THE EQUUS PARTNERSHIP

Member of the Association of Noise Consultants

CONSULTANTS IN ACOUSTICS

NOISE IMPACT STATEMENT

LAND AT PALK ROAD, HAVANT
Proposed Change of Use and Siting of Two Portakabins

April 2015

Ref: EPL 5414/R1

Report prepared for:

Portsmouth Water Limited

The EQUUS Partnership Ltd
The Garden Office
5 Linkfield Corner
Redhill
RH1 1BD

Registered in England No: 3611876

Tel: 01737 778355
Email: acoustix@equuspartnership.co.uk

CONTENTS

1 INTRODUCTION

2 SITE DESCRIPTION

3 DEVELOPMENT PROPOSALS

4 PLANNING POLICY CONTEXT AND ASSESSMENT GUIDANCE

4.1 National Policy
4.2 Local Policy
4.3 Other Guidance

5 EXISTING NOISE ENVIRONMENT

5.1 Automated Noise Monitoring
5.2 Manned Noise Monitoring
5.3 Weather Conditions
5.4 Noise Survey Results
5.5 Discussion of Results

6 OPERATIONAL NOISE LEVELS

6.1 Source Noise Data

7 NOISE IMPACT OF LOADING/UNLOADING ACTIVITY

7.1 General
7.2 Noise Impact on Properties to North (Brunswick Close)
7.3 Noise Impact on Properties to East (Palk Road)
7.4 Conclusions

8 NOISE IMPACT OF VEHICLE ARRIVALS/DEPARTURES

8.1 General
8.2 Maximum “Pass-By” Sound Levels
8.3 Impact on Existing Ambient Sound Levels
8.4 Conclusions

9 CONCLUSIONS

APPENDICES

APPENDIX A Figure 1*:* Site Plan

APPENDIX B Figure 2: Proposed Siting of Portakabins

APPENDIX C Figure 3*:* Site Plan Showing Noise Monitoring Locations

APPENDIX D Glossary of Acoustic Terminology

APPENDIX E Time History Graphs 1 and 2

APPENDIX F Manufacturer's Literature for "Jakacoustic" Fencing

1 INTRODUCTION

This **Noise Impact Statement** accompanies a planning application submitted by Portsmouth Water Limited. The Planning Application seeks the change of use of land at Palk Road, Havant (to use class B8 storage), including the siting of two "Portakabins".

This **Noise Impact Statement:**

- Presents the results of noise monitoring undertaken at the site to determine existing environmental noise levels that characterise the site.
- Assesses the potential operational impacts of the site, including:
  - noise from deliveries/collections at the site;
  - noise associated with vehicles travelling to/from the site.
- Discusses the acceptability of the proposed use, in accordance with relevant national and local planning policy.

2 SITE DESCRIPTION

The site is an existing pipe storage yard owned by Portsmouth Water located off Palk Road, Havant. The general character of the area comprises a mix of industrial and residential uses.

The northern boundary of the site is formed with Bedhampton railway station. Beyond the railway tracks to the north are the rear gardens of residential properties fronting Bedhampton Road and Brunswick Gardens.

To the east, the site boundary is formed with a chalet style property ("Wengen") fronting Palk Road. Other residential properties ("Clifton Villa", "Bellinger House" and "Chapel House") also front Palk Road.

The southern site boundary is formed with the continuation of Palk Road and gives access to the main entrance of the site and other external storage compounds which lie to the south.

To the west the site adjoins open grassland.

The location of the site and its general environs are shown on **Figure 1** attached at **Appendix A**.

3 DEVELOPMENT PROPOSALS

The planning application seeks the change of use of land to Use Class B8 (Storage) and the siting of two temporary "Portakabins", the proposed locations of which are shown on **Figure 2** attached at Appendix B.

The site will operate as a storage yard for an engineering company contracted by Portsmouth Water to provide maintenance and repair services to Portsmouth Water's utility network. It is understood that operative movements to and from the site will principally comprise light goods vehicles (LGV), i.e. small and large vans with a gross vehicle weight of up to 3.5 tonnes, with stock deliveries made using other goods vehicles (OGV1).

It is understood that the operational hours of the yard will be 07.00 to 19.00 hours weekdays, other than in very rare bona-fide emergencies (e.g. a water main bursting overnight) when pipes/fittings may need to be collected to minimise significant service disruptions.

4 PLANNING POLICY CONTEXT & ASSESSMENT GUIDANCE

In considering the potential noise impact of the proposed development, reference will be made to the following planning policy guidance and 'industry standard' design guidance.

4.1 National Policy

Current governmental guidance relating to the determination of planning applications is given in the "**National Planning Policy Framework"** (NPPF). The NPPF replaces earlier governmental Planning Guidance including Planning Policy Guide Note 24: Planning and Noise (PPG24) which has guided development for the previous 19 years.

Paragraph 109 of the NPPF advises:

> *"The planning system should contribute to and enhance the natural and local environment by:*
>
> - *protecting and enhancing valued landscapes, geological conservation interests and soils;*
> - *recognising the wider benefits of ecosystem services;*
> - *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
> - *preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
> - *remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.*

With specific regard to noise, paragraph 123 of the NPPF states:

> *"Planning policies and decisions should aim to:*
>
> - *avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;*
> - *mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;*

- *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and*

- *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason."*

With regard to the *"adverse impacts"* referred to in the first two of the above bullet points, the NPPF directs the reader to the advice contained in DEFRA's "**Noise Policy Statement for England"** (NPSE). This Policy Statement introduces the concept of a "*Significant Observed Adverse Effect Level*" (SOAEL), "Lowest Observed Adverse Effect Level" (LOAEL) and "*No Observed Adverse Effect Level*" (NOAEL). However, whilst the intent of the NPSE in relation to the NPPF is clear, the Noise Policy Statement for England does not, at this time, provide any quantitative threshold values for each identified level of "effect". Indeed, the NPSE carefully highlights 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."*

The Government has now issued *"National Planning Practice Guidance"* to assist in understanding the perception of noise effects, outcomes and actions that should be taken to align decision making with the NPPF.

The table below sets out this guidance:

Table 1: NPPG Advice

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	**No specific measures required**
No Observed Adverse Effect Level (NOAEL)			
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 (LOAEL)			
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; closing windows for some of the time because of the noise. Potential for non-awakening 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 (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. 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	Unacceptable Adverse Effect	**Prevent**

In light of the above, it can be seen that whilst the NPPF and associated planning practice guidance sets out stringent imperatives to ensure the satisfactory development of land in relation to possible noise impacts, the NPPF does not generally provide any detailed technical guidance defining what may be considered to constitute a *"significant" or "other"* adverse impact. In the absence of such technical guidance, reference needs to be been made

to sustainable development standards set out in local policy and/or relevant *'industry standard'* guidance, as set out later in this report.

4.2 Local Policy

Havant Borough Council's adopted "Core Strategy" includes the following policies in relation to noise:

Policy CS16 High Quality Design

Planning permission will be granted for development that is designed to a high standard, which helps to create places where people want to live, work and relax. All development should demonstrate that its design:

1. Responds to, draws inspiration from and respects local context and:
……
e) The development does not cause unacceptable harm to the amenity of neighbours through smell, the loss of privacy, outlook, noise and overlooking.
…….
6. Mitigates negative environmental impacts through sustainable design and construction methods, resource efficiencies, particularly water and the provision of facilities for waste recycling.

7. Adapts to the changing needs of the users and the changing climate over the lifespan of the building.

DM10 Pollution

Development that may cause pollution of water, air or soil or pollution through noise, smell, smoke, fumes, gases, steam, dust, vibration, light, heat, electromagnetic radiation and other pollutants will only be permitted where all of the following relevant criteria can
be met:

1. *The health and safety of existing and future users of the site, or nearby occupiers and residents is not put at risk.*

2. *National air quality standards or objectives would not be breached.*

3. *The water environment would not be detrimentally affected.*

4. *It would not lead to an unacceptable deterioration in the quality or potential yield of coastal, surface and ground water resources.*

5. *External lighting is of the minimum level of illumination and duration required for security and operational purposes.*

6. *External lighting would not interfere with safe navigation in either Chichester or Langstone Harbours and other coastal locations.*

The Council has also adopted various Supplementary Planning Guidance documents. However, these do not provide any specific quantitative guidance relating to the noise standards.

4.3 Other Guidance

Industry standard guidance documents relating to noise include:

4.3.1 BS 4142: 2014: *"Methods for Rating and Assessing Industrial and Commercial Sound"*

This recently updated standard assists in assessing the likelihood of adverse impact from industrial and commercial noise sources on neighbouring dwellings.

The initial assessment procedure outlined in BS 4142 essentially compares the "Rating Level" of the source with the "Background Noise Level" when the source is not present.

The "Rating Level" (L_{Ar}) referred to is the specific noise level of the noise source under investigation (in terms of the L_{Aeq} noise index), to which corrections are applied if the noise has certain audible characteristics.

The "Background Noise Level" (L_{A90}) represents the noise level that is exceeded for 90% of the stated measurement period. For assessment purposes, the background noise level needs to be determined without the noise source under investigation operating.

The time of operation needs to be taken into account. During the day (normally taken to be 07.00 to 23.00 hours) a one hour measurement period is considered appropriate. During the night (normally taken to be 23.00 – 07.00 hours) a 15 minute time period is normally used.

The following guidance is then offered based on the outcome of this initial assessment:

a) Typically, the greater the rating/background level difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB 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 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.

A note accompanying the above guidance states:

> *"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 initial estimate of the impact should then be modified to account for its context. Such considerations include:

(i) The absolute level of the sound - the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low. 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.

(ii) Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.

(iii) The character and level of the residual sound compared to the character and level of the specific sound.

(iv) The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

4.3.2 IEMA "Guidelines for Environmental Noise Impact Assessment" (2014)

The IEMA guidelines present good practice standards for the scope, content and methodology of noise impact assessments. Table 7.7 of the guidelines presents the following generic relationship between noise impact (magnitude) and noise effect (magnitude + sensitivity), including the evaluation of effect significance:

Perception		Description of Effects	Significance
Substantial	**BENEFICIAL**	**Receptor Perception = Marked Change** Causes a material change in behaviour and/or attitude. E.g. individuals begin to engage in activities previously avoided due to preceding environmental noise conditions. Quality of life enhanced due to change in character of the area.	**More Likely to be Significant** (Greater justification needed – based on impact magnitude and receptor sensitivities – to justify a non-significant effect) ↕ (Greater justification needed – based on impact magnitude and receptor sensitivities – to justify a non-significant effect) **Less Likely to be Significant**
Moderate		**Receptor Perception = Noticeable Improvement** Improved noise climate resulting in small changes in behaviour and/or attitude, e.g. turning down volume on television; speaking more quietly; opening windows. Affects the character of the area such that there is a perceived change in the quality of life.	
Slight		**Receptor Perception = Just Noticeable Improvement** Improved noise climate resulting in small changes in behaviour and/or attitude, e.g. turning down volume on television; speaking more quietly; opening windows. Affects the character of the area such that there is a perceived change in the quality of life.	
Negligible		**N/A = No discernible effect on the receptor**	**Not Significant**
Slight	**ADVERSE**	**Receptor Perception = Just Noticeable Improvement** Noise impact can be heard, but does not cause any change in behaviour or attitude, e.g. turning up volume of television; speaking more loudly; closing windows. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life.	**Less Likely to be Significant** (Greater justification needed – based on impact magnitude and receptor sensitivities – to justify a significant effect) ↕ (Greater justification needed – based on impact magnitude and receptor sensitivities – to justify a non-significant effect) **Less Likely to be Significant**
Moderate		**Receptor Perception = Just Noticeable Improvement** Noise impact can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows. Potential for non-awakening sleep disturbance. Affects the character of the area such that there is a perceived change in the quality of life.	
Substantial		**Receptor Perception = Disruptive** Causes a material change if behaviour and/or attitude, e.g. avoided certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in character of the area.	
Severe		**Receptor Perception = Physical Harm** Significant 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**

5 EXISTING NOISE ENVIRONMENT

Existing environmental noise levels at the site have been determined using a combination of automated and critical period manned surveys.

5.1 Automated Noise Monitoring

General

An automated noise data logger was installed at measurement location A1 shown on **Figure 3** attached at **Appendix C**. The equipment was installed to continuously monitor noise levels over a twenty four hour period between 17 and 18 March 2015.

The measurement microphone was positioned on a microphone boom approximately 2.4m above ground level, in essentially free-field conditions. The noise levels measured are considered to be representative of noise levels characterizing properties in Brunswick Gardens which overlook the site to the north.

Instrumentation

The following instrumentation was used for the survey.

Table 1: Measurement Instrumentation

Measurement Location	Instrumentation	
A1	Larson Davis Sound Level Analyser GRAS ½" Condenser Microphone Brüel and Kjær Sound Level Calibrator Outdoor Weather Protection	Type 824 Type 40AE Type 4230

Procedure

The equipment was programmed to record measurements of the L_{A90}, L_{Aeq}, L_{A10} and $L_{Amax,fast}$ sound levels were made over consecutive 15 minute sample period in each hour. The datalogger was also programmed to record octave band frequency spectra to

provide more detailed information regarding the frequency characteristics of incident noise levels.

Please refer to **Appendix D** for an explanation of the acoustic terminology used above.

The sound level analysers were calibrated prior to the surveys and the calibration was checked upon completion. No drift was found to have occurred.

5.2 Manned Noise Monitoring

General

In addition to automated noise monitoring, short term attended noise measurements were also made to provide additional information regarding the variation of noise levels around the site. Noise levels were made at the following locations:

Table 2: Manned Noise Monitoring Locations

Measurement Location	Description
M1	Outside "Bellinger House" on Palk Road. The tripod mounted measurement microphone was positioned approximately 1.5m above ground level and approximately 3.5m from the Palk Road façade of Bellinger House.
M2	Approximately mid-way along the northern boundary of the site. The tripod mounted measurement microphone was positioned approximately 1.5m above ground level in "free-field" conditions.
M3	Towards the south-eastern corner of the site. The tripod mounted measurement microphone was positioned approximately 1.5m above ground level in free field conditions.

The approximate locations of the measurement positions are shown on **Figure 3** attached at **Appendix C**.

Instrumentation

The following instrumentation was used for the manned measurements.

Table 3: Measurement Instrumentation for Attended Noise Monitoring

Measurement Location	Instrumentation	
M1, M2, M3	Brüel and Kjær Sound Level Analyser Brüel and Kjær ½" Condenser Microphone Brüel and Kjær Sound Level Calibrator Microphone Windshield	Type 2250 Type 4189 Type 4231

Measurements at Position M1 were made between 06.30 to 09.00 hours, to provide a detailed description of the noise environment in the vicinity of the residential properties in Palk Road (including existing traffic movements).

Measurement at Positions M2 and M3 were made between 11.00 to 13.00 hours, to help provide information regarding the variation of noise levels around the site.

Procedure

At Position M1 the equipment was programmed to record measurements of the L_{A90}, L_{Aeq}, L_{A10} and $L_{Amax,fast}$ sound levels were made over consecutive 1 second time periods to provide a detailed description of the noise climate. For presentation purposes, the data has been post-processed using Bruel and Kjaer "Evaluator" software to resolve data to consecutive 5 minute reference periods.

At Positions M2 and M3, the equipment was programmed to record measurements of the L_{A90}, L_{Aeq}, L_{A10} and $L_{Amax,fast}$ sound levels were made over a notional 15 minute sample period in each hour.

The sound level analyser was calibrated prior to each survey period and the calibration was checked upon completion. No drift was found to have occurred.

5.3 Weather Conditions

Weather conditions were not measured during the survey, but observations during site attendances were of sunny, mild and calm conditions. Local historic weather station observations indicate a maximum daytime temperature of around 13°C and a minimum

night-time temperatures of around 4°C. Average wind speeds were generally light (<5km/h), with a predominant northerly direction. There was no recorded precipitation.

5.4 Noise Survey Results

Automated noise monitoring results (at Position A1) are presented on **Time History Graph A1** attached at **Appendix E**.

Short term manned noise monitoring results at Position M1 are presented on **Time History Graph M1**, also attached at **Appendix E**.

Noise monitoring results for Positions M2 and M3 are summarised in **Table 4** below.

5.5 Discussion of Results

Background noise levels at all measurement locations are dominated by distant, fast moving traffic noise and, at times, local birdsong.

Noise levels across the site are also significantly influenced by transient noise associated with train movements on the adjoining railway. Transient noise is also generated by the level crossing on West Street. This includes noise from warning sounders as the barriers are about to close, and various impact type sounds when the barriers operate.

Noise levels at Position M1 are also influenced by traffic movements on West Street and Palk Road. Movements on Palk Road included car movements associated with the daily comings and goings of residents and commercial vehicle movements (LGV and OGV1) associated with existing storage/distribution uses.

During the daytime (from approximately 08.00 hours) noise associated with existing storage/distribution (e.g. use of fork lift trucks, general goods movements), etc. was audible.

The following table provides a summary and comparison of noise levels for each location:

Table 4: Summary of Measured Sound Levels

Position	Average Daytime ($L_{Aeq,16hour}$)	Range of Daytime $L_{Aeq,15minute}$ Values	Average Night-time ($L_{Aeq,8hour}$)	Range of Night-time $L_{Aeq,15minute}$ Values	Typical Daytime $L_{A90,15mins}$	Typical Night-time $L_{A90,15mins}$	Daytime $L_{Amax,fast}$ values Range / (Average)	Night-time $L_{Amax,fast}$ values Range / (Average)
A1	56	52 - 62	50	39 - 56	44	32	69 - 87 (77)	54 - 75 (70)
M1	-	58 - 60	-	58-59	54	56	72 – 81 (77)	68 – 79 (75)
M2	-	52 - 54	--	--	45	--	69 – 72	--
M3	-	53 - 54	--	--	45	--	69 – 72	--

Notes: Values reported for Position M1 are based on the results of measurements undertaken between 06.15 and 07.00 hours.
Values reported for Position M2 and M3 are based on measurements undertaken between 10.00 and 13.00 hours.

6 OPERATIONAL NOISE LEVELS

6.1 Source Noise Data

Loading/Unloading

Noise generated by vehicle's loading/unloading may be variable due to the specific goods being delivered/collected from the site. For the purposes of this report, source noise data for loading/unloading activities has been extracted from the EQUUS Partnership's in-house database and is summarised in **Table 5** below. These data represent a 5 minute period of material handling during unloading activity.

Table 5: Loading/Unloading Activity Source Noise Levels

Loading/Unloading Source Noise Data (at 10m)	
$L_{Aeq,5mins}$	$L_{Amax,fast}$
53	77

Vehicle Movements

Noise levels generated by vehicle movements to/from the site have determined by direct noise measurement of existing vehicle movement on Park Road, as measured at Position M1, which is approximately 3.5m from the nearside kerb of Palk Road. These data (expressed in terms of the maximum "drive by" level ($L_{Amax,fast}$) and sound exposure values (L_{AE}) are summarised in **Table 6** below:

Table 6: Vehicle Pass-By Source Noise Levels

Vehicle Type	Vehicle Pass-By Noise Level (as measured at Position M1)	
	L_{AE}	$L_{Amax,fast}$
LGV	80	77
OGV1	74	73

7 NOISE IMPACT OF LOADING/UNLOADING ACTIVITY

7.1 General

The level of noise generated by an individual loading/unloading event will vary depending on the specific location of the delivery/collection event on the site. In order to reflect this, the assessments presented below are based on assumed activity at the nearest boundary to the receptor location; at the furthest distance from the receptor location and at a mid-point between the two.

Calculations have been undertaken to assess environmental noise levels generated by loading and unloading activities based on the source noise data presented in Section 7 and in general accordance with the procedures of ISO 9613-3: 1996, with appropriate allowances made for plant directivity and propagation attenuation, etc.

In order to review the potential impact of proposed loading /unloading activities the most appropriate assessment guidance is considered to be that contained within BS 4142: 2014: *"Methods for Rating and Assessing Industrial Noise"*. Section 1.1 of this standard specifically indicates that the assessment methodology is suitable for *"sound from the loading and unloading of goods and materials at industrial and/or commercial premises"*.

The assessments presented below therefore review the likely significance of noise emissions from the proposed use based on the guidance of BS 4142. It should, however, be noted that an important element of the BS 4142 assessment method is to consider the context of the noise. The magnitude and character of operational noise has, therefore, also been considered in the context of the existing noise climate observed at the site.

7.2 Noise Impact on Properties to North (Brunswick Close)

The northern boundary of the site is estimated to be approximately 24m from the nearest residential property in Brunswick Close (no. 5). The furthest point of the site is estimated to be around 100m from this property.

Table 7: Loading/Unloading Noise Levels on 5 Brunswick Close

Noise Index	Predicted Loading/Unloading Noise Level		
	"Near" Event	"Mid-Point" Event	"Far" Event
$L_{Aeq,5mins}$	40	36	33
$L_{Amax,fast}$	64	60	57

BS 4142: 2014

BS 4142: 2014 promotes the use of a one hour measurement period to determine the likely significant of industrial noise. If it is assume that deliveries will be equally distributed around the site, the specific sound level for a one hour period is calculated to be 38 dB $L_{Aeq,1hour}$.

Loading and unloading type activities are inherently characterised by impact type sounds. The guidance of BS 4142: 2014 recommends that a character correction of 6dB is applied to noise source where impulsivity is "clearly perceptible".

Applying the above character correction to the specific noise level yields a rating level of 44dB.

Based on the data presented on Time History Graph T1, the representative background noise likely to be experienced by properties in Brunswick Close is determined to be 44dB L_{A90}.

It can therefore be seen that the rating level of the proposed use is unlikely to exceed the existing representative background noise level at the site. The guidance of BS 4142: 2014 states:

> *"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.*

Context

With regard to context, it is considered to be materially relevant to note that (a) the site already operates as a pipe storage facility and some degree of existing lawful operational

noise from the site already includes the types of noise that would be introduced by the operational development sought by the planning applications; and (b) other outdoor storage uses also operate in the vicinity of the site and generate similar types of noise to that proposed. The character of the proposed use is not therefore considered likely to increase the probability of disturbance compared with existing noise sources characterising the site.

It is also informative to note that predicted operational noise levels are likely to be significantly lower than existing ambient and maximum sound levels which characterise the site. To amplify on this, it can be seen that the noise monitoring results for Position A indicate that daytime $L_{Aeq,15minute}$ sound levels at the site range from 52 to 62 dB. These values are substantially higher than the predicted levels of operational noise and therefore suggest the proposed operations will not result in any significant increase on existing ambient noise levels.

Table 4 also indicates that during the proposed operational hours, existing $L_{Amax,fast}$ sound levels at the site range between 69-87dB $L_{Amax,fast}$. It is again clear that these values are substantially higher than predicted values of operational noise (57 To 64 dB $L_{Amax,fast}$).

Conclusion

In light of the above, it is concluded that the proposed use should not have any significant adverse noise impacts on existing residential properties in Brunswick Close.

7.3 Noise Impact on Properties to East (Palk Road)

The eastern site boundary immediately adjoins residential accommodation ("Wengen", fronting Palk Road). As noted in section 3 above, it is proposed to locate a Portakabin adjacent to the eastern site boundary and another alongside the northern boundary with Bedhampton Station. With these Portakabin's in place, it is assumed that loading/unloading activity would not occur within approximately 20m of the adjoining residential property. The far side of the proposed works compound is approximately 120m from this nearest dwelling.

Based on the above, the following operational noise levels are calculated:

Table 8: Loading/Unloading Noise Levels on "Wengen", Palk Road

Noise Index	Predicted Loading/Unloading Noise Level		
	"Near" Event	"Mid-Point" Event	"Far" Event
$L_{Aeq,5mins}$	42	31	26
$L_{Amax,fast}$	66	55	50

BS 4142: 2014

BS 4142: 2014 promotes the use of a one hour measurement period to determine the likely significant of industrial noise. If it is assume that deliveries will be equally distributed around the site, the specific sound level for a one hour period is calculated to be 38 dB $L_{Aeq,1hour}$.

Loading and unloading type activities are inherently characterised by impact type sounds. The guidance of BS 4142: 2014 recommends that a character correction of 6dB is applied to noise source where impulsivity is "clearly perceptible".

Applying the above character correction to the specific noise level yields a rating level of 44dB.

The representative background noise level measured at Position M2 (adjacent to the side boundary to Wengen) is determined to be 45dB L_{A90}.

It is therefore concluded that the rating level of the proposed use is likely to be around 1dB **lower** than the representative background noise level at the site. As noted above, where the rating level of a sound source does not exceed the background level, this can be taken as an indication of the source having a low impact.

Context

As noted earlier, the site already operates as a pipe storage facility and some degree of existing lawful operational noise from the site already includes the types of noise that would be introduced by the operational development sought by the planning applications, and other outdoor storage uses also operate in the vicinity of the site and generate similar types of noise to that proposed. The character of the proposed use is not therefore considered

likely to increase the probability of disturbance compared with existing noise sources characterising the site.

Predicted operational noise levels are also predicted to be significantly lower than existing ambient and maximum sound levels which characterise the site.

Conclusion

In light of the above, it is concluded that the proposed use should not have any significant adverse noise impacts on existing residential properties in Brunswick Close.

7.4 Conclusions

Assessments of noise associated with loading and unloading activities conclude that the proposed use should not have any significant noise impacts on existing residential properties in the vicinity of the site. It is therefore concluded that the development will not cause unacceptable harm to the amenity of adjoining neighbours and therefore complies with Policies CS16 and DM10 of the Havant Borough Council's adopted core strategy.

In addition to avoiding significant adverse noise impacts, National Planning Policy Framework requires that developments *"mitigate and reduce to a minimum"* other adverse impacts on health and quality of life. Whilst assessments indicate that the operational noise associated with the development should not adversely impact on the health or quality of life of the site's residential neighbours, there are a number of practical measures that will help ensure that noise from the site is reduced to a minimum. These include:

(a) When arranging stock at the site, goods that are required more frequently should be located furthest from the northern and eastern boundaries of the site to maximum the distance (and thus minimise noise levels) associated with the most regular loading/unloading events.

(b) A close boarded timber fence is installed along the eastern boundary of the site (to replace or supplement) the existing fence to this boundary and maximise acoustic screening afforded to the ground floor window and garden area of the adjoining property. It is recommended that the fence is extends to a height of 2.0m and is solid with a minimum superficial mass per unit area of 10kg/m^2. Manufacturer's literature for

an acoustically suitable proprietary acoustic fencing system, “Jakacoustic” fencing by Jacksons Fencing is attached at **Appendix F**.

In summary, it is concluded that the proposed development complies with both national and local planning policies.

8 NOISE IMPACT OF VEHICLE ARRIVALS/DEPARTURES

8.1 General

As noted earlier, the main entrance to the site is accessed via Palk Road. An assessment of noise generated by vehicle movements on existing residential properties on the eastern stretch of Palk Road has therefore been undertaken.

8.2 Maximum "Pass-By" Sound Levels

Based on the data presented in **Table 6**, LGV and OGV1 vehicle movements on Palk Road are predicted to produce typical maximum sound levels of 73 and 77dB $L_{Amax,fast}$, (predicted at Position M1, outside Bellinger House). By reference to **Table 4** and **Time History Graph 2**, it can be seen that such noise levels are within the range of magnitude of noise levels already experienced at this location.

The above conclusion is not unexpected, since Palk Road is already used as an access route for other industrial uses to the south of the site, and therefore already routinely experiences noise from the types of vehicle that would be associated with the proposed use.

8.3 Impact on Existing Ambient Sound Levels

In addition to the magnitude of individual noise events, the assessment below considers the potential significance of possible longer term changes to existing ambient noise levels, due to additional vehicle movements that may be introduced by the proposed change of use. Since the "additional" noise sources under investigation already form a characteristics of noise experienced by dwellings on Palk Road, the significance of potential impacts are considered to be most appropriately assessed by considering the change in the L_{Aeq} noise index. In determining the potential significance of effects, it is proposed to adopt the effect descriptor matrix given in Table 7-12 of the Institute of Environmental Management and Assessment's *"Guidelines for Environmental Noise Impact Assessments"*. This classification is summarised in **Table 9** below:

Table 9: Proposed Effect Descriptors Based on Table 7-12 of IEMA Guidance

None/Not Significant	Less than 2.9dB L_{Aeq} change in sound level and/or all receptors are of negligible sensitivity to noise or marginal to the zone of influence of the proposals
Slight	A 3 to 4.9 dB L_{Aeq} change in sound level at a receptor of some sensitivity
Moderate	A 3 to 4.9 dB L_{Aeq} change in sound level at a sensitive or highly sensitive noise receptor, or a greater than 5dB L_{Aeq} change in sound level at a receptor of some sensitivity
Substantial	Greater than 5dB L_{Aeq} change on sound level at a noise sensitive receptor, or a 5 to 9.9 dB L_{Aeq} change in sound level at a receptor of great sensitivity to noise
Very Substantial	Greater than 10dB L_{Aeq} change in sound level perceived at a receptor of great sensitivity to noise

Based on the above guidance, it can be seen that in order for the potential impact of additional traffic to be considered to have *"no effect"* or *"an insignificant effect"*, existing ambient noise levels should not be increased by more than 2.9 L_{Aeq}.

The results of noise monitoring undertaken at Position M1 give typical $L_{Aeq,1hour}$ noise level of 58-59dB $L_{Aeq,1hour}$. In order for this value not to be increased by more than 2.9dB would require the noise from additional traffic movements to be 57.7 dB $L_{Aeq,1hour}$ or less. Calculations indicate that this level of noise would equate to Palk Road being used by an additional 93 LGV movements or 23 OGV1 movements in a one hour period.

It is not expected that the proposed change of use would generate such volumes of traffic. It is therefore concluded that the proposed change of use will not have a significant impact on existing dwellings in Palk Road.

8.4 Conclusions

An assessment of noise impacts associated with lorry movements to/from the site indicates that the proposed change of use should not give rise to any significant adverse noise impact on existing dwellings in Palk Road and that traffic generation associated with the proposed

change of use should comply fully with noise related policies of the National Planning Policy Framework and Havant Borough Council's adopted Core Strategy.

9 CONCLUSIONS

Baseline Environmental Noise Levels

An environmental noise survey has been undertaken to determine existing noise levels in the vicinity of the proposed development site. Noise levels were found to be dominated by local rail movements, local and distant road traffic movement, noise from existing industrial uses in the vicinity of the site and birdsong.

Noise Impact of Loading/Unloading Activities

Noise impact assessment calculations indicate that noise associated with loading/unloading activities should not have any significant adverse noise impacts.

However, in order to reduce noise levels to a minimum (in line with the spirit of National Planning Policy guidance), it is recommended that new fencing is installed along the eastern boundary of the site and that stock stored on the site is arranged so as to located more frequently delivered/collected items as far as practicable from the northern and eastern boundaries of the site.

Noise Impact of Vehicle Movements To/From The Site

An assessment of noise impacts associated with lorry movements to/from the site indicates that the proposed change of use should not give rise to any significant adverse noise impact on existing dwellings in Palk Road.

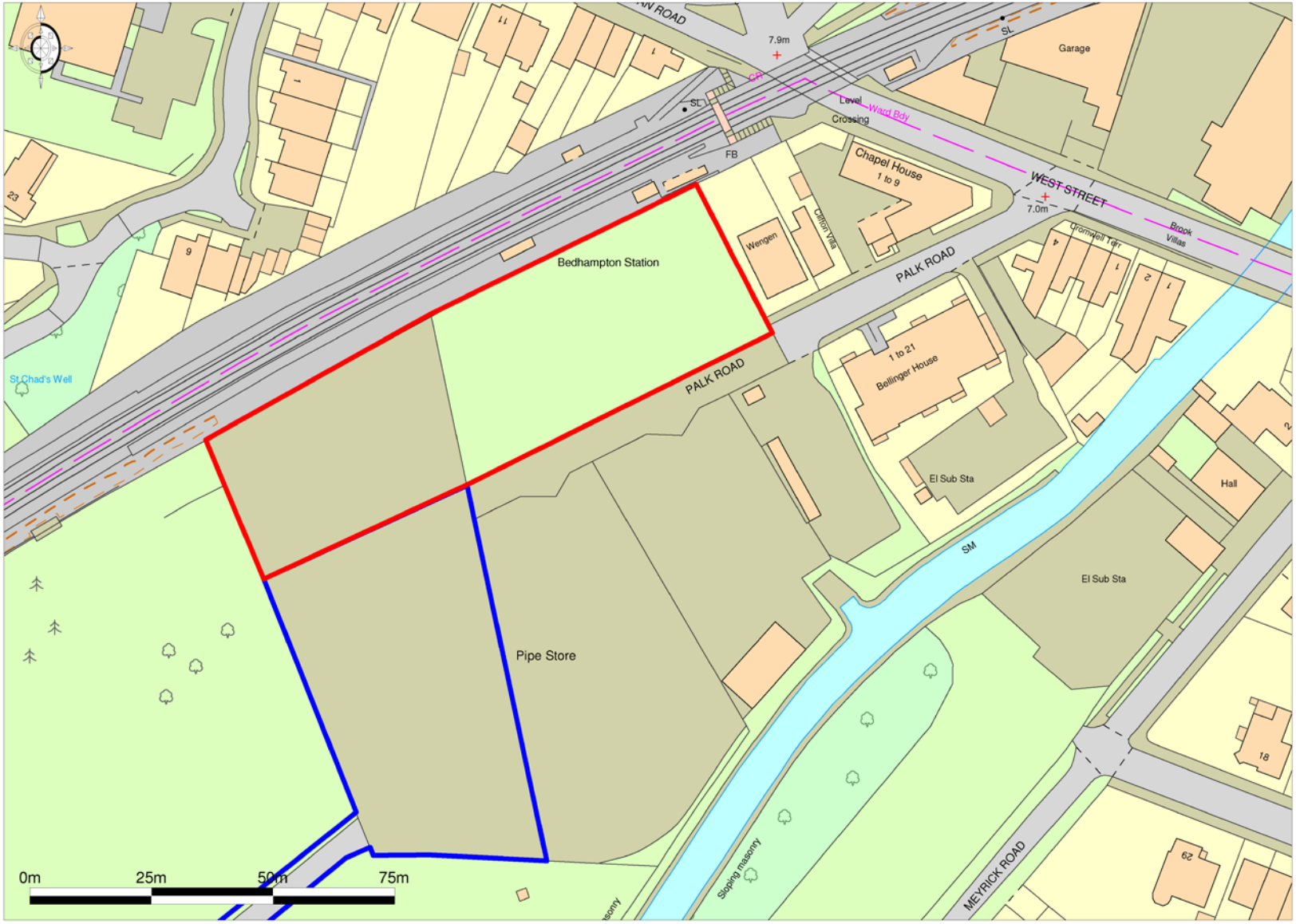
Overall Conclusions

An assessment of possible noise impacts associated with the proposed development concludes that the development should not give rise to any “significant” noise impacts and that “other” impacts can be satisfactorily mitigated and reduced to a minimum, in accordance with paragraph 123 of the National Planning Policy Framework.

In view of the above conclusions, the proposed development is considered to comply fully with relevant local and governmental planning policy guidance.

PAUL GRAY BSc(Hons), MIOA
Associate

APPENDIX A



Ordnance Survey © Crown Copyright 2015. All rights reserved. Licence number 100022432. Plotted Scale - 1:1250

Promap®

THE EQUUS PARTNERSHIP
Member of the Association of Noise Consultants
CONSULTANTS IN ACOUSTICS

Portsmouth Water
Palk Road, Havant

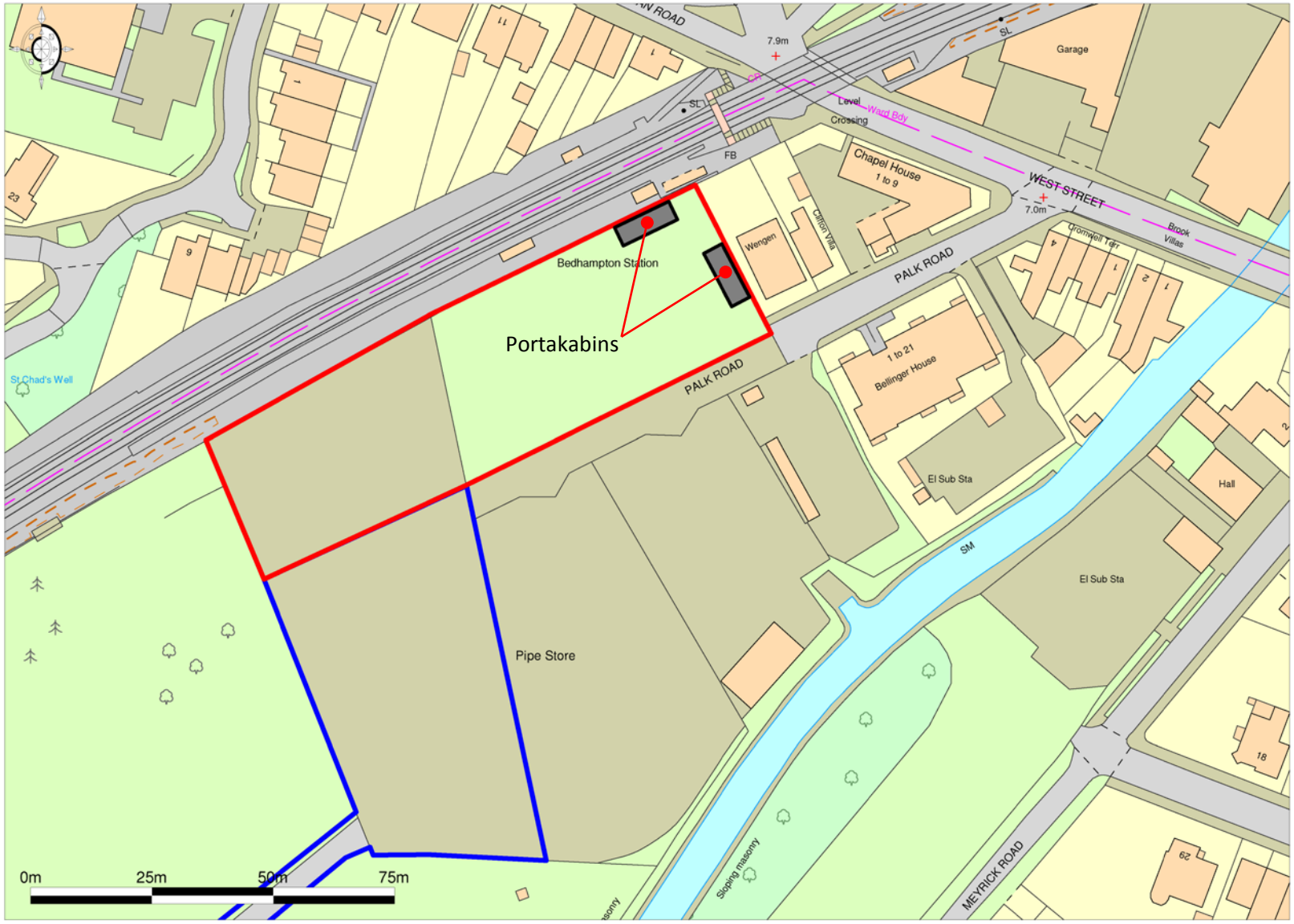
Site Location Plan

Date: April 2015

Scale: NTS

Drawing Ref: Figure 1

APPENDIX B



Ordnance Survey © Crown Copyright 2015. All rights reserved. Licence number 100022432. Plotted Scale - 1:1250

Promap®

THE EQUUS PARTNERSHIP
Member of the Association of Noise Consultants
CONSULTANTS IN ACOUSTICS

Portsmouth Water
Palk Road, Havant

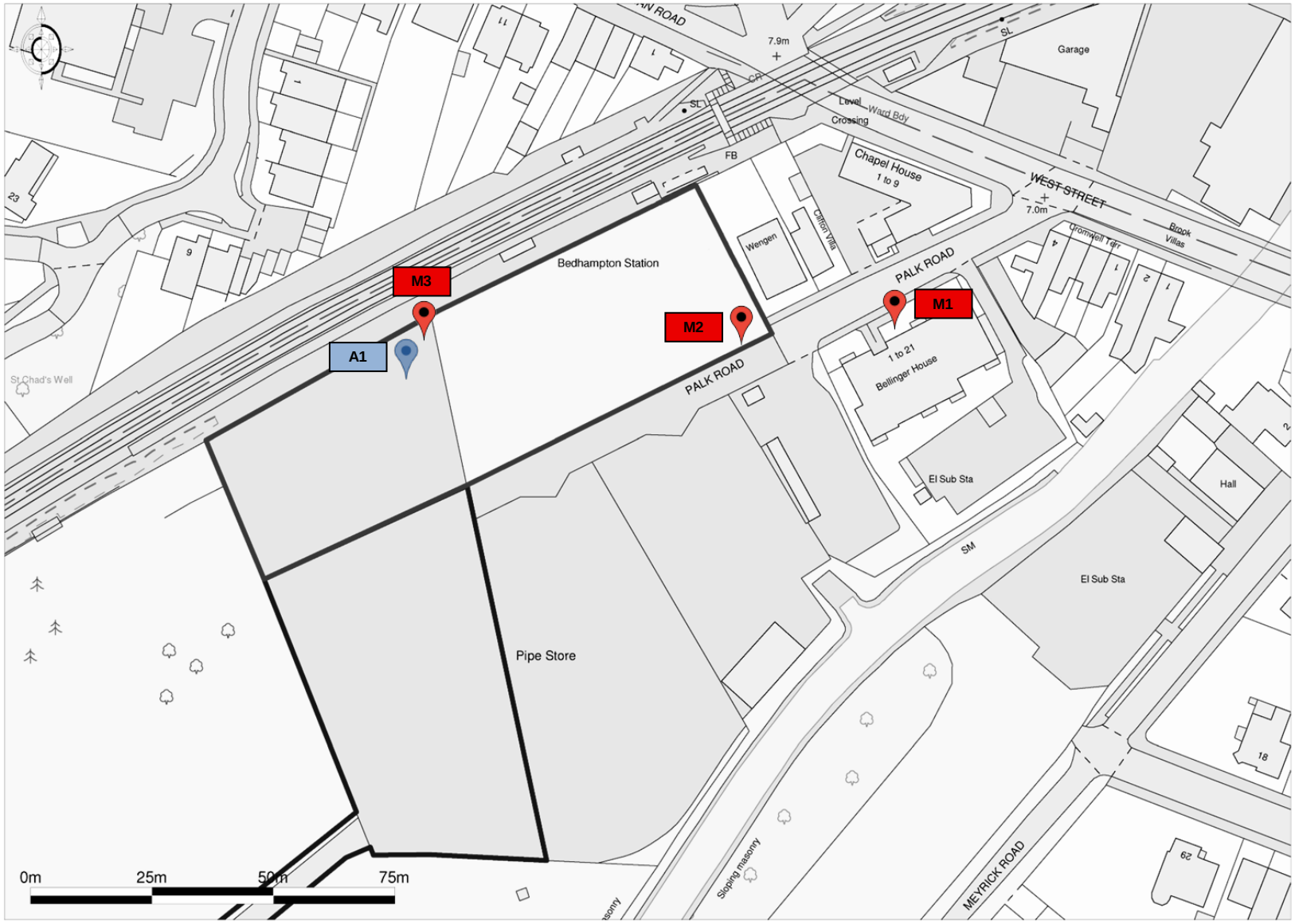
Proposed Siting of Portakabins

Date: April 2015

Scale: NTS

Drawing Ref: Figure 2

APPENDIX C



Ordnance Survey © Crown Copyright 2015. All rights reserved. Licence number 100022432. Plotted Scale - 1:1250

Promap®

THE EQUUS PARTNERSHIP
Member of the Association of Noise Consultants
CONSULTANTS IN ACOUSTICS

Portsmouth Water
Palk Road, Havant

Noise Monitoring Locations

Date: April 2015

Scale: NTS

Drawing Ref: Figure 1

APPENDIX D

GLOSSARY OF ACOUSTIC TERMINOLOGY

THE EQUUS PARTNERSHIP
Member of the Association of Noise Consultants
CONSULTANTS IN ACOUSTICS

General

A vibrating surface or turbulent fluid flow will cause pressure fluctuations in the surrounding air. These pressure fluctuations are perceived by the human ear as "sound".

Measurement Units

The human ear can detect sound pressures as low as about 20 µPa, and can tolerate (for short periods) sound pressures as high as 200 Pa, an amplitude range of 10 million times. To take account of this huge amplitude range, sound pressure levels (often written in "acoustic shorthand" as SPL or Lp) are quantified using a logarithmic scale, the decibel (dB) scale. This is based on a reference pressure of 20µPa, thus a sound pressure of 20µPa would equate to 0dB and a pressure of 200Pa would equate to 140dB.

Frequency (Pitch) Characteristics

The sound received at any particular location is not solely influenced by the sound pressure level, the frequency characteristics (pitch) of the noise is also an important factor. Noise audible to a human (with "normal" hearing), typically covers the frequency range 20 Hertz to 20,000 Hertz. Hertz (Hz) are defined as the number of times the sound pressure fluctuates in one second. "Low" pitched sounds fluctuate less times per second than "high" pitched sounds. Whilst humans are capable of detecting a wide range of frequencies, the ear is not equally sensitive to all frequencies – the ear is most sensitive at frequencies towards the middle of the audible range and less sensitive to the lower and higher frequencies.

To take account of this frequency response, sound pressure fluctuations are normally quantified by applying a frequency-weighting network or filter which simulates the frequency response of the ear. In essence, this means that more significance is given to the frequencies at which the ear is most sensitive and less significance to those at which the ear is less sensitive. Noise measurements relating to human reaction are generally made using an "A-weighting" network. These measurements are reported as A-weighted decibels or dB(A). The A-weighted sound pressure level is written in "acoustic shorthand" as L_A.

Variation of Sound with Time

It will be appreciated that the sound pressure level of most noise sources will fluctuate with time. In order to take account of the way in which the human ear perceives noise, it is normal for the sound pressure level to be quantified using a time weighting network, to mimic the speed of response of the human ear. The standardised setting for most types of noise is a "Fast" time weighting.

The manner in which sound fluctuates with time can also influence the subjective manner in which noise is perceived. Noise can be continuous (showing no significant variation with time as in the case of a fan), intermittent (i.e. the noise is transient in it's nature, such as a train pass-by) or impulsive (i.e. there is a sudden build up of noise - this can range from "clanking" types sounds as might be experienced next to railway goods yard or a high energy discharge such as an explosion)

Measurement of Sound

Sound pressure levels are measured using equipment comprising a pressure-sensitive microphone, associated amplifier, frequency weighting network, time weighted network and output indicator. In its simplest form this is a small hand-held instrument called a sound level meter. More sophisticated instrumentation (a sound level analyser) is also available which allows the real-time output of the frequency characteristics of the sound to be quantified.

Comparison of Sound Levels

To put the significance of noise measurement into context, the following Table presents the A-weighted sound pressure level of some typical sources:

Sound Pressure Level, dB(A)	Typical Noise Source . Activity
160	Saturn Rocket Taking Off
140	Military Jet Taking Off at 30m
100	Nightclub
90	Heavy goods vehicle driving past at 7m
80	Busy urban road
70	Domestic vacuum cleaner at 3m
60	Busy office environment
55	Normal speech at 1m
40	Whispered conversation at 2m
30	Bedroom at night (BS 8233: 1999)
20	Remote country location
0	Threshold of hearing – a very eery silence

Addition of Sound Levels

It is important to note that the use of a logarithmic scale to describe noise does not allow normal arithmetic addition. This means that two noise sources each generating a level of, say, 60dB(A) will not generate a combined sound level of 120dB(A). The values must be added logarithmically, which would actually yield a combined sound level of 63dB(A) in this example.

Subjective Perception of Sound Levels Changes

With regard to the human perception of sound level changes, the human ear:

- Cannot generally perceive a sound level difference of less than 3dB(A)
- Will perceive a sound level difference of 4-5dB(A) as "noticeable"
- Will perceive a sound level difference of 10dB(A) as a doubling (or halving) of loudness.

GLOSSARY OF ACOUSTIC TERMINOLOGY

Acoustic Terminology

As stated previously, most sources of noise will fluctuate with time. In order to characterize such noise, it is therefore normal to represent the noise climate using a variety of noise parameters and statistical indices. The most commonly adopted noise parameters are described below:

$L_{Aeq,T}$ This is the equivalent continuous A-weighted sound level measured over a specified time period "T". This is the notional continuous sound level which, over the time T, contains the same amount of energy as the actual fluctuating sound being measured. This parameter is widely accepted as being the most appropriate noise descriptor for most environmental noise and the effects of noise on humans.

$L_{Amax,fast}$ This is maximum A-weighted sound pressure measured with a fast frequency response recorded during the stated measurement period. It is typically used to characterise the highest sound level caused during a noise event.

$L_{A90,T}$ This is the A-weighted sound pressure level exceeded for 90% of the specified time period "T". It is normally used to describe the underlying background noise level of an environment since it inherently excludes the effects of transient noise sources.

Noise Rating (NR) Level

When describing noise from building services installations, it is common to express noise levels in terms of a Noise Rating (NR) Level. The NR level is determined by plotting the measured frequency spectrum of a noise against a series of reference curves, which roughly approximate to equal loudness values. This method permits higher sound levels at low frequencies corresponding to the sensitivity of the human ear. The NR level is defined as the value of the highest curve "touched" by the plotted frequency spectrum. For typical sources of building services noise, the overall A-weighted sound level is numerically around 5-6dB higher than the NR level of the noise.

α_w The "**Weighted Absorption Coefficient**" (α_w) is a single figure measure of the overall sound absorption capabilities of a building element determined in accordance with BS EN ISO 11654: 1997.

APPENDIX E

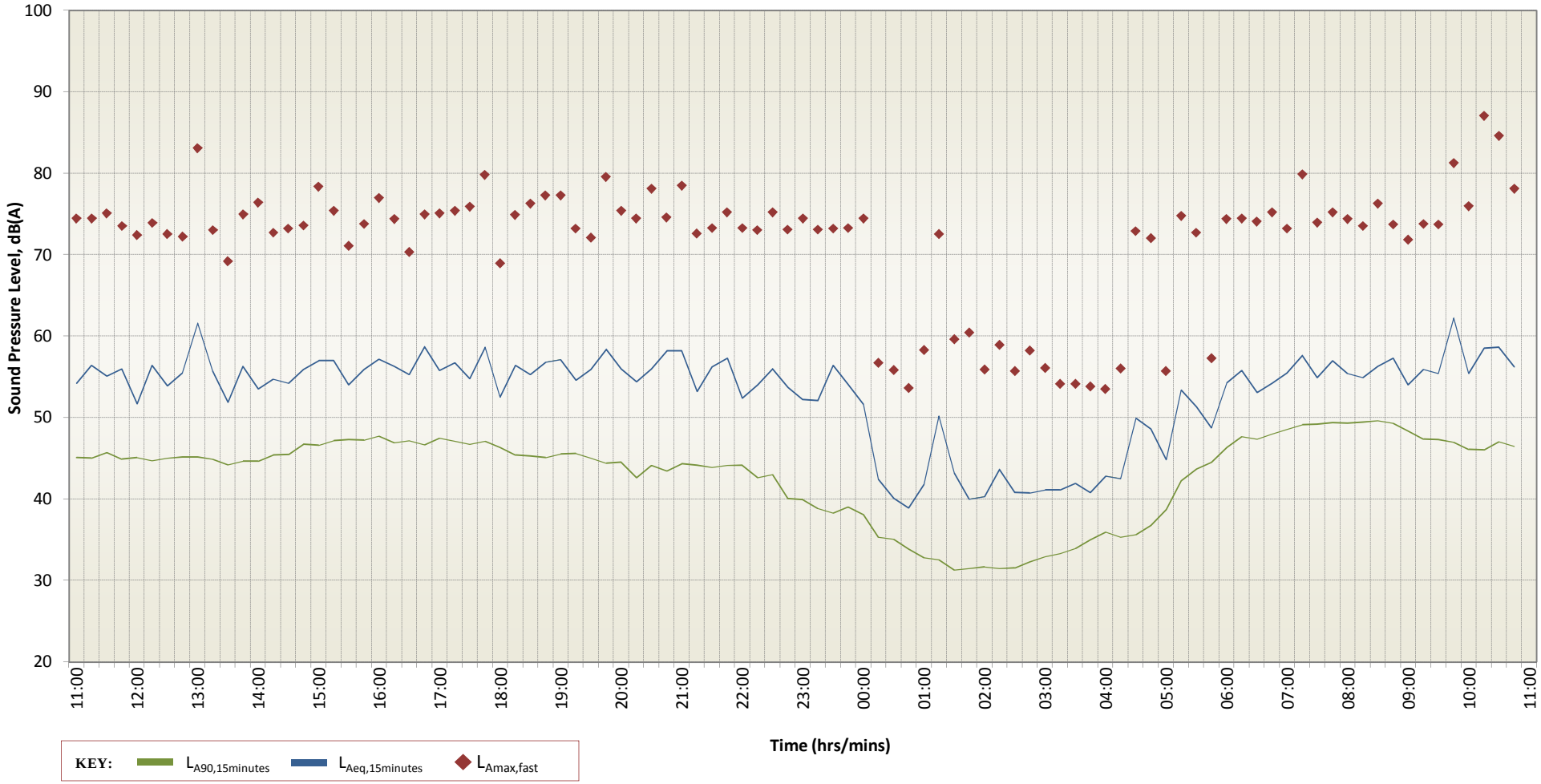
PALK ROAD, HAVANT

THE EQUUS PARTNERSHIP
Member of the Association of Noise Consultants
CONSULTANTS IN ACOUSTICS

TIME HISTORY GRAPH 1

Results of Automated Noise Measurements at Position A1

Survey Date: 17-18 March 2015



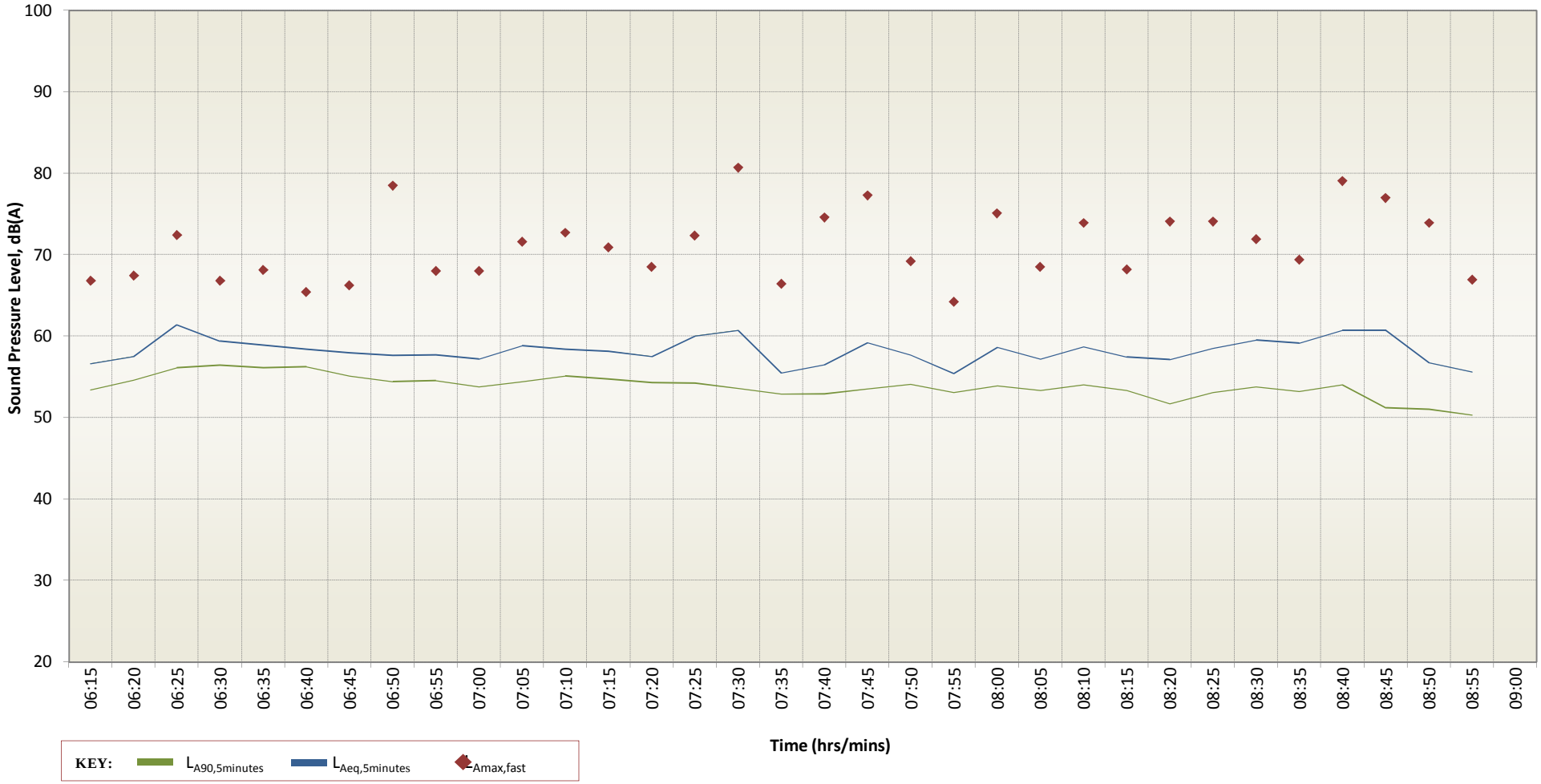
PALK ROAD, HAVANT

THE EQUUS PARTNERSHIP
Member of the Association of Noise Consultants
CONSULTANTS IN ACOUSTICS

TIME HISTORY GRAPH 2

Results of Attended Noise Measurements at Position M1

Survey Date: 17 - 18 March 2015



APPENDIX F

Jakoustic Reflective

Acoustic Fencing | Jacksons Security

Jacksons Fencing
Stowting Common | Ashford | TN25 6BN
www.jacksons-security.co.uk
+44 (0) 1233 750 393

Jacksons
Quality that lasts
Fencing & Access Solutions

Applications

✓ Residential ✓ Commercial ✓ Medium Risk ✓ Schools ✓ Sports Venues

The Jakoustic system comprises of our unique timber 'tuning fork' design posts and 125mm boards featuring an interlocking "vee" coupled with a tongue and groove. All timber is Jakcure pressure treated and is covered by our 25 year guarantee.

Features

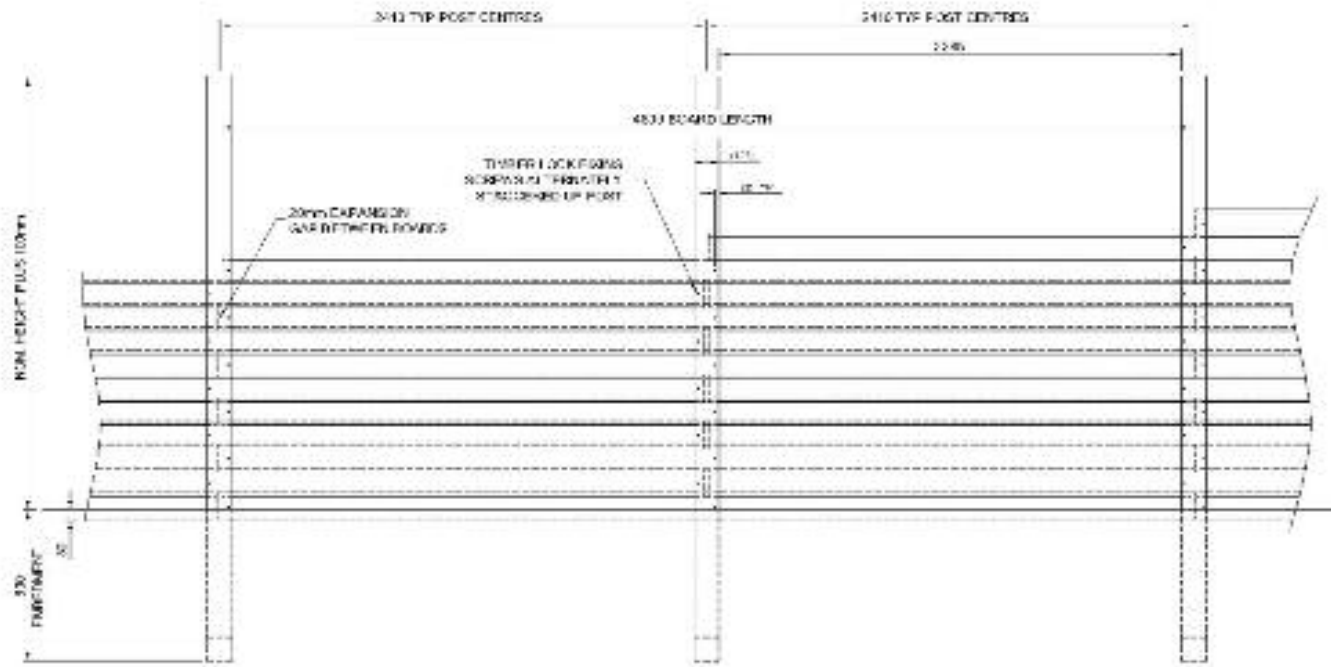
- Up to 28dB reduction in noise*
- Can accommodate changes in level or profile
- Unique timber tuning forks

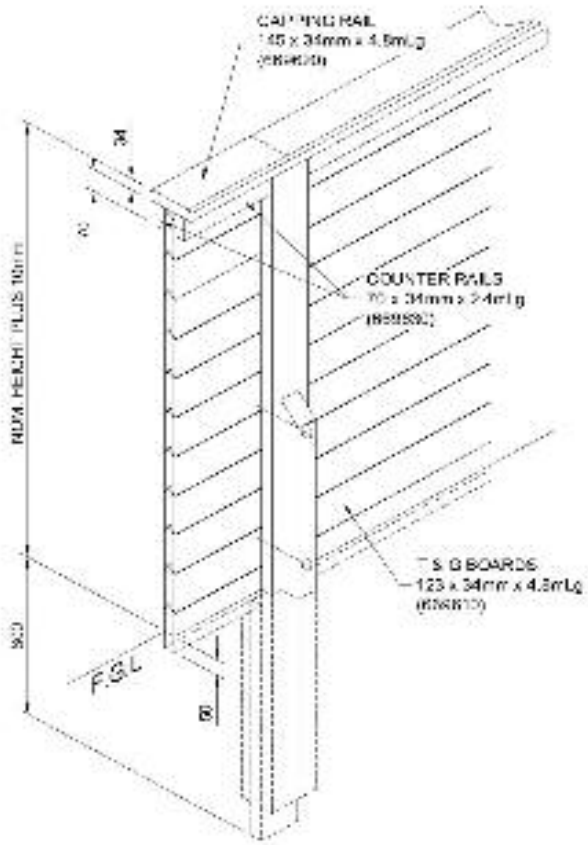
Distance from noise source	2.0m fence	2.5m fence	3.0m fence
	Noise reduction		
5m	13.6dB	16.5dB	17.4dB
10m	11.3dB	13.5dB	14.1dB
15m	10.3dB	12.5dB	12.9dB
20m	9.2dB	11.9dB	12.4dB

*Jakoustic barrier certified laboratory results:
Rating according to BS EN 1793 - 2:1998
Category = B3
Laboratory sound reduction 28dB
Supperficial mass 28 kg/m2

Reflective

Specifications and Technical Data





Heights	Post Length	Spur Post Length
2.0m	2.7m	N/A
2.5m	3.3m	2.0m
3.0m	3.9m	2.5m
3.5m	4.2m	2.7m
4.0m	4.8m	3.30m

Gates

Matching gates are available in swing, cantilever sliding and tracked in either automated or manual operation. Please ask for specifications and details.

Reflective