DRAGONFLY

CONSULTING

Planning Appeal – Land East of Spring Lane, Croft, Warrington

LPA Application Ref: 2024/00668/FUL

Appeal Ref: APP/M0655/W/25/3367247

Between:

1. Thomas Smith

   and

2. Warrington Borough Council

3. Spring Lane and New Land Residents Group

Proof of Evidence of Christopher Chittock
Noise Impact of change of use of land to use as residential caravan site for 5 gypsy/traveller families, each with two caravans including no more than one static caravan/mobile home, together with the laying of hardstanding and erection of communal amenity building.
On the Instructions of Spring Lane and New Lane Residents Group
DC5184-E2
23rd October 2025

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1.0 INTRODUCTION

1.1 I am Christopher James Chittock, Managing Director of Dragonfly Consulting with direct responsibilities for the acoustics projects within the company.

1.2 I hold a Bachelor of Science Degree, with Honours, in Audio Technology from the University of Salford. I am a Corporate Member of the Institute of Acoustics.

1.3 I have over 20 years of experience within the field of noise and vibration in both the public and private sectors. I have provided expert testimony at both planning hearings and inquiries and I have provided written and verbal evidence in Court proceedings.

1.4 A full copy of my Curriculum Vitae is available in Appendix B.

1.5 In accordance with civil procedure rules, I am instructed by Green Belt Experts on behalf of Spring Lane and New Land Residents Group who are a Rule 6 Party to the appeal (the R6 Party). I am appointed as an independent acoustics expert to consider the noise impact of the part-retrospective change of use of the land off Spring Lane, Croft (the land) to residential use, with residential accommodation in mobile and static caravans.

Parties and Participants

1.6 The summary of main parties and participants in the appeal is as follows:

1. Mr Thomas Smith;
2. Warrington Borough Council; and
3. Spring Lane and New Land Residents Group.

1.7 Whilst reasonable effort has been made to ensure that this report is easy to understand, it is technical in nature. To assist the reader, a glossary of terminology is included in Appendix A.

Declaration

1.8 This evidence, which I have prepared and provide for this appeal reference APP/M0655/W/25/3367247 is true to the best of my knowledge and belief. It has been prepared and is given in accordance with the guidance of my professional institution, and I confirm that the opinions expressed are my true and professional opinions.

Christopher Chittock BSc (Hons), MIOA
Managing Director
Dragonfly Consulting

2.0 INSTRUCTIONS

2.1 I am appointed by the R6 Party as an acoustics expert to consider the issues surrounding noise impacts on future residents of the proposed change of use of the land to a residential use, with residential accommodation in mobile and static caravans.

2.2 My instructions were as follows:

- Review the noise assessment issued by LF Acoustics (ref: *Spring Lane Noise v1.0 300525, May 2025)* and provide my professional opinion on the methodology, conclusions and recommendations used in the report.

- Based on the contextual information available with regards to the development as provided by the client and the information available on the application on the Warrington Borough Council planning portal; make comment on the availability, suitability and effectiveness of the mitigation strategies given to control the noise impact at this site.

2.3 I have subsequently taken into account the comments on the noise impact assessment submitted in relation to the appeal by the Environmental Health Officer given reference EP/263412 and dated 1st August 2025 addressed to LPA planning officer Vivienne Pearson.

3.0 DOCUMENTS AND DRAWINGS

3.1 I have been provided with a folder of documentation containing relevant documents. I consider that the key documents amongst the bundle insofar as they are relevant to noise are as follows:

Table 3.1
List of Provided Documents and Drawings

Documentation	Date
Planning application ref. 2024/00668/FUL (inc. submitted drawings)	May – Dec 2024
2024/00668/FUL Green Belt Experts Objection Letter	20/12/2024
Enforcement Letter	10/07/2025
LF Acoustics Noise Impact Assessment	30/05/2025
Appellant Statement of Case (estimated July 2025)	(undated)
Warrington Borough Council Statement of Case	10/09/2025
Updated proposed Site Plan Layout Plan (No ref) rec'd 17/10/2025	N/A
Internal Memo -EHO Comments (ref: EP/263412)	01/08/2025
Rule 6 Party Statement of Case	09/10/2025
Main Parties, Draft Statement of Common Ground	16/10/2025

4.0 STANDARDS AND GUIDANCE

4.1 The Warrington Borough Council Local Plan 2022/23 - 2038/39 (the Local Plan) and the amenity guidance in the National Planning Policy Framework (the NPPF), the Noise Policy Statement for England (NPSE) and National Planning Practice Guidance (the NPPG) are relevant to this appeal.

Local Planning Policy

Local Plan

4.2 The Local Plan sets out the LPA's policy objectives. The following Policies are the most relevant to this appeal, in relation to noise and amenity issues:

Policy ENV8 - Environmental and Amenity Protection

"General Principles

1. The Council requires that all development is located and designed so as not to result in a harmful or cumulative impact on the natural and built environment, and/or general levels of amenity.

2. Development proposals, as appropriate to their nature and scale, should demonstrate that environmental risks have been evaluated and appropriate measures have been taken to minimise the risks of adverse impacts to air, land and water quality, whilst assessing vibration, light and noise pollution both during their construction and in their operation.

Noise Pollution

11. The Council encourages consideration for noise and acoustic mitigation during early stages of design, having regard for layout, siting and internal features.

12. Developments which are noise sensitive end uses near to busy roads or noisy existing businesses will need to demonstrate with any application that appropriate mitigation can be employed and implemented to prevent adverse impacts on health and quality of life for future site users. Such developments need to consider and implement the 'agent of change' principle in accordance within the NPPF.

13. New developments should not place unreasonable restrictions on existing businesses or business activities through the restriction of activities, prohibition of works or otherwise.

14. Development proposals generating noise which is likely to create significantly adverse impacts on health and quality of life and which cannot be mitigated and/or controlled through the use of conditions or through pre-existing effective legislative regimes, will not be permitted."

4.3 In general policy terms, Policy ENV8 seeks to protect the environment and amenity of existing and future users, and where development causes or will be subject to negative impacts, ensure that appropriate mitigation or compensatory measures are secured through conditions or planning obligations.

4.4 Specifically, Policy ENV8 states that the Council will only support development which would not lead to a significant adverse impact on the environment, health and quality of life, or amenity of future occupiers or those currently occupying adjoining or nearby properties.

Policy DC6 – Quality of Place

4.5 The policy sets out that good design should be at the core of all development proposals having regard to the key principles. In particular, the following criteria are relevant:

4.6 Criterion g) states that development must

"Not result in unacceptable conditions for future users and occupiers of the development in accordance with Policy ENV8;"

DEV3 - Gypsy & Traveller and Travelling Show People Provision

4.7 States that the council will favourably consider planning applications for proposed new sites where there is an identified need or a demand for the provision, and they meet the stipulated criteria.

4.8 Criterion 5. a) requires that

"The proposed site is suitable for use as a Gypsy, Traveller or Travelling Showperson's site and can provide an acceptable living environment for future occupiers;"

4.9 Criterion 5. b) requires

''The site is not subject to physical constraints or other environmental issues that cannot be mitigated to an acceptable level, or that would impact upon the health, safety or general wellbeing of residents on the site;"

4.10 The supporting text to the policy at paragraph 4.1.68 states: *"Careful consideration should be given to how a site can deliver adequate living standards to residents."* This is supported by paragraph 4.1.69 which states *"Proposals will be favourably considered where they satisfy the criteria set out in this Policy and other relevant policies of the Plan."*

Warrington Environmental Protection Supplementary Planning Document (2024)

4.11 The council's environmental protection Supplementary Planning Document (SPD) explains the Council's approach to assessing planning applications for their impacts on Environmental Protection matters for human health and amenity relating to air quality; contaminated land; light pollution; and noise. Section 5 of the SPD outlines when, and how, noise impacts that should be considered as part of the planning process.

4.12 The SPD comments that

"*Excessive environmental noise in increasingly recognised as having a significant and adverse impact leading to poorer health. Therefore, we need to be able to routinely assess when noise may be an issue and then put in place appropriate mitigation to reduce the level of noise so that it does not disturb amenity and health."*

The SPD continues by referencing that Policy ENV8:

"*covers Environmental and Amenity Protection matters and sets out identified aims and general principles which apply to noise"*

National Planning Policy

National Planning Policy Framework

4.13 The National Planning Policy Framework (NPPF, Dec 2024) sets out the Government's planning policies for England and how these are expected to be applied. At the heart of the NPPF is a presumption in favour of sustainable development. It requires Local Plans to be consistent with the principles and policies set out in the NPPF with the objective of contributing to the achievement of sustainable development.

4.14 Paragraph 187 of the NPPF states:

4.15 *"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..[]."

4.16 Additionally, Paragraph 198 of the NPPF states:

"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…"

Footnote 72 of paragraph 198 refers the Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010).

Noise Policy Statement for England (NPSE)

4.17 The document 'Noise Policy Statement for England' sets out the following vision for ongoing noise policy:

4.18 *"Promote good health and a quality of life through the effective management of noise within the context of Government policy on sustainable development."*

4.19 This vision should be achieved through the following Noise Policy Aims:

4.20 *"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on 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."*

4.21 To achieve this vision, the Noise Policy Statement sets three (3 no.) noise levels to be defined by the assessor:

NOEL – No Observed Effect Level

This is the level 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 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.

4.22 The Noise Policy Statement considers that noise levels above the SOAEL would be seen to have, by definition, significant adverse effects and would be considered unacceptable. Where the assessed noise levels fall between the LOAEL and the SOAEL noise levels, the Policy Statement requires that:

4.23 *"…all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development… This does not mean that such adverse effects cannot occur."*

4.24 Where noise levels are below the LOAEL, it is considered there will be no adverse effect. Once noise levels are below the NOEL, there will be no observable change.

Planning Practice Guidance for Noise

4.25 With reference to the NPPF and NPSE above, further guidance is given within the Noise Exposure Hierarchy Table, shown overleaf, forming part of the Planning Practice Guidance for Noise:

Table 4.1
Noise Exposure Hierarchy Table – Planning Practice Guidance for Noise

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level			
Not present	No Effect	No Observed Effect	No specific measures required
No Observed Adverse Effect Level			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up 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. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. 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. 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.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Unacceptable Adverse Effect	Prevent

ProPG: Planning and Noise

4.26 The document 'ProPG: Planning & Noise - Professional Practice Guidance on Planning & Noise' provides advice for Local Planning Authorities, developers and their respective advisors and compliments government planning, noise policy and guidance. The document seeks to:

- Advocate full consideration of the acoustic environment from the earliest possible stage of the development control process;
- Encourage the process of good acoustic design in and around new residential developments;

- Outline what should be taken into account in deciding planning applications for new noise sensitive developments;
- Improve understanding of how to determine the extent of potential noise impact and its effect; and
- Assist in the delivery of sustainable development.

4.27 Following the guidance in the NPPF, planning should always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings. ProPG describes an acoustic design process which seeks to deliver the best acoustic outcome for the site.

Standards

British Standard (BS) 7445-1:2003 – Description and Measurement of Environmental Noise – Part 1: Guide to Quantities and Procedures

4.28 This document defines the basic quantities to be used for the description of environmental noise and describes basic procedures for the determination of these quantities.

4.29 The methods and procedures described in this British Standard are intended to be applicable to sounds from all sources, individually and in combination, which contribute to the total noise at a site. This British Standard does not specify limits for environmental noise, internally or externally.

BS 8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings

4.30 The scope of British Standard 8233:2014: *Sound insulation and noise reduction for buildings* is the provision of guidance for the control of noise in and around buildings. It suggests appropriate criteria and limits for different situations; the primary intention of the document is to guide the design of new buildings or refurbished buildings undergoing a change of use rather than to assess the effect of changes in the external noise climate. The standard suggests suitable internal noise levels within different types of buildings, including residential dwellings, as shown in Table 4.2.

Table 4.2
Indoor Ambient Noise Levels in Spaces When They Are Unoccupied

Activity	Typical Situations	Design Range $L_{Aeq,T}$ dB	
		0700h to 2300h	2300h to 0700h
Resting	Living rooms	35	--
Dining	Dining Room / Area	40	--
Sleeping	Bedrooms	35	30

4.31 BS 8233:2014 states in Note 4 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."*

4.32 BS 8233:2014 also suggests noise limits for external areas of a property such as gardens or balconies. It states that:

"For traditional external areas that are used for amenity space, such as gardens and patios, 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. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise 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."

Approved Document F1 – Means of Ventilation

4.33 Whilst not directly related to the acoustic performance and noise impact assessment, Table 1.7 of the document provides the guidance with respect to minimum passive ventilator space installed within the external façade of spaces depending on the overall ventilation strategy.

Assessing L_{Max} for Residential Developments: The AVO Guide Approach

4.34 *Assessing L_{max} for Residential Developments* outlines an industry approach to determining a suitable design case for maximum noise levels when considering their assessment in relation to residential development. It also provides examples for the selection of a suitable L_{max} value from survey data to use as a design case.

ANC Green Book: Environmental Noise Measurement Guide

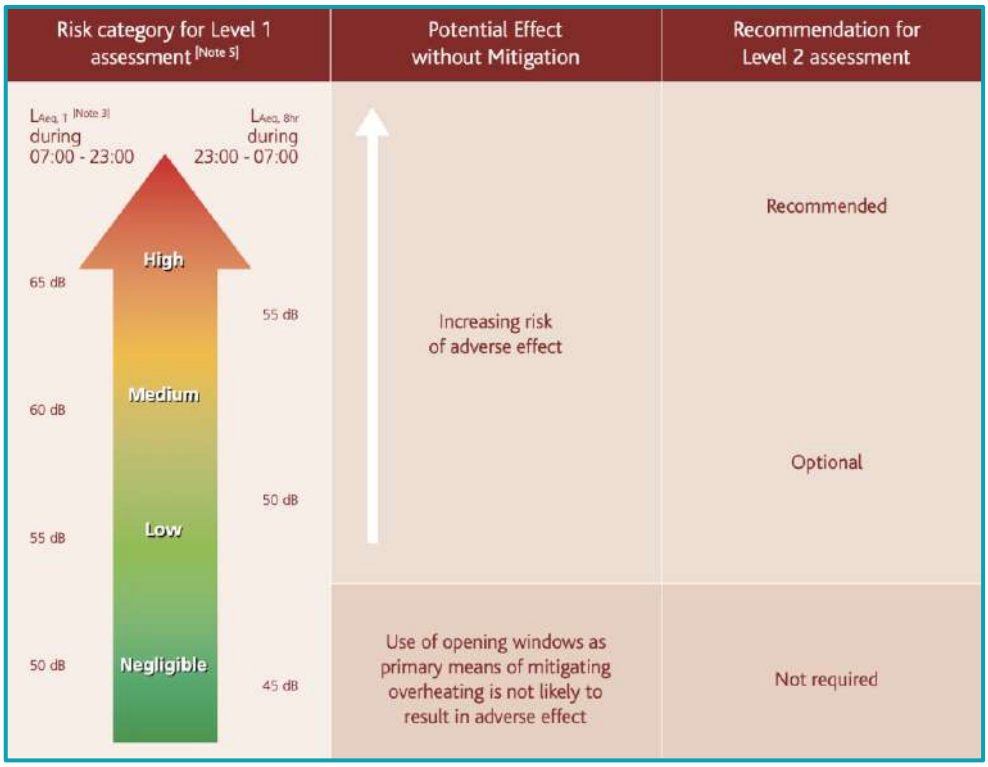
4.35 The ANC Green Book provides practical guidance around the measurement and analysis of environmental sound. Areas covered include the preparation, execution and reporting of site survey work, and some road signs through the maze of guidance and policy applicable to this work. It also outlines a number of industry standard practices for the determination of L_{Amax} as a design case.

Acoustics Ventilation and Overheating Residential Design Guide (AVO)

4.36 The Association of Noise Consultants (ANC) and the Institute of Acoustics (IOA) have published a document which provides guidance on making an assessment of overheating risk associated with a specific acoustic strategy. The guidance offers a two-level approach to address issues of overheating with respect to internal noise levels.

4.37 A Level 1 AVO assessment identifies the potential risk of overheating indoor spaces, when considering the existing external noise levels at a proposed development site, whilst relying on an open window scenario to provide sufficient ventilation. The results of the Level 1 assessment (Recommended, Optional or Not Required) will determine if a Level 2 AVO assessment is required/recommended. Table 3-2 within the document provides guidance for a level 1 site risk assessment relating to overheating conditions. This is shown in Figure 4.1, overleaf.

Figure 4.1
Guidance for a Level 1 AVO Risk Assessment



Approved Document O

4.38 Approved Document O of the Building Regulations 2010 seeks to ensure that in situations where external noise may be an issue, the risk of occupants overheating can be managed appropriately whilst still ensuring that internal noise levels in dwellings are controlled to an acceptable level. Whilst the approved is unlikely to apply to mobile dwellings, it provides guidance on acceptable internal noise levels during overheating conditions.

4.39 Approved Document O (ADO) states as follows:

"*In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*

Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).

b. 55dB L_{AFmax}, more than 10 times a night (between 11pm and 7am).

Where in-situ noise measurements are used as evidence that these limits are not exceeded, measurements should be taken in accordance with the Association of Noise Consultants' Measurement of Sound Levels in Buildings with the overheating mitigation strategy in use. Guidance on reducing the

passage of external noise into buildings can be found in the National Model Design Code: Part 2 – Guidance Notes (MHCLG, 2021) and the Association of Noise Consultants' Acoustics, Ventilation and Overheating: Residential Design Guide (2020).”

5.0 REVIEW OF AVAILABLE INFORMATION

Background

5.1 The application site sits within a former horticultural nursery site immediately to the north of the M62 and to the east of Junction 21A of the M62 and M6 motorways.

5.2 The site is situated on the east of Spring Lane, where a Poultry Farm is located to the immediate north-west of the road and 70m west of the site. To the east is open farmland and to the immediate south of the site is the M62 with farmland and farm buildings beyond and the M6 slip road.

5.3 The site sits significantly below the M62 by approximately 3-4m, with a direct line of site to the northern carriageways.

5.4 The site is alleged to currently be in an unauthorised light industrial / commercial use.

5.5 A planning application was submitted for residential use of the site in May 2024 (it is noted that the application was not made valid until December 2024). Despite the site being located immediately adjacent to a major motorway, the application was not supported by a noise impact assessment.

5.6 The application was refused in March 2025, with the likely noise levels at the site cited as a reason for the refusal.

Facts Obtained by Others

5.7 A noise survey and noise impact assessment has been completed by LF Acoustics on behalf of the appellant.

5.8 Further to the submission of that assessment, in support of the appeal it has been reviewed by Warrington Borough Council's Environmental Health team and comments have been provided.

5.9 I have also been provided with all available documents submitted in support of the original planning application and the additional documentation as detailed in Section 3 above.

Facts Obtained by Myself Through Investigation

5.10 I have not undertaken any specific noise measurement or site inspections to support this Proof of Evidence. However, I raise no concerns about the methodology of the measurement of existing noise levels and I'm happy to place reliance on those measurements in this context.

6.0 REVIEW OF APPELLANTS SUBMISSION

6.1 A noise impact assessment of the proposals has been submitted by the applicant following refusal of the original planning application. The Noise Impact Assessment (NIA) was issued by LF Acoustics, and the report notes the author of the report as Mr L Jephson (MIOA), with no peer review recorded.

6.2 This post-nominal "MIOA" denotes that the report author has achieved the grade of being Corporate Member of the Institute of Acoustics. It is widely accepted within the field of acoustics that membership of the Institute of Acoustics (IOA), to the appropriate grade based on experience, is the leading method of demonstrating your competence as a practitioner in acoustics.

6.3 I have reviewed this report in detail, and have not identified any noteworthy issues relating to the measurement of the existing noise levels at the appeal site, and fundamental issues with the methodology for the subsequent noise mapping.

6.4 The report states that a suitable noise model validation process has been completed to ensure that the noise model of the site accurately reflects the current average noise levels. No modelling of maximum noise events has been completed. However, it is noted that no details of that validation process are supplied, therefore I am unable to confirm that the validation met an acceptable level of accuracy and that the predicted levels set out in the LF Acoustics report are therefore accurate and reliable.

6.5 Although I raise no concerns about the methodology of the measurement of existing noise levels, there are a number of areas within the NIA where I have concerns about how that noise will impact upon future occupants. These are as follows:

- Assumptions in relation to the amount of attenuation provided by the proposed dwellings' façade (caravan's) construction;
- The predicted internal noise levels;
- The prediction and assessment of the maximum noise levels within the dwellings;
- The noise mitigation strategy and consideration of ventilation and comfort cooling; and,
- The uncertainty of the Assessment.

Assumptions with regards to the Attenuation Provided by the Dwelling Façades.

6.6 The assessment notes that the proposed dwellings to be used on this site are prefabricated structures manufactured off-site, then installed on-site fully constructed, and finally connected to services. These are variously described within the LF Acoustics assessment as 'Mobile Homes', 'Park Homes' and are also known as 'Static Caravans'. However, it is important to note that the application details, plans and description of development seeks the siting of touring caravans on the site in addition to static caravans.

6.7 In all instances, but most especially touring caravans, it is an inherent characteristic of their design to make those structures lightweight in construction to enable them to be towed by vehicles.

6.8 Planning guidance makes no differentiation between the method of manufacture for dwellings, with the same standards and expectations of the level of both internal and external noise amenity required to be achieved for noise irrespective of whether the dwelling is constructed on-site or off-site. These same expectations apply to traditional build methods or lightweight prefabricated construction such as caravans.

6.9 Traditional build structures typically made of brick, concrete or stone have a high level of noise attenuation achieved through the facades, owing to the density of those materials - with noise attenuation levels in excess of 50dB R_W. This level of noise attenuation is quite typical for cavity wall structures. Whilst roof structures offer lower levels of attenuation, these again are typically in sound reduction values in excess of 40dB R_W.

6.10 Where a building has a lightweight façade and roof structure, such as a caravan, prediction of internal noise levels using the detailed design of each specific building elements is critical. A proper assessment must include the number and size of windows, the area of the façade and roof for each habitable room to be assessed and the specific external façade noise levels relating to that habitable room. The submitted noise impact assessment does not contain this level of detail or accuracy.

6.11 Despite the submission being a full detailed application, no details of the proposed dwellings have been provided as part of the application, and none are considered as part of the NIA. Given the variation in materials and specification of different makes/models of caravans; it appears unlikely there is any enforceable planning condition that can reasonably be imposed so as to secure and enforce siting of caravans which meet the required minimum standard of noise attenuation likely to be necessary for this site.

6.12 In the context of the site being adjacent to the motorway, such information is essential if an assessment is to be reliable. Therefore, in the absence of this specific information, it is not possible to provide robust or reliable predictions of the internal noise levels within the proposed dwellings. Without this, it is a significant uncertainty whether the occupants could have an acceptable standard of amenity.

6.13 Where the report author has sought to provide indicate predictions of internal noise levels based on an ‘Omar Park Home’ typical specification. A review of the range of dwellings available from Omar makes it clear that the authors assumption of an exposed façade area of 10m^2 including glazing (Appendix F) is likely a significant under estimation of the exposed facade area.

6.14 Consequently, it is likely that the stated predicted internal noise levels in the report will represent a significant and material under prediction of the likely internal noise levels within the proposed dwellings (caravans).

6.15 It is not, in my professional opinion, possible to provide an accurate prediction of the composite façade attenuation and therefore internal noise levels without a proposed building façade construction detail, floor plans and full elevation details for the proposed dwellings.

Predicted Internal Noise Levels.

6.16 ‘Table 5.1’ of the LF Acoustics report provides the predicted internal noise levels within the dwellings as reproduced in Table 6.1, below:

Table 6.1
Calculated Internal Levels with Mobile Homes Most Exposed to Road Traffic Noise

Room	Period Internal $L_{AEq,T}$ Noise Levels (dB)	
	Daytime (0700-2300)	Night-time (2300-0700)
Mobile Homes	35	34

6.17 Paragraph 5.2.7 of the report states as follows:

6.18 *"The results above indicate that the requirements of BS 8233 would be achieved and would maintain a good standard of noise within the mobile homes during the daytime periods, assuming windows closed."*

6.19 The statement in Paragraph 5.2.7 of the appellants' assessment is inaccurate. The noise levels in Table 6.1 do not indicate compliance with a *good* standard of internal amenity in accordance with BS 8233. If the predictions of internal noise levels are robust and accurate, which in any event is in question as I have explained above, then the noise levels set out in Table 6.1 may achieve a *reasonable* standard of internal noise level as set out by BS 8233.

6.20 It should be noted that the Councils SPD requires a 'good' standard of amenity and not a 'reasonable' standard. The LF Acoustics report therefore clearly sets out that the proposals will not comply with the Environmental Protection SPD.

6.21 If, as suspected, the assessment currently underestimates internal noise levels, then even the 'SPD non-compliant '*reasonable'* standard will not be achieved.

6.22 On this basis, the submitted NIA provides a strong indication that the proposed development would not be in accordance with the requirements of Policy ENV8 because the proposed development would lead to a potentially significant adverse impact on the amenity of future occupiers. This would mean that the development is also contrary to policies DC6 and DEV3 5) of the Local Plan, the NPPF and the Council's SPDs.

Predicted External Noise Levels

6.23 The report provides no assessment of external noise level impacts which should be included for a residential scheme such as this, in accordance with the requirements of BS 8233, the Warrington Design Guide and their Environmental Protection SPD as well as the good practice guidance set out in the ProPG. It is a clear and ordinary expectation that residential units should have some external amenity areas provided that are of an appropriate quality, as is explained in Section 5.2.3 of the Council's Design Guide SPD.

6.24 Based on the submitted measured external noise levels, it is clear that external noise levels will be significantly in excess of the 50dB maximum acceptable noise level for outdoor amenity spaces (as defined by the SPD, BS 8233 refers to this as an lower guideline value). No mitigation is proposed to reduce external noise levels to either the BS 8233 55dB upper threshold value, the 50dB SPD maximum acceptable noise level, or reduce noise from the dominant noise source, the M62 as far as is reasonably practicable. Neither has it been demonstrated that there are any feasible mitigation measures that could be delivered to achieve this standard. This is a required element to accord with the requirements of the Warrington Council SPDs.

6.25 On this basis, the existing noise impact assessment demonstrates that, in its current form, the proposed development would not be in accordance with the requirements of Policies ENV8, DC6 and DEV3 5), as well as the adopted SPDs because the proposed development would lead to a significant adverse impact on the amenity of future occupiers.

Predicted and Assessment of Maximum Internal Noise Levels

6.26 Whilst a very basic prediction of likely averaged ($L_{Aeq,T)}$ internal noise levels has been offered within the NIA, no prediction of maximum internal noise levels has been completed in accordance with current industry best practice. No modelled maximum noise levels impacting on facades of caravans appears to have been completed and there is no evidence of a maximum noise model having been produced or validated.

6.27 The importance of modelling maximum noise events is to ensure that acceptable standards of amenity can be achieved. The basic prediction that is provided is not robust and does not consider likely maximum internal noise levels in line with the 'Best Practice' approach set out in 'ProPG: *Planning and Noise*' or the 'ANC Green Book'.

6.28 Therefore, at this stage there is insufficient evidence that the development could ensure appropriate standards of living and avoid significant adverse effects upon occupants of the dwellings due to maximum noise events. Therefore, the NIA fails to demonstrate that the proposed development would be in accordance with the requirements of Policy ENV8, DC6 and DEV3 5), as well as the adopted SPDs.

Noise Mitigation Strategy

6.29 The ProPG (together with the council's Design Guide SPD and policies) makes clear that all sites for proposed residential use, must make use of 'Good Acoustic Design' and that new developments should seek to secure a good standard of design and amenity for occupants.

6.30 Good design should consider, through site layout, topography and orientation of dwellings, how to avoid and minimise adverse impacts before reliance is placed on façade attenuation to achieve acceptable levels of amenity for occupiers. This is a point emphasised in Sections 3.1.2 and 5.2.1 of the Council's Design Guide SPD.

6.31 The proposed dwellings are all placed at the end of the site closest to the primary source of noise, the M62 motorway. The report does not demonstrate any consideration of good acoustic design strategy. The application seeks a full detailed permission, but it does not adequately consider orientation, layout or include any structural noise mitigation in the form of barriers or bunds to attenuate noise from the M62, the primary noise source.

6.32 No detail is provided on the proposed dwellings and therefore no consideration of layout and orientation is possible, seeking to position habitable rooms away from the primary source of noise.

6.33 This lack of structural and inherent design mitigation means that noise levels in amenity areas are likely to significantly exceed acceptable noise levels. Noting the short distance to the eastbound carriageway and the relative height difference between the motorway and the appeal site, viable mitigation measures which would achieve acceptable external amenity noise levels may not be available for this site or, if viable, may be considered inappropriate in the location for other reasons.

6.34 Although the report identifies a requirement for closed windows to control noise impacts on internal amenity, the assessment does not take into account the need for an alternate means of ventilation to the caravans to be provided to prevent and control overheating conditions inside the caravans without the need to open the windows, which would result in internal noise levels in exceedance of all relevant guidance.

6.35 The report only addresses the need for consideration of Background Ventilation under Part F of the Building Regulations and regardless, it provides insufficient detail to support the assertions made in respect to this ventilation. This represents a fundamental misunderstanding of the need for adequate ventilation for the purposes of comfort cooling and temperature control for healthy living conditions within any residential dwellings. This issue is of particular concern in dwellings which are of a composite / prefabricated construction and will therefore suffer from increased thermal gain (overheating in warmer months) compared to higher mass building designs.

6.36 The current glazing and ventilation strategy would not be able to comply with the requirements of Part O of the Building Regulations (if required) or current good practice guidance on the consideration of acoustics and overheating in residential buildings without significant amendments to the design.

Uncertainty of the Assessment

6.37 The assessment does not include a consideration of the inherent uncertainty within either the site-based noise survey, the noise modelling process or the process of predicting noise transfer through the proposed dwelling facades to provide internal noise levels.

6.38 In the context of the noise survey, the uncertainty of the on-site testing is anticipated to be of the order of ±1dB.

6.39 Turning to the prediction of external noise levels through the noise modelling process, SoundPlan noise modelling software has been utilised to ascertain how noise propagates across the proposed development. The software directly incorporates the ISO 9613 calculation procedure which has an uncertainty rating of +/- 3dB in this context.

6.40 Finally, the design calculations that have been utilised to determine the facade performance of the glazing and ventilation strategy for the scheme, rely on the method outlined within Annex G of BS 8233 (which is based on the BS EN 12354-3 calculation methodology). The expected precision of this calculation methodology is quoted as +/- 2dB.

6.41 Based on the information above, the combined Root Sum Squared (RSS) uncertainty for the provided noise impact assessment has been calculated as +/- 3.7dB.

6.42 If uncertainty is taken into account on this prediction, it is likely that the predicted internal noise levels within the proposed dwellings would fail to meet the noise levels to achieve acceptable standard of amenity and would result in significant adverse impacts in breach of Policies ENV8, DC6 and DEV3.

7.0 REVIEW OF WARRINGTON BOROUGH COUNCIL'S SUBMISSION

7.1 I have reviewed the comments made on behalf of the Environmental Protection team at Warrington Borough Council, in the form of an internal memo. It is understood these comments are made in the context of the team's role as statutory consultees to the planning application and as internal advisors to the council's planning department

7.2 In my professional opinion the comments made by the officer are consistent and appropriate to the issues raised within Section 6 above. There is significant common ground between the Environmental Protection comments and my own Bonafide professional opinion.

7.3 I note that the officer identifies the high noise levels at the site, and the deficiencies in the assessment of internal noise levels. In particular, concerns are raised that the assumptions on the attenuation of noise from the façade of the caravans relies on the caravan windows being closed at all times. The memo identifies that mechanical ventilation would be required to achieve acceptable internal living conditions for both noise and thermal comfort.

8.0 CONCLUSIONS

8.1 In my professional opinion, based on the information available to me within the LF Acoustics report, I would characterise the risk of noise impact on the proposed dwellings from road noise associated with the M62 motorway as being significant, with levels likely exceeding the "significant adverse effect level (SOAEL)". This is in direct contradiction to the stated conclusion of the LF Acoustics report.

8.2 An accurate and robust noise impact assessment that addresses the concerns raised above, is likely to indicate that the noise impact of the road noise will be far more numerically significant than that predicted by LF Acoustics. In synopsis, if the assessment is repeated robustly, the outcome will likely demonstrate internal noise levels significantly above acceptable values.

8.3 Given the extent to which the LF Acoustics assessment may under-estimate the noise impact of the M62 as a noise source and the extent to which it may over-estimate the potential for that noise source to be effectively mitigated, the LF Acoustics report is unable to demonstrate that the site is suitable for the type and character of development proposed. Additionally, the feasibility of providing any form of adequate mitigation to make the site suitable for the residential development is brought into question.

8.4 It is therefore my professional opinion that the proposed development is not in line with the technical guidance, National Planning Policy or the Council's local plan policy ENV8, DEV3 and DC6 or the council's adopted SPDs.

9.0 STATEMENT OF COMPLIANCE

9.1 I understand my duty as an expert witness. I have complied with that duty and will continue to comply with it. This report includes all matters relevant to the issues on which my expert evidence is given. I have given details in this report of any matters which might affect the validity of the report.

10.0 STATEMENT OF TRUTH

10.1 I confirm that I have made clear which facts and matters referred to in this report are within my own knowledge and which are not. Those that are within my own knowledge I confirm to be true. The opinions I have expressed represent my true and complete professional opinions on the matters to which they refer.

11.0 STATEMENT OF CONFLICTS

I confirm that I have no conflict of interest of any kind, other than any which I have already set out in this report. I do not consider that any interest which I have disclosed affects my suitability to give expert evidence on any issue on which I have given evidence and I will advise the parties by whom I am instructed if, between the date of this report and the trial, there is any change in circumstances which affects this statement.

Appendix A – Glossary of Terminology

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table A-1
Sound Levels Commonly Found in the Environment

Sound Level	Location
0dBA	Threshold of hearing
20 to 30dBA	Quiet bedroom at night
30 to 40dBA	Living room during the day
40 to 50dBA	Typical office
50 to 60dBA	Inside a car
60 to 70dBA	Typical high street
70 to 90dBA	Inside factory
100 to 110dBA	Burglar alarm at 1m away
110 to 130dBA	Jet aircraft on take off
140dBA	Threshold of Pain

Acoustic Terminology

dB (decibel) The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ($2x10^{-5}$ Pa).

dB(A) A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

L_{Aeq} is defined as the notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.

L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated.

$L_{EP,d}$ is a worker's daily exposure to noise at work (normalised to an 8-hour day), taking into account the average levels of noise and the time spent in each area. This is the parameter that is used by the *Noise at Work Regulations* and is essential in assessing a worker's exposure and what action should be taken.

Appendix B – Curriculum Vitae

Christopher Chittock - Professional Curriculum Vitae

QUALIFICATIONS, TRAINING AND ACCREDITATION

BSc (Hons) Audio Technology;
Bond Solon Expert Witness Certificate;
Corporate Member of the Institute of Acoustics;
Extensive Professional CPD annually with the Institute of Acoustics and Specialist Training Providers.

PERSONAL STATEMENT

I am Christopher James Chittock, Managing Director and Principal Acoustic Consultant at Dragonfly Consulting, with direct supervisory responsibilities for the noise and vibration projects within the company.

I hold a Bachelor of Science degree, with Honours, in Audio Technology from the University of Salford. I hold the Bond Solon Expert Witness Certificate from the University of Cardiff. I am a Corporate Member of the Institute of Acoustics.

I have over 19 years' experience within the field of acoustics in both the public and private sector. My areas of expertise include noise impact assessments, particularly for use in the planning process, architectural acoustics, noise nuisance and occupational noise & vibration.

I have provided expert testimony at planning enquiries and licencing hearings and I have provided written and verbal evidence in Court in both the civil and criminal contexts.

I also hold the post of Visiting Lecturer at Leeds Beckett University.

RECENT PROJECTS

Below is a summary of just a selection of the recent projects in relevant fields in which I have been involved:

Residential

- Discharge of planning conditions, acoustic design and testing of a (100+ rooms) hotel development;
- Assessment of external noise impact and internal acoustic design for conversions of existing buildings to form new residential developments (40+ flats) in the North of England;
- Acoustic design of conversion of Victorian city centre building to form residential, A3 and retail development, Manchester city centre;
- Sound insulation testing of all types of developments, including large multi-dwelling and small residential, under both ANC and UKAS accreditation schemes;

Commercial and Industrial

- Noise assessment for planning consent relating to an Energy from Waste (EFW) plant;
- Various outline and Reserved Matters planning applications for large industrial developments in West and South Yorkshire;
- Acoustic assessments for residential and retail/office developments to demonstrate compliance with BREEAM and EcoHomes;
- Workplace noise & vibration assessments for commercial and industrial enterprises from 10 – 500 employees including Taylor's of Harrogate and the Ministry of Justice.

Renewable Energy

- Desktop and site-specific noise assessments for the installation of onshore wind turbines of varying scales including a site assessment for the three largest proposed UK onshore wind turbines;
- Assessment of noise impact of Anaerobic Digestion (AD) installations;
- Expert witness testimonies in both the planning and legal contexts dealing with suitability of sites for development and post installation noise issues.

Construction

- Ground borne vibration monitoring and advice for a range of projects including vibration and percussion piling;
- Assessment of noise impact for construction sites and compliance noise monitoring to ensure the compliance and enforcement of noise mitigation schemes.

Education

- Acoustic design for a performing arts facility of a higher education college in Lincolnshire;
- Noise assessment for the discharge of planning conditions relating to the expansion of a private school in North Yorkshire.

Entertainment Noise

- Noise monitoring and control for large outdoor music venues;
- Noise assessments for planning consent relating to licensed premises, night clubs and late-night bars throughout the UK;
- Noise management for music festivals in accordance with festival licences.

Legal

- Provision of expert witness reports on noise & vibration exposure for Noise Induced Hearing Loss (NIHL) and Hand Arm Vibration Syndrome (HAVS);
- Provision of expert witness services for noise nuisance cases (Defendant and Complainant);
- Expert witness services on acoustic design in buildings (cases in excess of £4 million);
- Various planning appeals including commercial premises and aircraft landing sites.