimate noise levels, and evaluate layout options.
- Determine design noise levels for spaces in and around the building(s).
- Determine sound insulation of the building envelope, including the ventilation strategy".



BS 8233:2014 suggests design noise levels for various types of building. The recommended noise levels for dwelling houses, flats and rooms in residential use (when unoccupied) can be seen in **Table 3.1** below. This is replicated from Table 4 of Section 7.7.2 of BS 8233:2014. The guidance suggests that "*In general, for steady external noise sources, it is desirable that the internal ambient noise level does not exceed the guideline values*". The noise levels in **Table 3.1** are marginally different to those published in BS 8233:1999 'Sound insulation and noise reduction for buildings – Code of practice', but are based on the existing guidance from the current World Health Organisation (WHO) "Guidelines on Community Noise".

Table 3.1: Summary of Noise Criteria: BS 8233: 2014

Activity	Location	07:00 To 23:00	23:00 To 07:00
Resting	Living room	35 dB L _{Aeq,16hour}	-
Dining	Dining room/area	40 dB L _{Aeq,16hour}	-
Sleeping	Bedroom	35 dB L _{Aeq,16hour}	30 dB L _{Aeq,8hour}

When considering the noise level criteria considered in **Table 3.1**, the following points should be noted:

- BS 8233: 2014 suggests that the above criteria should be adopted flexibly and that "*where development is considered necessary or desirable... the internal target level may be relaxed by up to 5 dB and reasonable internal conditions still achieved*".
- The noise levels quoted above are annual averages and "*do not need to be achieved in all circumstances*" e.g. New Year's Eve or fireworks night.

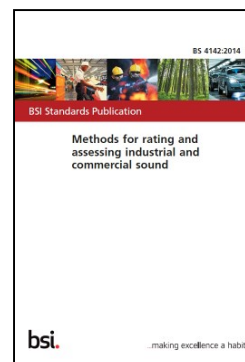
- The noise levels in **Table 3.1** are “for steady external noise sources” such as traffic noise or plant noise. This is a departure from the 1999 version of BS 8233, where the recommended internal noise levels were irrespective of the external noise source and therefore included the suggestion that in order to achieve “reasonable” noise levels within bedrooms at night, L_{AFmax} noise levels should not exceed 45 dB. Whilst this has been omitted from the 2014 version of BS 8233, it does state that “Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values.” Therefore, at sites which may be affected by individual noise events, it is more appropriate to use the guidance contained within the WHO “Guidelines on Community Noise” which suggest that good sleep will not generally be affected if internal levels of L_{AFmax} 45 dB are not exceeded more than 10-15 times per night.
- BS 8233:2014 notes that if the design of the building is “relying on closed windows to meet the guide values, there needs to be appropriate alternative ventilation that does not compromise the facade insulation or resulting noise level”.
- BS 8233 provides guidance for noise in gardens and outdoor amenity space. It suggests that “it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments.” The guidance does go on to say that these guideline values are not achievable in all circumstances and in some areas, “such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.”

3.2. BS 4142: 2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

British Standard BS 4142: 2014 +A1:2019 “Methods for rating and assessing industrial and commercial sound” provides a method for the measurement and rating of industrial noise or noise of an industrial nature and background noise levels outside dwellings in mixed residential and industrial areas. The rating level (defined in the BS) is used to rate the industrial noise source outside residential dwellings (this is defined as the “specific noise source”).

The procedure defined in BS 4142 for predicting the likelihood of complaints is based on establishing the difference between the rating level and the background level outside the residential property of interest. The greater the difference the greater the likelihood of complaints and more specifically:

- “A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context;



- *The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.*
- *Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.”*

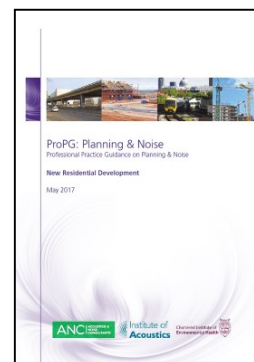
The guidance goes on to state that “where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.” Consequently, when considering the impact of a BS 4142 assessment, it is often also necessary to consider the absolute noise levels experienced at the receptor location in relation to BS 8233 and World Health Organisation guidelines.

3.3. ProPG: Planning & Noise Professional Practice Guidance (2017)

Planning & Noise: Professional Practice Guidance on Planning and Noise: New Residential Development (the “ProPG”), published May 2017, provides a recommended approach for dealing with noise within the planning process, specifically in relation to new residential developments.

The ProPG follows a systematic, proportionate, risk-based, 2-stage approach. The two stages of the approach are:

- Stage 1 – an initial assessment where external noise is rated against the risk of adverse effect; and
- Stage 2 – a systematic consideration of four key elements to determine the suitability of the site for housing.



The results of the initial Site noise risk assessment will determine the appropriate risk of developing the Site from a noise perspective. This approach is intended to give the developer, the noise practitioner, and the decision maker an indication only of the likely suitability of the site for new residential development from a noise perspective. Thus, a site with a higher risk will be recognised as presenting more acoustic challenges than a site with a low or negligible risk.

Figure 3.1 outlines the initial site risk assessment. Stage 2 of the approach looks to determine whether a site is suitable for housing based on the noise risk of the site. Stage 2 essentially attempts to determine that good acoustic design principles have been incorporated into the design from the outset, that suitable internal noise levels can be achieved in habitable rooms and that suitable external noise levels can be achieved in gardens and outdoor amenity space.

Figure 3.1: Initial Site Risk Assessment (from the ProPG)

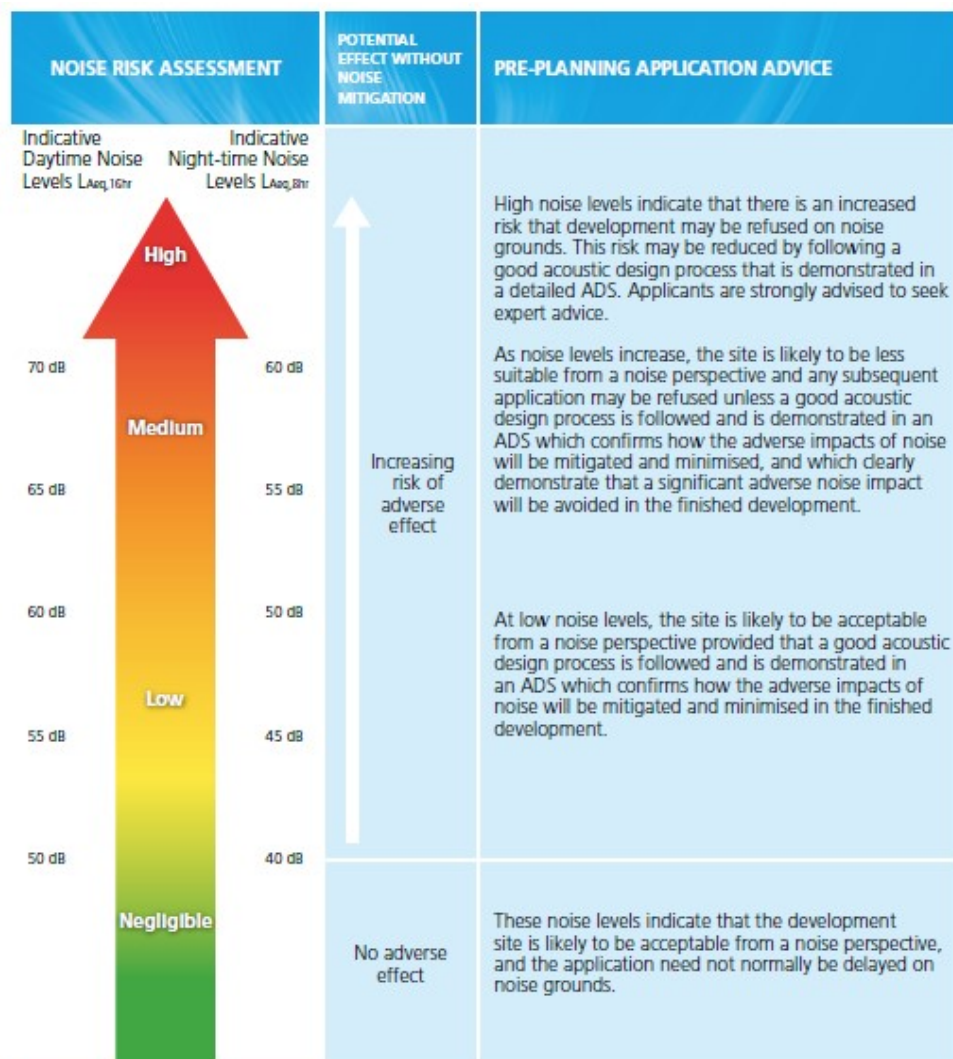


Figure 1 Notes:

- Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures.
- Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is "not dominant".
- $L_{Aeq,16hr}$ is for daytime 0700 – 2300, $L_{Aeq,8hr}$ is for night-time 2300 – 0700.
- An indication that there may be more than 10 noise events at night (2300 – 0700) with $L_{Amax,f} > 60$ dB means the site should not be regarded as negligible risk.

The ProPG encourages good acoustic design for all developments with the aim of protecting future residents from the effects of noise. Para 2.21 of the ProPG notes that in the first instance, it would be necessary to try to achieve suitable internal noise levels with windows open:

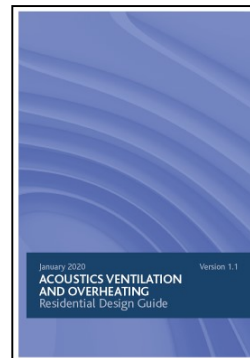
“Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open. Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design.”

However, the ProPG notes that in some instances it is not possible to achieve suitable internal noise levels when windows are open. The notes to Figure 2 of the ProPG note *““designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet target internal levels with windows open, internal noise levels can be assessed with windows closed...”*. In these instances, one must consider the impacts of ventilation and overheating, with the need to provide a good acoustic environment. The ProPG notes in Para 2.36 that where a *“scheme is reliant on open windows to mitigate overheating, it is also necessary to consider the potential noise impact during the overheating condition. In this case a more detailed assessment of the potential impact on occupants should be provided”*.

3.4. Acoustics, Ventilation and Overheating Residential Design Guide (2020)

Published by the Association of Noise Consultants; the *Acoustics, Ventilation and Overheating (AVO) Guide* recommends an approach for acoustic assessments to take due regard of the interdependence of acoustics, ventilation and overheating. The approach ensures that the ventilation strategy of a building becomes an integral part of the acoustic design process.

The AVO Guide notes that *“The starting position when considering mitigation of noise impact on new residential development is to apply good acoustic design, site-wide, as described in the ProPG”*. Since the ProPG advocates the importance of at least attempting to achieve suitable internal noise levels with windows open, the starting point of the AVO Guide is to first see whether windows can be opened; therefore, it is clear that the AVO Guide should be applied after good acoustic design principles have been applied.



The AVO Guide makes it clear that as part of the acoustic design process, one needs to consider both whole house ventilation (which the AVO calls the *“ADF ventilation condition”*) and provisions for ventilation cooling to mitigate overheating (the *“overheating condition”*). The Guide notes that *“In terms of noise effect, the important distinction between these two situations is that the ADF ventilation condition applies for the entire time whereas the overheating condition applies only for part of the time”*.

Regarding the overheating condition, the AVO Guide notes *“it is considered reasonable to allow higher levels of internal ambient noise from transport sources when higher rates of ventilation are required in relation to the overheating condition. The basis for this is that the overheating condition occurs for only part of the time. During this period, occupants may accept a trade-off between acoustic and thermal conditions, given that they have some control over their environment. In other words, occupants may, at their own discretion, be more willing to accept higher short-term noise levels in order to achieve better thermal comfort. The importance of control is relevant to daytime exposure, but not to night time exposure where the consideration is sleep disturbance”*.

To estimate the potential impact in the overheating condition, a two-stage approach has been taken. The two levels of the approach are:

- Level 1 - an initial assessment where external noise is rated against the risk of adverse effect based on the assumption that opening windows are the primary means of mitigating overheating; and
- Level 2 – a systematic consideration of the potential for adverse effect on occupants based on internal ambient noise levels.

A Level 1 assessment looks at the external noise levels to determine whether a partially open window can be used to manage overheating, assuming a 13 dB attenuation for an open window. For “*negligible*” sites, no further action is required and open windows will be sufficient to manage overheating. For “*high*” risk sites, a Level 2 assessment is required. This is also recommended for “*medium*” risk sites. For a Level 2 assessment, the internal noise levels are calculated with windows open to determine the likely impact when windows are open to satisfy the overheating condition. **Table 3.2** summarises the approach and guidance from the AVO Guide. Essentially the guidance is used to determine whether or not windows can or cannot be opened. This guidance should be read in conjunction with Approved Document O of the Building Regulations.

Table 3.2: Initial Site Risk Assessment and Subsequent Guidance in Relation to the Overheating Condition

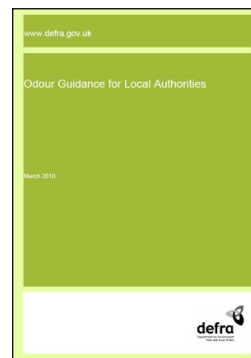
Daytime $L_{Aeq,16hour}$	Night-time $L_{Aeq,8hour}$	Night-time L_{AFmax}	Level 1 Risk	Level 2 Assessment	Outcome	Openable Windows?
≤ 48 dB(A)	≤ 43 dB(A)	-	Negligible	Not Required	Noise can be heard, but does not cause any change in behaviour or attitude	Yes
> 48 dB(A) to ≤ 53 dB(A)	> 43 dB(A) to ≤ 48 dB(A)	-	Low	Optional	Limited behavioural change is expected unless conditions are prevalent for most of the time.	Yes
> 53 dB(A) to ≤ 63 dB(A)	> 48 dB(A) to ≤ 55 dB(A)	Normally Exceeds > 74 dB(A) to ≤ 78 dB(A)	Medium	Recommended	At higher noise levels, more significant behavioural change is expected and may only be considered suitable if occurring for limited periods.	Yes, Depending on Duration
> 63 dB(A)	> 55 dB(A)	Normally Exceeds 78 dB(A) at night	High	Recommended	Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	No

4. OUDOR GUIDANCE

4.1. Defra Odour Guidance for Local Authorities (2010)

In order to determine whether a housing development or other sensitive development is appropriate in an area which is subject to a potential odour issue, it is necessary to conduct an odour risk assessment. In March 2010, Defra published its document “*Odour Guidance for Local Authorities*”, prepared by Temple Group, which gives advice and practical guidance on how to assess odour. The guidance suggests that the risk assessment takes several simple stages:

- Onsite investigations into potential odour sources;
- Field odour assessment to evaluate and describe sources of odour;
- Determine the likelihood of complaints relating to odour i.e. will a statutory nuisance occur;
- Determine the suitability of the proposed development in relation to odour.



The Defra “*Odour Guidance for Local Authorities*” was prepared to provide advice and a consistent approach to dealing with odour issues for local authorities. One of the principal functions of the guidance is to assist in the investigation and determination of odour complaints. This is relevant to an odour assessment for planning, since when determining the acceptability of odour on proposed development, it is usual to assess whether the future occupiers of the proposed development will have cause to complain about odour. Therefore, the objective of an odour assessment is to determine whether, in all likelihood, any odours are likely to cause complaints and therefore proceedings under Section 79 of the Environmental Protection Act 1990 regarding Statutory Nuisance.

The Defra Guidance provides advice on a standardise method for describing odour characteristics and attributes, which requires reference to several different attributes of smell, which are summarised in **Table 4.1**.

Table 4.1: Basic Sensory Properties of Odour

Detection (at Threshold)	Concentration of an odour when first detectable
Recognition	Human ability to differentiate between odours, e.g. wine or vinegar
Intensity	Perceived strength at differing concentrations – see Table 4.2 .
Hedonic Tone	Pleasantness / offensiveness, e.g. pleasant, unpleasant, offensive. Normally scored on a scale between -4 (very unpleasant) and +4 (very pleasant). The Hedonic Tone (also sometimes referred to as “ <i>Dravnieks</i> ”) is normally assessed using the library of Hedonic Tones published by Dravnieks, A., Masurat, T. and Lamm, R.A. 1984 <i>Hedonics of odours and odour descriptors</i> . Journal of the Air Pollution Control Association 34 (7), 752–755.
Odour Quality or Character	Association & complexity, e.g. the many “tones” and associations we have with an odour such as flowers, coffee, waste, sewage, etc. The quality and character are normally associated with the “descriptors” of the odour.

Table 4.2: Odour Intensity Scale

Score	Intensity
0	No odour
1	Very faint odour
2	Faint odour
3	Distinct odour
4	Strong odour
5	Very strong odour
6	Extremely strong odour

4.2. IAQM Guidance on the Assessment of Odour for Planning (2018)

The Institute of Air Quality Management's "Guidance on the assessment of odour for planning" also provides useful guidance. However, the focus of the IAQM guidance is to assess the appropriateness of future new odour sources within the planning context, rather than determine the appropriateness of new dwellings adjacent to existing odour sources. However, the IAQM guidance does provide useful guidance on the assessment of odour, especially in relation to field odour assessments.

The IAQM Guidance discuss FIDOL factors which are used to highlight which general principles and factors may be important in assessing when, or if, a specific odour source is likely to constitute a cause for complaint. The FIDOL factors are defined as **F**requency, **I**ntensity (and therefore concentration), **D**uration, relative **O**ffensiveness (hedonic tone/character) and **L**ocation, along with any aggravating characteristics. Although an odour does not have to be offensive in order for it to constitute a statutory nuisance, there are similarities between the criteria. **Table 4.3** below outlines the FIDOL factors that are useful in determining potential odour impact or "offensiveness", and some of the important factors that should be taken into account when assessing a case of potential statutory odour nuisance.



Table 4.3: Relating Odour Impact (or Offensiveness) to Statutory Nuisance

The 'FIDOL' factors determining offensiveness	Factors determining Statutory Nuisance	Comments
FREQUENCY (How often an individual is exposed to odour)	Frequency (How often an individual is exposed to odour)	Even an odour with quite a pleasant hedonic score can be perceived as a statutory nuisance if exposure is frequent. At low concentrations, a rapidly fluctuating odour is more noticeable than a steady background odour, i.e. this is an aggravating factor
INTENSITY (The perceived strength of the odour, proportional to log10 concentration)	Level of odour	
DURATION (The length of an odour event or episode. Duration of exposure to the odour)	Duration	
OFFENSIVENESS (relative character - Offensiveness is a mixture of odour character and hedonic tone at a given odour concentration/intensity)	Type of odour	Some odours are universally considered offensive, such as decaying animal matter. Other odours may be offensive only to those who suffer unwanted exposure in the residential intimacy e.g. coffee roasting odour.
LOCATION (The type of land use and nature of human activities near an odour source. Tolerance and expectation of the receptor.)	The characteristics of the neighbourhood where the odour occurs	
	The sensitivity of the complainant	Statutory nuisance uses the concept of the response of the average, reasonable person

5. SITE SURVEY

5.1. Location Notes

The site is located on a small shopping street, in the centre of the village of Netley. Victoria Road is characterised by a mixture of residential and commercial premises. On the northern side of Victoria Road, there is a parade of shops, many with dwellings above. The parade of shops includes a Chinese takeaway, an Indian takeaway, a bakery, a dry cleaners, a fish and chip shop, as well as a car repair garage. **Figure 5.1** and **Figure 5.2** shows the locations of these premises.

Figure 5.1: The Site and Surrounding Land Uses – View 1



Source: © Google 2023

Figure 5.2: The Site and Surrounding Land Uses – View 2



Source: © Google 2023

5.2. Survey Overview

The site was visited on two occasions – once on the evening of Friday 19th May 2023 and again at lunchtime on Monday 22nd May 2023. These two time periods were chosen as this would encompass the opening hours of all of the premises.

On the Friday evening, all the takeaways were in operation, with the fish and chip shop adjacent to the site especially busy, with customers queuing out of the door. Customers were also observed waiting at both the Chinese and Indian takeaways.

On the Monday lunchtime visit, the takeaways were all closed; however, the bakery was very busy with frequent patrons entering and exiting. The garage and dry cleaners were also open.

To conduct the survey, observations were made outside the property to the front and rear, including on the flat roof at first floor level, close to the entrance to the existing dwelling.

5.3. Survey: Friday 19th May 2023

5.3.1. Noise

At the front of the site, noise was typical of a small local high street, with some traffic (although not large volumes of traffic) and vehicles manoeuvring into the car parking spaces along the street. There were a few people waiting outside the fish and chip shop; however, these were generally waiting quietly. It should be noted that the fish and chip shop closes at 9pm each evening, so late night noise from patrons would not be experienced. Generally, noise on the front façade of the development is low and it would not be expected that any additional mitigation would be required to ensure suitable internal noise levels within rooms served by the front façade.

To the rear of the site, in the evening time, it was clear that the kitchen extracts associated with the Chinese takeaway and fish and chip shop were both in operation. The extract from the Indian takeaway was seen to be operating, but was far enough from the development site such that it was not audible.

The fish and chip shop extract can be seen in **Figure 5.3**. The extract is located adjacent to the boundary of the fish and chip shop and the proposed development site. The window to the right of the extract is the bedroom of Flat F2. Basic noise measurements indicated that noise from the kitchen extract was around 52 dB 1m from the bedroom window of Flat F2. Ambient noise levels away from the extracts were noted to be between 48 and 50 dB $L_{Aeq,T}$, with L_{A90} levels expected to be lower. As a consequence, using the methodology within BS 4142, it can be estimated that the Rating level of the fish and chip shop extract is likely to be in excess of the background noise levels during the evening time when the fish and chip shop is operational. Therefore, unmitigated, there is a possibility of complaints from the residents of Flat F2.

It was observed that the extract associated with the Chinese takeaway was also operational; however, the noise levels from that particular extract were lower at the proposed development site, presumably due to distance. The noise level from the extract was estimated to be marginally below background noise levels and therefore is not considered to be a major issue.

5.3.2. Odour

Significant levels of odour were not observed either to the front, or to the rear, of the proposed development site. Some very low levels of odour were observed in the street in front of the takeaways, but this was not at a significantly high intensity (Intensity 1 or 2, very occasionally Intensity 3 – see **Table 4.2**). The odours would be described as being associated with takeaway food, especially fish and chips and would generally be perceived to be fairly pleasant. Furthermore, the duration of the odour events could be described as fleeting - there was never permanent odours observed around the site. It should be noted that odours of this magnitude and nature would be expected on a small high street, in the centre of village such as Netley. This type of location would typically attract takeaways and therefore, some low level odour would be expected and therefore any existing or future residents should have an expectation of some low level odour.

The above description of odour is still true of the rear site, where strong odour was not observed, even close to the fish and chip shop extract. It can be seen from **Figure 5.3** that the fish and chip shop extract is fairly new – it appears to incorporate a jet cowl or similar extraction system, specifically designed to push extract air at velocity into the air to aid dispersion and therefore reducing odour. As a consequence, odour issues are not expected in relation to the fish and chip shop (or any other takeaways) and no further mitigation is necessary.

Figure 5.3: Location of Fish & Chip Shop Extract



5.4. Survey: Monday 22nd May 2023

5.4.1. Noise

On the site visit during the daytime of Monday 22nd May, noise in the street was very similar to that observed on a Friday night, with some traffic and vehicles manoeuvring into the car parking spaces along the street. Noise from people in the street was also observed at times, however, most were entering the bakery, as the takeaways were all closed.

To the rear, all kitchen extracts were off during the daytime visit, although it is understood that the fish and chip shop does open between 12pm and 2pm some lunchtimes and therefore, the extract could be operational during this time.

During the daytime, at the time of the site, only the dry cleaners were operating any sort of plant. At ground floor level, between the development and the dry cleaners, four extracts are located. At the time of the survey, only a single extract was in operation – noise from this unit was measured to be 67 dB(A) at 1m. **Figure 5.4** shows the location of these extracts.

Figure 5.4: Location of Dry Cleaner Extract



Whilst the noise from the dry cleaners is louder than the extract at the fish and chip shop, the extracts are located at a greater distance from any affected windows than at the fish and chip shop. Nevertheless, the bedroom window of Flat F1 is expected to overlook these extracts and it would be anticipated that the Rating

level of noise from the dry clear's extract is likely to be in excess of the background noise levels during the daytime. Therefore, unmitigated, there is a possibility of complaints from the residents of Flat F1. It is, however, important to recognise that the dry cleaners is only open from 8am to 5.30pm Monday to Friday and until 1pm on a Saturday.

5.4.2. Odour

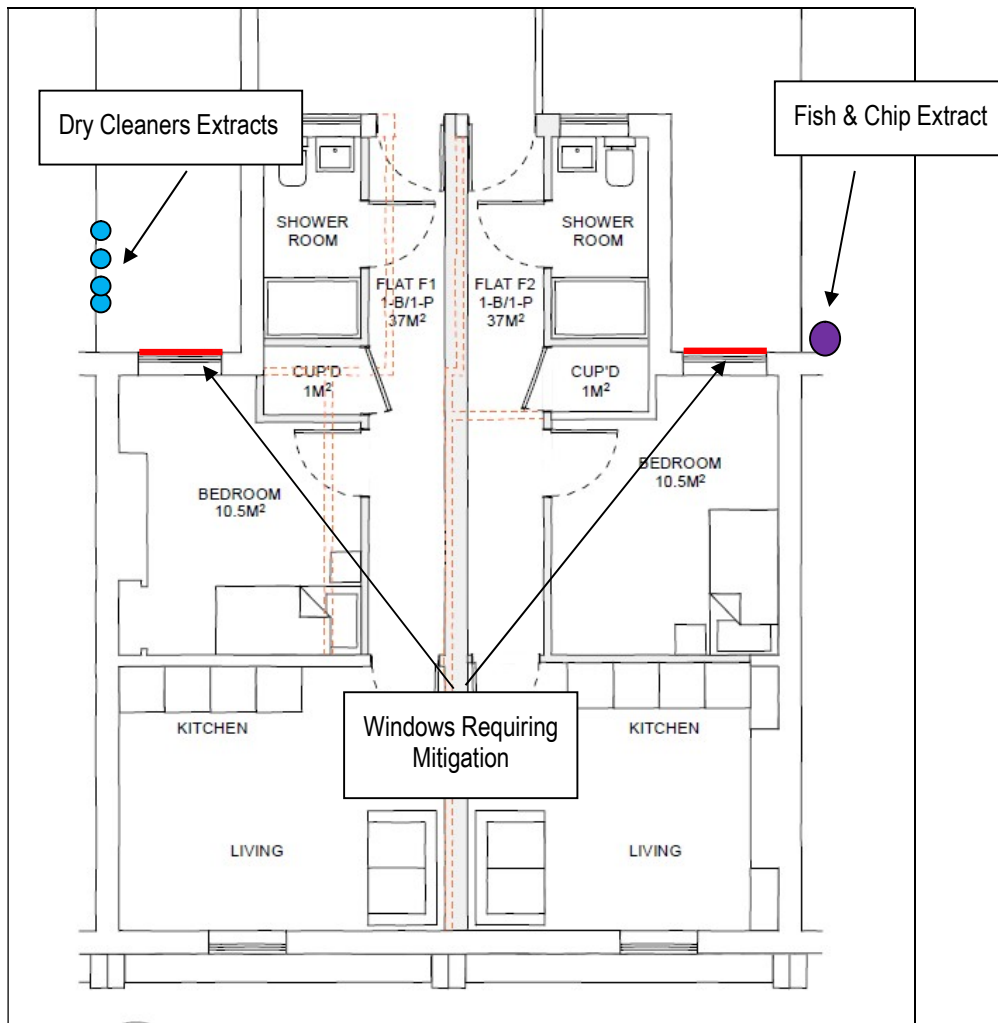
During the daytime, odour was barely perceptible on and around the proposed development site. With no takeaways open, there wasn't any food odours noticeable, as were perceived (albeit at low intensities) in the evenings. Odour was perceptible immediately adjacent to the extracts associated with the dry cleaners; however, one needed to be located within the turbulent air immediately next to the extract outlet to perceive the odour. Odour was not perceptible away from the extracts.

6. NOISE & ODOUR ASSESSMENT

6.1. Survey Conclusions

The site survey concludes that odour is not a consideration on site. Concentrations of odour are low, primarily due to an appropriately specified kitchen extract fan at the fish and chip shop. However, the survey concludes that unmitigated, plant associated with the dry cleaners and the fish and chip shop could have an impact to the bedroom windows of Flats F1 and F2. The locations of these windows (and the approximate location of the corresponding plant) can be seen in **Figure 6.1**. As a consequence, for the site to be used for residential purposes, appropriate mitigation will need to be put in place to reduce the likelihood of complaints and improve residential amenity.

Figure 6.1: Location of Extracts and Affected Windows



6.2. Mitigation

As noted above, the bedroom windows at Flats F1 and F2 will require mitigation to reduce the likelihood of complaints. As noted by Jon Pyke – an Environmental Health Officer at Eastleigh Borough Council, provided feedback in relation to the application, *“the planned front two dwellings on the first floor could be ventilated through the front façade and the rear side windows could be sound insulated”*. This approach seems appropriate for this situation.

The noise levels experienced at the bedroom windows of Flats F1 and F2 are not necessarily predicted to be particularly high in absolute terms, only that they are higher than the background noise levels. For example, at the bedroom window of Flat F2, noise from the kitchen extract fan would be around 52 dB; assuming a good quality standard double glazed window system, which would typically have a R_w of 31-33 dB(A), noise from the kitchen extract is likely to be 20 dB or less inside the bedroom, well below the maximum daytime internal noise level of 35 dB(A) for bedrooms, as specified by BS 8233 (given that the kitchen extract operates only during the daytime and closes at 9pm, the night time noise criteria is not applicable). The bedroom window at Flat F1 is likely to experience similar noise levels, albeit only during the daytime from 8am to 5.30pm. Whilst the dry cleaners fans are significantly louder, they are around 4m from the window of Flat F1 – this would result in a noise level of around 55 dB(A) at the façade.

Whilst suitable internal noise levels can be achieved with windows closed, if one opens the window, for example to deal with overheating or for ventilation, given that a partially open window has a R_w of around 13 dB(A) (regardless of the performance of the window when closed), this would result in an internal noise level in excess of 35 dB(A). As a consequence, the dwellings need to be designed such that the bedroom windows do not need to ever be opened.

It is important to note that it is not generally considered appropriate for windows to be sealed, as it is considered that residents should have the right to choose whether or not they open the window, plus they should still be openable for the rapid dilution of smells/water vapour/VOCs. However, the residents should not have to rely on opening the windows to ensure that conditions in the rooms are comfortable.

In order to ensure that the windows do not need to be opened, suitable ventilation and cooling must be achieved. It is recommended that a ventilation specialist is consulted to design a system to ensure a good standard of internal amenity. The use of passive ventilations strategies should always be the default; however, where this is not possible, a mechanical ventilation system, taking air from the road façade and penetrating into the rear of the properties would be suitable to ensure suitable internal noise levels.

7. OVERALL CONCLUSIONS AND RECOMMENDATIONS

A preliminary noise and odour assessment has been carried out at the site in order to determine whether as a result of noise or odour, there are any significant constraints on developing the site for residential purposes.

The assessment notes that there are a number of commercial premises around the site, including a garage, a dry cleaners, a fish and chip shop, a bakery, an Indian Takeaway and a Chinese Takeaway.

The assessment notes that odour is not a constraint upon the development of the site. Whilst there is some low level odour, primarily in relation to takeaways in the vicinity of the site, the odour observed is considered typical of the location.

With regards to noise, the survey concludes that unmitigated, plant associated with the dry cleaners and the fish and chip shop could have an impact to the bedroom windows of Flats F1 and F2. However, it should be noted that these noise sources are not constant – the fish and chip shop only operates for a few hours each evening and not beyond 9pm, as well as a few lunchtimes each week between 12pm and 2pm. The dry cleaners keeps office hours, only operational between 8am and 5.30pm.

Suitable internal noise levels can be achieved with a good quality standard double glazed window system, which would typically have a R_w of 31-33 dB(A). However, whilst suitable internal noise levels can be achieved with windows closed, if one opens the window, for example to deal with overheating or for ventilation, this would result in an internal noise level in excess of the recommended maximum. As a consequence, the dwellings need to be designed such that the bedroom windows do not need to ever be opened.

In order to ensure that the windows do not need to be opened, suitable ventilation and cooling must be achieved. It is recommended that a ventilation specialist is consulted to design a system to ensure a good standard of internal amenity. The use of passive ventilations strategies should always be the default; however, where this is not possible, a mechanical ventilation system, taking air from the road façade and penetrating into the rear of the properties would be suitable to ensure suitable internal noise levels.

If a suitable ventilation system is designed, the proposed development would meet the guidance contained within BS 8233: 2014, and it would be considered that the proposed development complies with Paragraph 185 of the National Planning Policy Framework since the new development will not be “*put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution*”. Since it has been shown that in terms of noise, the proposals adhere to local and national planning policy, it is considered that the noise and odour environment of the site should not be a constraint on the proposed residential development.

Appendix 1

Glossary of Acoustic Terms

Appendix 1: Glossary of Acoustic Terms

Decibel (dB)	This is a tenth (deci) of a bel. Decibel can be a measure of the magnitude of sound, changes in sound level and a measure of sound insulation. Decibels are not an absolute unit of measurement but are an expression of the ratio between two quantities expressed in logarithmic form.
dB(A)	A-weighted decibels, i.e. decibel level incorporating a frequency weighting (A-weighting), which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness.
Freefield	A situation in which the radiation from a sound source is completely unaffected by the presence of any reflecting boundaries.
Hertz (Hz)	Unit of frequency, equal to one cycle per second. The frequency of sound waves refers to the number of pressure fluctuations per second. Frequency is related to the pitch of a sound.
$L_{Aeq,T}$	The equivalent steady sound level in dB(A) containing the same acoustic energy as the actual fluctuating sound level over the given period, T. For example, daytime noise is generally measured over a 16 hour period, so T is 16 hours. $L_{Aeq,T}$ can be measured directly with an integrating sound level meter.
L_{A10}	The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 10 percent of a given time and is the $L_{A10,T}$. The L_{A10} is used to describe the levels of road traffic noise at a particular location.
L_{A50}	The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 50 percent of a given time and is the $L_{A50,T}$.
L_{A90}	The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 90 percent of a given time and is the $L_{A90,T}$. The L_{A90} is used to describe the background noise levels at a particular location.
L_{Amax}	The 'A'-weighted maximum sound pressure level measured over a measurement period.
R_w (or SRI)	The weighted sound reduction index as a single number laboratory measured rating used to describe the sound insulation of building elements.