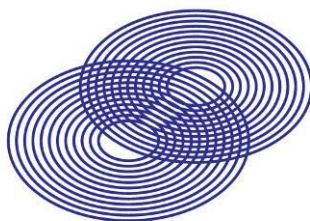


ADNITT ACOUSTICS  
Renaissance House  
32 Upper High Street  
Epsom, Surrey  
KT17 4QJ

T: +44 (0)20 7099 9735  
F: +44 (0)845 127 5121  
E: enquiry@adnitt.com  
W: www.adnitt.com



**adnitt  
acoustics**

**Report** 2134/ENS/R1-B  
**Issue Date** 29 March 2019

**Project** **Kilmarnock Farm**  
Charlwood Road, Crawley RH11

**Title** **Environmental Noise Survey**  
**Sub Title**

**Client** PJ Brown (Construction) Ltd.  
Burlands Farm  
Charlwood Road, Ifield  
Crawley

**Case No**

**Author** Raul Zafra Duarte BEng(Hons)

**Checked** Chris Turner BSc(Hons) MSc MIOA  
MInstP

| Revision | Reason                 | Checked | Signature |
|----------|------------------------|---------|-----------|
| A        | Changes in site layout | CT      |           |
| B        | Changes in site layout | RZ      |           |
|          |                        |         |           |
|          |                        |         |           |

## CONTENTS

|    |                                    |    |
|----|------------------------------------|----|
| 1. | INTRODUCTION                       | 1  |
| 2. | NATIONAL AND LOCAL PLANNING POLICY | 2  |
| 3. | THE SITE AND SURROUNDINGS          | 6  |
| 4. | ENVIRONMENTAL NOISE SURVEY         | 7  |
| 5. | NOISE SURVEY RESULTS               | 9  |
| 6. | OPERATIONAL NOISE LEVELS           | 10 |
| 7. | MITIGATION MEASURES                | 12 |
| 8. | CONCLUSION                         | 13 |

### List of Tables

|   |    |
|---|----|
| Table 2134/T1 - National Planning Practice Guidance with regard to Noise      | 4  |
| Table 2134/T2 - Noise Survey Equipment  | 8  |
| Table 2134/T3 - Summary of Automated Noise Measurements Results (Position P1) | 9  |
| Table 2134/T4 - Summary of Attended Noise Measurements Results                | 9  |
| Table 2134/T5 - Summary of operational noise levels results.                  | 11 |
| Table 2134/T6 - Summary of Operational noise levels with mitigation measures. | 12 |

### List of Attachments

**Appendix A: GLOSSARY OF ACOUSTIC TERMS**

**Appendix B: SOURCE NOISE LEVELS USED IN MODELLING EXERCISE**

**Figure 2134/ SP 1 : Site Plan Showing Measurement Locations**

**Figure 2134/ SP 2 : Site Plan Proposal**

**Figure 2134/ NM 1 : Operational Noise Map without mitigation measures**

**Figure 2134/ NM 2 : Operational Noise Map with mitigation measures**

**Figure 2134/ TH 1 : Time History of Automated Noise Monitoring (Position P1)**



## 1. INTRODUCTION

- 1.1 Adnitt Acoustics Services Ltd have been commissioned through WS Planning and Architecture to undertake a noise survey and assessment for the proposed development at Kilmarnock Farm, Charlwood Road, Crawley RH11.
- 1.2 An environmental noise survey and assessment to determine typical operating noise levels at sensitive receptor positions is required to comply with the requirements of the Local Planning Authority, West Sussex County Council.
- 1.3 The proposed development is understood to be as follows:

*“The proposed development would see PJ Brown (Construction) Ltd, employers of around 400 people locally, extend their existing operation to Kilmarnock Farm to create a soil recycling and concrete crushing facility at the site...”*

*“Proposed Soil Recycling and Concrete Crushing Facility at Kilmarnock Farm, Charlwood Road, Charlwood RH11 OJY”*
- 1.4 The type of operation at the facility would be recycling brick and concrete to make a 6F2 crush material and the screening of soil.
- 1.5 As this is a technical report it will make reference to some technical terms. To assist the reader a glossary has been included in Appendix A.

## 2. NATIONAL AND LOCAL PLANNING POLICY

### *National Planning Policy*

- 2.1 Since March 2012 national planning policy has been governed by the National Planning Policy Framework (NPPF). The July 2018 version of the NPPF states:

#### **Paragraph 170**

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 180**

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...

#### **Paragraph 182**

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 Further guidance with regard to the phrases “significant adverse impacts” and “adverse impacts” is given in the Noise Policy Statement for England (NPSE) which provides the following guidance.

*“There are two established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation. They are:*

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.*

*Extending these concepts for the purpose of this NPSE leads to the concept of a significant observed adverse effect level.*

SOAEL - Significant Observed Adverse Effect Level

*This is the level above which significant adverse effects on health and quality of life occur.”*

2.3 The NPSE further clarifies that due to the complex and subjective nature at which noise impacts are perceived by individuals or groups of individuals 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”*

2.4 A hierarchy of noise impacts has recently been published by the Department for Communities and Local Government as part of the National Planning Practice Guidance (NPPG). This hierarchy is presented as a table and has been reproduced below.

| Perception                                       | Examples of Outcomes  | Increasing Effect Level                  | Action                           |
|--|---|--|----------------------------------|
| Not Noticeable                                   | No Effect   | No Observed Effect                       | No specific measures required    |
| 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 Level (NOAEL) | No specific measures required    |
| <i>Lowest Observed Adverse Effect Level</i>      |   |  |                                  |
| Noticeable and intrusive                         | Noise can be heard and causes small changes in behaviour and/or attitude, 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 perceived change in the quality of life. | Observed Adverse Effect                  | Mitigate and reduce to a minimum |
| <i>Significant Observed Adverse Effect Level</i> |   |  |                                  |

| Perception                     | Examples of Outcomes   | Increasing Effect Level             | Action  |
|--------------------------------|--|-------------------------------------|---------|
| Noticeable and disruptive      | The noise causes a material change in behaviour and/or attitude, 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   |
| Noticeable and very disruptive | Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory   | Significant Observed Adverse Effect | Prevent |

**Table 2134/T1 - National Planning Practice Guidance with regard to Noise**

### **Local Planning Policy**

- 2.5 The development plan for the area includes West Sussex Waste Local Plan 2014 (WLP), Horsham District Local Development Framework: Core Strategy 2007 (CS) and Horsham District Local Development Framework: General Development Control Policies 2007 (GDGP).
- 2.6 WLP 2014 have the following policy concerning to public health and amenity. (The relevant strategic objective is 13: To protect and, where possible, enhance the health and amenity of residents, businesses, and visitors).

| <b>Policy W19: Public Health and Amenity</b>  |
|---|
| <p><i>Proposals for waste development will be permitted provided that:</i></p> <p><i>(a) lighting, noise, dust, odours and other emissions, including those arising from traffic, are controlled to the extent that there will not be an unacceptable impact on public health and amenity;</i></p> <p><i>(b) the routes and amenities of public rights of way are safeguarded, or where temporary or permanent re-routeing can be justified, replacement routes of comparable or enhanced amenity value are provided; and</i></p> <p><i>(c) where necessary, a site liaison group is established by the operator to address issues arising from the operation of a major waste management site or facility.</i></p> |

### **British Standard BS 4142:2014**

- 2.7 BS 4142:2014 provides the following guidance on determining typical background noise levels.

*“The background sound level is an underlying level of sound over a period, T, and might in part be an indication of relative quietness at a given location. It does not reflect the occurrence of transient and/or higher sound level events and is generally governed by continuous or semi-continuous sounds.*

*In using the background sound level in the method for rating and assessing industrial and commercial sound it is important to ensure that values are reliable and suitably represent both the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods.*

*Among other considerations, diurnal patterns can have major influence on background sound levels and, for example, the middle of the night can be distinctly different (and potentially of lesser importance) compared to the start or end of the night-time period for sleep purposes. Furthermore, in this general context it can also be necessary to separately assess weekends and weekday periods.*

*Since the intention is to determine a background sound level in the absence of the specific sound that is under consideration, it is necessary to understand that the background sound level can in some circumstances legitimately include industrial and/or commercial sounds that are present as separate to the specific sound.”*

## 2.8 BS 4142:2014 provides the following guidance on the assessment of impacts:

*“Obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level from the rating level and consider the following:*

- a) *Typically the greater this difference, the greater the magnitude of the impact.*
- b) *A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.*
- c) *A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.*
- d) *The lower the rating level is relative to the measured background sound level, the less likely it is that 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.*

*NOTE 2 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.*

*...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.”*



### **3. THE SITE AND SURROUNDINGS**

- 3.1 The address is Kilmarnock Farm, Charlwood Road, Charlwood RH11 0JY.
- 3.2 The site is located to the north-west of Crawley. It is within Horsham District Council (HDC) but lies just to the south of a part of Crawley Borough Council (CBC). The western end of Gatwick airport runway lies approximately 1 km to the east of the appeal site.
- 3.3 Access to the site is proposed from the gated access that currently serves the southernmost field and would be directly from Charlwood Road. There is a public footpath to the north of the site that provides access from Charlwood Road to a network of Public Rights of Way (PROW).
- 3.4 Planting will be proposed along the western boundary running adjacent with the public footpath. The proposed development is to be located within the western half of the site and using the existing volume of buildings and hardstanding as a guide for the proposed use.
- 3.5 The development will include a jaw crusher, a screening machine, mobile plant, haul road and soil stockpiles.
- 3.6 The nearest residential unit to the proposed development is a dwelling next to the site which is located about 30 metres to the south from the future site plant fronting Charlwood Road. Further, Little Foxes Hotel is about 150 m to the south-west and residential dwellings at St Anne's Cottage and Upper Prestwood Farm are, respectively, about 150 m and 300 m to the north-west of the site.
- 3.7 Though it is a rural area the existing noise environment has been found to be dominated by aircraft noise. As Gatwick airport is near, intermittent noise from aircraft landing and taking off affects the site.
- 3.8 The site operational times for the development would be 8:00 to 17:00 hrs Mon/Fri and 8:00 to 13:00 hrs Saturday. There would be no work on Sundays/Bank Holidays.

## 4. ENVIRONMENTAL NOISE SURVEY

### *Automated Measurements*

4.1 In order to establish the environmental noise climate around the proposed site, an unattended long-term noise survey was undertaken between Thursday 18th October 2018 and Monday 22nd October 2018.

4.2 The meter was positioned as follows:

Position P1: The meter was located at ground level at the rear garden of the dwelling at the front of the site, fronting Charlwood road. The microphone was positioned at least 2m from the floor and at least 3.5m from any reflecting surface so that can be considered to be in free-field conditions. Taken to be typical of prevailing and background levels at one of the nearest noise sensitive receptor façade line.

4.3 The location of the noise survey equipment along with the approximate development boundary are shown on the attached site plan Figure 2134/ SP1 which is appended to this report.



**Figure 1 : Microphone Location (Position P1)**

4.4 The acoustic parameters  $L_{Aeq}$ ,  $L_{A90}$  and  $L_{AFMax}$  were measured automatically every 15 minutes during the survey shown in Figure TH/1 appended to this report.

4.5 Survey measurements were carried out in accordance with guidelines laid down in BS 7445:1991 Part 2 and other relevant standards.

### *Attended Measurements*

4.6 Additionally, attended measurements were undertaken on Thursday 18th October 2018 at ground floor level at position P2, and on Monday 22nd October 2018 at ground floor level at positions P3, P4 and P5.

4.7 The meter was positioned as follows:

Position P2: The meter was located on a tripod at ground floor level at the entrance to the Little Foxes Guesthouse to the south-west of the proposed site. The microphone was set at a height of at least 1.5m above the ground and at least 4m from any façade.

Position P3: The meter was located on a tripod at ground floor level at the entrance to a residential dwelling at Bonnets Lane to the east of the proposed site. The microphone was set at a height of at least 1.5m above the ground and at least 4m from any façade.

Position P4: The meter was located on a tripod at ground floor level at the entrance to The Manor House to the east of the proposed site. The microphone was set at a height of at least 1.5m above the ground and at least 4m from any façade.

Position P5: The meter was located on a tripod at ground floor level at the Dimensions road access to the east of the proposed site. The microphone was set at a height of at least 1.5m above the ground and at least 4m from any façade.

- 4.8 The location of the attended measurements along with the approximate development boundary are shown on the attached site plan Figure 2134/ SP1 which is appended to this report.
- 4.9 Attended measurements were carried out in accordance with guidelines laid down in BS 7445:1991 Part 2 and other relevant standards.

### ***Measurement Equipment***

- 4.10 The equipment used during the survey is detailed in the equipment schedule provided below. The sound level meter was calibrated before and after the survey and the readings found to be within the tolerances of British Standard BS EN IEC 61672-1:2003.

| Description                   | Manufacturer/Model           | Serial Number | Last Calibration Date | Certificate Number |
|-------------------------------|------------------------------|---------------|-----------------------|--------------------|
| Integrating Sound Level Meter | Cirrus Optimus Green CR:171A | G061849       | 10/01/2018            | 256121             |
| Microphone                    | Cirrus MK224                 | 210243A       | 04/12/2017            | 116129             |
| Acoustic Calibrator           | Cirrus CR:515                | 64545         | 10/01/2018            | 116128             |
| Integrating Sound Level Meter | NTi XL2-TA                   | A2A-08401-E0  | 21/08/2018            | U29351             |
| Preamp                        | NTi MC230                    | 7798          | 21/08/2018            | 29350              |
| Microphone                    | NTi MA220                    | 3376          | 21/08/2018            | 29350              |
| Acoustic Calibrator           | Larson Davis CAL200          | 1152          | 15/02/2018            | 31449U             |

**Table 2134/T2 - Noise Survey Equipment**

### ***Weather Conditions***

- 4.11 The weather during the noise survey was recorded by the Adnitt Acoustics Davis Vantage Vue weather station which was positioned next to measurement position P1. The average wind speeds were generally below the recommended maximum of 5m/s.
- 4.12 From analysis of the results it appears that the weather has not adversely affected the measured data during the measurement period.

## 5. NOISE SURVEY RESULTS

### *Automated Measurements*

- 5.1 The time history of the unattended noise survey is presented in Figure 2134/TH1 appended. Tabulated data is available on request.
- 5.2 Table 2134/T3 below presents a summary of the results from the ambient noise survey. To assist in interpretation the results have been summarised in terms of the daytime (07:00hrs - 23:00hrs) and night-time (23:00hrs - 07:00hrs).

| Position | Measurement Period                    | Ambient Noise Level<br>( $L_{Aeq,T}$ , dB) | Typical Free-Field<br>Background Noise Level<br>( $L_{A90, 15mins}$ , dB) |
|----------|---------------------------------------|--|---|
| P1       | Daytime (07:00 - 19:00)               | 62   | 43  |
|          | Evening (19:00 - 23:00)               | 60   |   |
|          | Night-time (23:00 - 07:00)            | 55   | 35  |
|          | Operational Period<br>(08:00 - 17:00) | 60   | 50  |

**Table 2134/T3 - Summary of Automated Noise Measurements Results (Position P1)**

### *Attended Measurements*

- 5.3 Table 2134/T7 below shows a summary of the results from the attended measurements:

| Position | Date and Time    | Duration | Ambient Noise Level<br>( $L_{Aeq, 15min}$ , dB) | Background Noise Level<br>( $L_{A90,T}$ , dB) |
|----------|------------------|----------|---|---|
| P2       | 18/10/2018 13:42 | 15 min   | 57  | 50  |
| P3       | 22/10/2018 14:00 | 15 min   | 70  | 49  |
| P4       | 22/10/2018 14:24 | 15 min   | 60  | 51  |
| P5       | 22/10/2018 14:46 | 15 min   | 56  | 46  |

**Table 2134/T4 - Summary of Attended Noise Measurements Results**

- 5.4 The following was observed during the attended measurements:
- The existing acoustic environment has been found to be dominated by noise associated with aeroplane landing and taking off from Gatwick airport.
  - Furthermore, locations near Bonnets Lane (P3 and P4) and Charlwood road (P2) are strongly affected by road traffic noise.
  - When aeroplanes are not taking off or landing and far from roads the background noise levels are consistent with those of a quiet rural area.

## 6. OPERATIONAL NOISE LEVELS

- 6.1 An assessment to determine typical operating noise levels at sensitive receptor positions has been made to comply with the requirements of Planning Authority.
- 6.2 This assessment has applied noise prediction acoustic software that supports ISO 9613-2 calculation methodology.
- 6.3 Main inputs required for the application of the methodology are:
- Sources position and noise emission characteristics.
  - Nearest sensitive receptors location.
  - Screening of objects and obstacles and interaction of ground between emitters and receivers.
  - Duration of activity.
- 6.4 Updated plan for the soil recycling and concrete crushing facility with location of plant and site boundaries is provided on the attached site plan Figure 2134/ SP2.
- 6.5 Plant sound power levels has been obtained from manufacturers when available or taken from BS 5228: 2014 standard Annex C and D tables that contain sound level data for similar types of equipment.
- 6.6 Predictions for mobile plant movements on site have also been based on the calculation methodology provided under BS 5228: 2014.
- 6.7 A list of plant sound power levels from which the noise predictions were made are presented in Appendix 2.
- 6.8 The most sensitive receptor for the noise prediction is assumed to be in the nearest dwelling fronting Charlwood road, next to development site and 4m above ground to cover 'worst case'. However, rest of the sensitive noise sensitive receptors will also be assessed.
- 6.9 The site location relative to the sensitive receptors are shown on the attached site plan Figure 2134/ SP1 which is appended to this report.
- 6.10 The following assumptions has been made in calculation:
- The noise modelling assumes that fixed plant is operating continuously as point sources and for mobile plant (wheel loader and excavator) take into account a 70% time operation and sound power level equally distributed in their operation area.
  - For the assessment of HGVs, a rate of 30 daily movements over an 9-hour day has been considered and it is assumed that on-site vehicles would travel at a speed of 20mph. Sound power level will be equally distributed on development's road lane.
- 6.11 Noise maps derived from calculations are included on the attached noise mapping Figure 2134/ NM1 (Appendix B).

6.12 Reception noise levels from future development operation are provided in table below:

| Receptor position<br>(Refer to figure) | Period      | Predicted typical<br>noise level<br>( $L_{Aeq}$ dB) | Background<br>Noise Level<br>( $L_{A90,T}$ dB) | Level<br>difference<br>dB (A) |
|--|-------------|---|--|-------------------------------|
| Position 1: Kilmarnock Farm House.     | Operational | 60  | 50   | +10                           |
| Position 2: Little Foxes Guesthouse.   | Operational | 42  | 50   | -7                            |
| Position 3: Dwelling at Bonnets Lane.  | Operational | 41  | 49   | -11                           |
| Position 4: Dwelling at Manor House.   | Operational | 43  | 51   | -22                           |
| Position 5: Buildings at Ifield Hall.  | Operational | 50  | 46   | +4                            |

**Table 2134/T5 - Summary of operational noise levels results.**

6.13 The table above shows the predicted highest likely noise levels from site operations which would occur during the daytime period. The results show a 10 dBA exceedance of the background noise level at most sensitive receptor (Receptor 1: Dwelling located on the site entrance).

## 7. MITIGATION MEASURES

- 7.1 At the nearest residential building, the rated noise level is +10dB above the background level which according to BS 4142: 2014 is likely to be in an indication of a significant adverse impact depending on the context.
- 7.2 The initial environmental noise assessment indicates that additional mitigation measures are required to comply with national and local planning policies.
- 7.3 If noise cannot be controlled at source, then alternative ways of noise attenuation are required. These are either to increase distance between the noise source and the sensitive receiver or to introduce noise reduction screens or barriers.
- 7.4 An initial approach is to introduce a barrier between the site and the sensitive receivers. It is predicted that a 4.5m high solid absorptive barrier constructed around the site on the limits of the development should reduce noise levels at the receiver by approximately 10dB. The barrier should meet a minimum of Class A3 when measured and rated in accordance with BS EN 1793-1:1997.
- 7.5 The extent of this barrier is shown in Figure 2134/SP2 which is appended to this report.
- 7.6 The predicted noise levels from future development operation with the proposed perimeter barrier at the nearest receptors are provided in Table below:

| Receptor position<br>(Refer to figure) | Period      | Predicted typical<br>noise level<br>( $L_{Aeq}$ dB) | Background<br>Noise Level<br>( $L_{A90,T}$ dB) | Level<br>difference<br>dB (A) |
|--|-------------|---|--|-------------------------------|
| Position 1: Kilmarnock Farm House.     | Operational | 47  | 50   | -3                            |
| Position 2: Little Foxes Guesthouse.   | Operational | 34  | 50   | -16                           |
| Position 3: Dwelling at Bonnets Lane.  | Operational | 35  | 49   | -14                           |
| Position 4: Dwelling at Manor House.   | Operational | 39  | 51   | -12                           |
| Position 5: Buildings at Ifield Hall.  | Operational | 44  | 46   | -2                            |

**Table 2134/T6 - Summary of Operational noise levels with mitigation measures.**

- 7.7 Further mitigation measures to ameliorate operational noise levels in addition to the barrier include:
- Selection of the quietest available plant and machinery;
  - Ensure that mobile plant is fitted with broadband type noise reversing alarms;
  - Switching of plant and machinery when not in use;
- 7.8 These measures should be investigated by the operator.
- 7.9 Based on the predictions above it is considered that the noise emissions from the site should be in the order of the prevailing background sound level at the nearest noise sensitive receptor.

## 8. CONCLUSION

- 8.1 Adnitt Acoustics Services Ltd have been commissioned through WS Planning and Architecture to undertake a noise survey and assessment for the proposed soil recycling and concrete crushing facility at Kilmarnock Farm, Charlwood Road, Crawley RH11.
- 8.2 An environmental noise survey has been carried out in order to establish the environmental noise climate around the proposed site and obtain the Background Sound Level  $L_{A90}$  using appropriate noise guidance in BS 4142: 2014.
- 8.3 The existing acoustic environment has been found to be strongly affected by noise associated with airplane landing and taking off from Gatwick airport.
- 8.4 An assessment has been made using relevant and appropriate noise guidance and standards to predict and determine typical operating noise levels at sensitive receptor positions.
- 8.5 The information used as inputs to calculate the noise contribution from the proposed site at the nearest residential properties has been provided by developer or estimated from databases in BS 5228-1:2009+A1:2014 when not available.
- 8.6 At the nearest residential boundary area, the predicted typical noise level from the proposed development is about 60dBA for daytime period, +10dB above the pre-existent background level, which according to BS 4142: 2014 is likely to be in an indication of a significant adverse impact depending on the context.
- 8.7 The initial environmental noise assessment indicates that additional mitigation measures are required to comply with national and local planning policies.
- 8.8 It is recommended that a barrier be constructed between the site and the nearest noise sensitive receptor. The specification of the barrier is given in Section 7 of this report.
- 8.9 Following introduction of the proposed mitigation measured it is considered that the noise emissions from the site should be in the order of the prevailing background sound level at the nearest noise sensitive receptor.

**Raul Zafra Duarte BEng(Hons)**

**for ADNITT ACOUSTICS**



## APPENDIX A: GLOSSARY OF ACOUSTIC TERMS

|  |   |   |
|--|---|---|
| <b>Ambient Noise</b>   | The noise climate heard over a period of time due to all normal sources, in the absence of extraneous or atypical sounds. Used to describe noise in the absence of the introduced sound, generally. |   |
| <b>Ambient Noise Level</b>   | Describes the average noise level of the ambient noise over a stated period of time, e.g. hourly noise  |   |
|  | Parameter: A-weighted Continuous Equivalent Sound Pressure Level determined over the time period T.<br>Expressed in decibels / A-weighted decibels  | $L_{eq,T}$ or $L_{Aeq,T}$<br><br>dB(A) or dB  |
| <b>Decibel scale dB</b>  | A linear numbering scale used to define a logarithmic amplitude scale, thereby compressing a wide range of amplitude values to a small set of numbers   |   |
| <b>dB(A)</b>   | An electronic filter in a sound level meter, which approximates under defined conditions the frequency response of the human ear.   |   |
| $L_{Aeq,T}$  | The equivalent continuous sound level. The steady dB(A) level which would produce the same A-weighted sound energy over a stated period of time as the measured sound pressure level.               |   |
| $L_{Amax}$   | The maximum dB(A) level measured during a survey period.  |   |
| $L_{A10}$  | The dB(A) level exceeded for 10% of the survey period, often used as a quantifier of traffic noise level.   |   |
| $L_{A90}$  | The dB(A) level exceeded for 90% of the survey period. Used in BS 4142:1997/2014 as being representative of the background noise level.   |   |
| <b>Acoustic screening</b>  | Physical barrier to sound formed by fence, wall, building or other structure, which has the effect of reducing the sound transmitted.   |   |
| <b>Individual Event Noise</b>  | The noise of a distinctive event with the varying noise climate, usually a transient activity, such as a vehicle pass-by, aircraft flyover or similar, rather than an isolated impulsive noise.     |   |
| <b>Individual Event Noise Level</b>  | Describes the highest noise level during the event as measured under particular conditions of time-weighting  |   |
|  | Parameter: A-weighted Maximum Sound Pressure Level with FAST or SLOW time weighting<br><br>Expressed in decibels / A-weighted decibels  | $L_{Amax,FAST}$ or $L_{Amax,F}$<br>$L_{Amax,SLOW}$ or $L_{Amax,S}$<br><br>dB(A) or dB |
| <b>Sound Reduction Index <math>R_w</math></b>                              | Single number rating used to describe the sound insulation of building elements as defined in BS EN ISO 717 1997.   |   |
| <b>Weighted element-normalized level difference <math>D_{n,e,w}</math></b> | Single number rating used to describe the sound insulation of building elements as defined in BS EN ISO 717 1997.   |   |

## APPENDIX B: SOURCE NOISE LEVELS USED IN MODELLING EXERCISE

| Plant               | No of units | Sound Power Level | Data source               | Operating times     |
|---------------------|-------------|-------------------|---------------------------|---------------------|
| Mini Sizer screener | 1           | 100 dBA           | BS 5228-1:2009            |                     |
| Jaw Crusher         | 1           | 104 dBA           | BS 5228-1:2009            | 8:00-17:00          |
| Excavator           | 1           | 102 dBA           | Manufacturer's Data Sheet | (Mon-Fry)<br>&      |
| Wheel loader        | 1           | 99 dBA            | Manufacturer's Data Sheet | 8:00-13:00<br>(Sat) |
| HGV movements       | 30 per day  | 106 dBA           | BS 5228-1:2009            |                     |

Figure 2134/ SP 1 : Site Plan Showing Measurement Locations






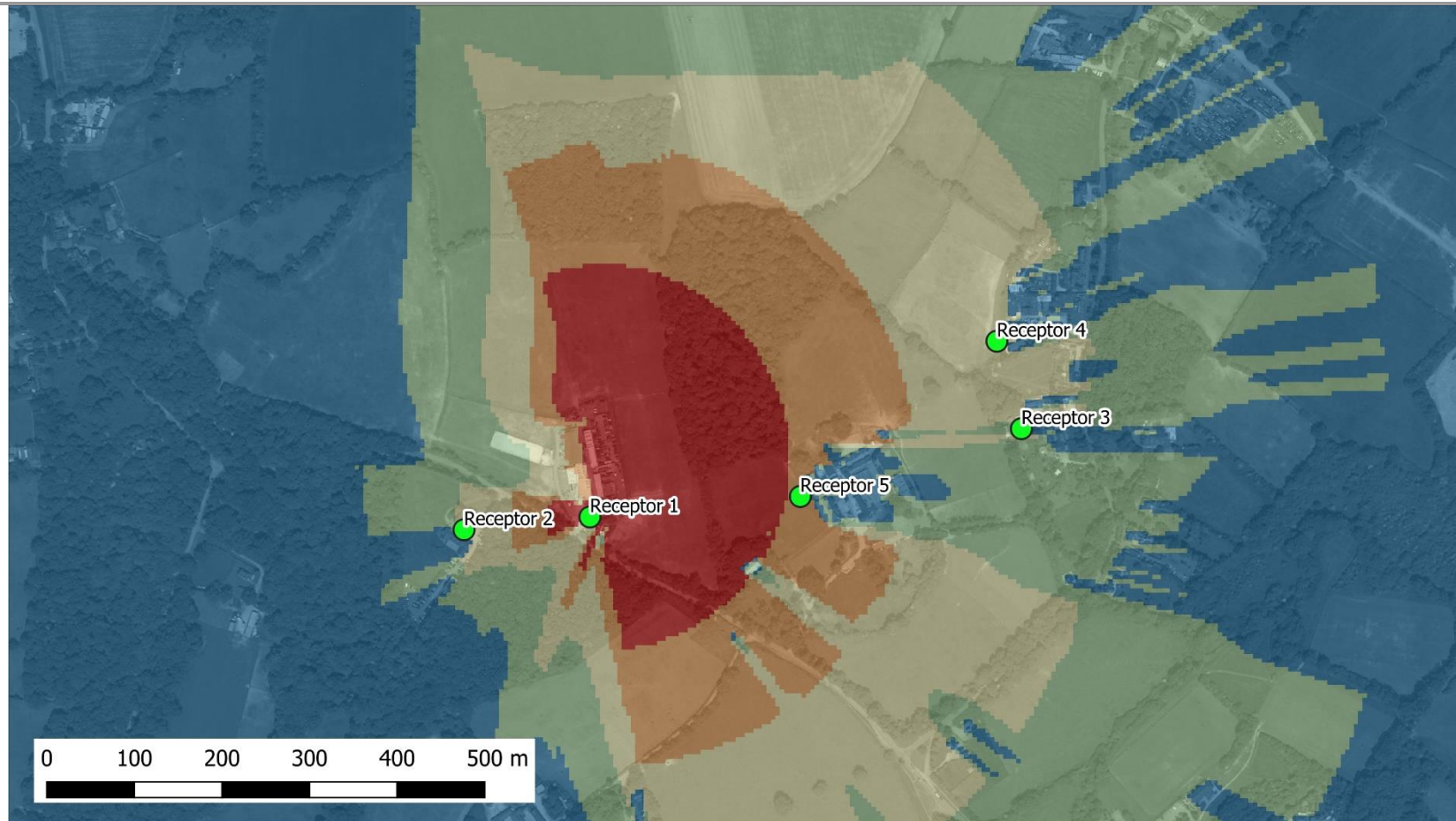
|  |   |   |  |                      |                      |               |
|--|---|---|--|----------------------|----------------------|---------------|
| <p><b>Legend</b></p> <p> Approximate Site Boundary</p> <p> Measurement locations</p> | <p>CLIENT: PJ BROWN (CONSTRUCTION) Ltd.</p>   | <p>SIZE: A4</p>   | <p>TITLE: Site Plan showing noise monitoring locations</p> |                      |                      |               |
|  | <p>Adnitt Acoustics<br/>Renaissance House<br/>32 Upper High Street<br/>Epsom<br/>Surrey, KT17 4QJ<br/>Tel: 020 7099 9735<br/>Fax: 0845 127 5121</p> |  | <p>DATE: 18/01/2019</p>                                    | <p>CHECKED: CT</p>   | <p>PROJECT: 2134</p> |               |
|  | <p>© Google 2019</p>  | <p>DRAWN: RZ</p>  | <p>APPROVED: RZ</p>  | <p>SCALE: 1:5000</p> |                      | <p>REV: -</p> |
|  |   |   | <p>DRAWING: 2134/1901/18/RZ SP1</p>                        |                      |                      |               |

Figure 2134/ SP 2 : Site Plan Proposal

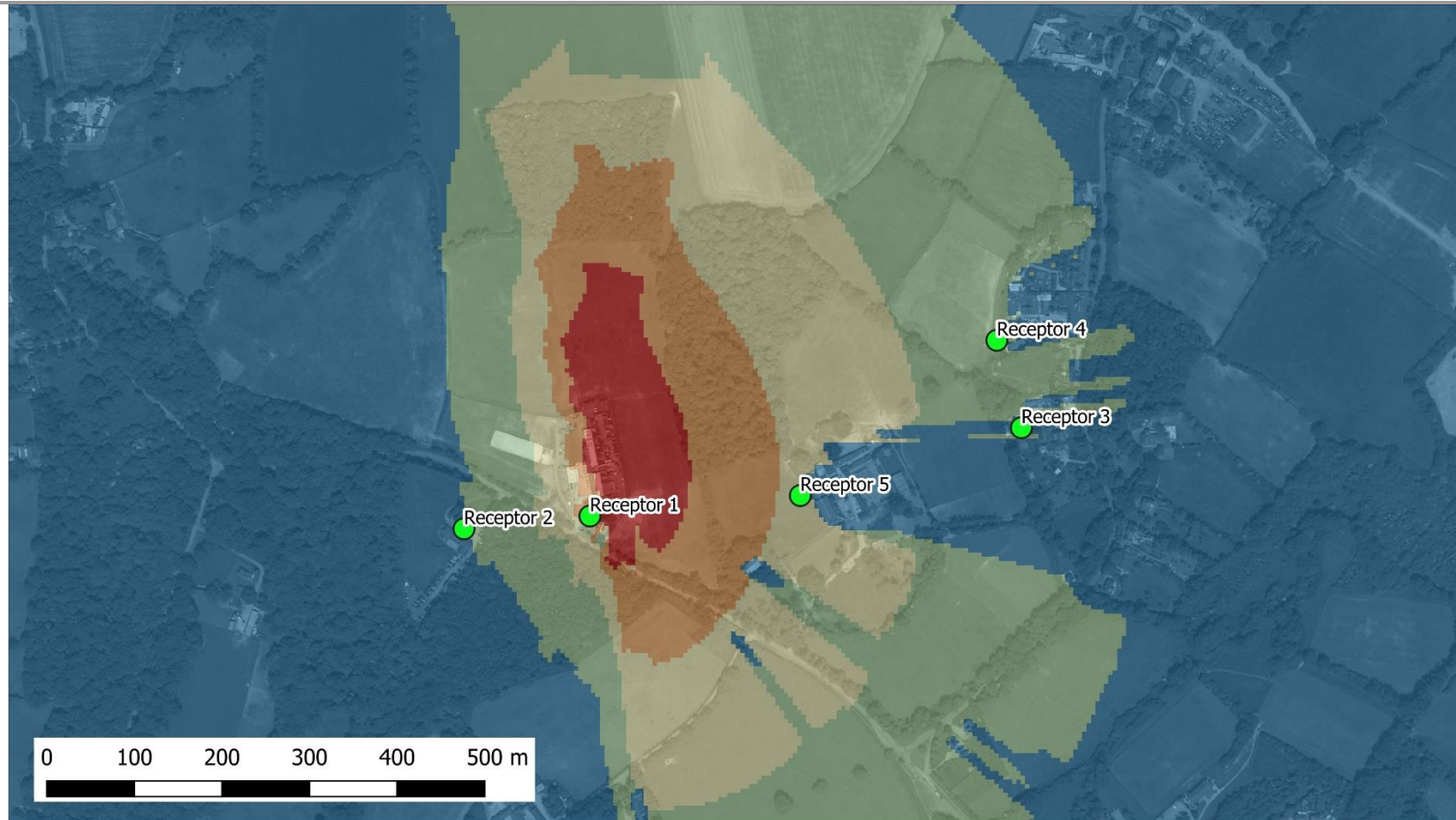


Figure 2134/ NM 1 : Operational Noise Map without mitigation measures



|  |  |  |                               |   |                             |
|--|--|--|-------------------------------|---|-----------------------------|
| <b>Legend</b><br>Predicted Operational Noise Level<br>< 35dB LAeq,T<br>35dB - 40dB LAeq,T<br>40dB - 45dB LAeq,T<br>45dB - 50dB LAeq,T<br>> 50dB LAeq,T | CLIENT: PJ BROWN (CONSTRUCTION) Ltd.<br>Adnitt Acoustics<br>Renaissance House<br>32 Upper High Street<br>Epsom<br>Surrey, KT17 4QJ<br>Tel: 020 7099 9735<br>Fax: 0845 127 5121 |  | SIZE:<br>A4                   | TITLE:<br>Predicted Operational Noise Levels<br>without Mitigation Measures |                             |
|  | © Google 2019  |  | DATE: 18/01/2019<br>DRAWN: RZ |   | CHECKED: CT<br>APPROVED: RZ |
| DRAWING:<br>2134/190118/RZ NM1   |  |  |                               | REV:<br>-   |                             |

Figure 2134/ NM 2 : Operational Noise Map with mitigation measures



|  |  |  |                                |   |                                |           |
|--|--|--|--------------------------------|---|--------------------------------|-----------|
| <b>Legend</b><br>Predicted Operational Noise Level<br>< 35dB LAeq,T<br>35dB - 40dB LAeq,T<br>40dB - 45dB LAeq,T<br>45dB - 50dB LAeq,T<br>> 50dB LAeq,T | CLIENT: PJ BROWN (CONSTRUCTION) Ltd.<br>Adnitt Acoustics<br>Renaissance House<br>32 Upper High Street<br>Epsom<br>Surrey, KT17 4QJ<br>Tel: 020 7099 9735<br>Fax: 0845 127 5121 |  | SIZE:<br>A4                    | TITLE:<br>Predicted Operational Noise Levels with Mitigation Measures |                                |           |
|  | © Google 2019  |  | DATE: 18/01/2019<br>DRAWN: RZ  | CHECKED: CT<br>APPROVED: RZ   | PROJECT: 2134<br>SCALE: 1:6000 | REV:<br>- |
|  |  |  | DRAWING:<br>2134/190118/RZ NM2 |   |                                |           |

Figure 2134/ TH 1 : Time History of Automated Noise Monitoring (Position P1)

