SHARPS REDMORE

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Report

Sandown Park, Masterplan

Environmental Noise Report

Prepared by
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Project No 1818509

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Appendices

1.0 Introduction

1.1 Sharps Redmore (SR) has been instructed by Jockey Club Racecourses Ltd to carry out a noise assessment to accompany a masterplan led hybrid planning application of the Sandown Park Racecourse, Portsmouth Road, Esher, KT10 9AJ. The overall concept plan is shown in Appendix A to this report and includes the following:

Outline Element

Site 1: 15 Residential units

Site 2: 49 Residential units

Site 3: 114 Residential units

Site 4: 72 Residential units

Site 5: 68 Residential units and relocated upgraded children's nursery

Site A: Racecourse operational facilities, including replacement of lodge, racecourse accommodation and rationalisation of existing operational area, including stabling, pre-parade ring and associated facilities,

Site B: Hotel (circa. 150 bedrooms)

Site C: Family and Community Zone, including remodelling of kart track area to provide cycle track, consolidation of existing structures for provision of indoor soft play and café and outdoor leisure,

Site D: Rationalisation of existing car park

Site F: Improvements to existing car parking, including amendments to layout through soft and hard landscaping

Full Element

Site E1 and E2: Widening of southwestern and eastern sections of racetrack.

Bellmouth accesses serving the new development sites.

1.2 In pre-application discussions with Elmbridge Borough Council, the Environmental Health Department have advised that a noise assessment is carried out, which includes details of the current noise climate and predicted noise levels. The assessment should include the following:

- Impact of existing noise levels on proposed residential developments (Sites 1 – 5),
- Impact of proposed changes to the racecourse on the existing noise sensitive properties.

1.3 The assessment includes reference to national guidelines and existing noise levels including BS 4142:2014 Methods for rating and assessing industrial and commercial sound, the World Health Organisation (WHO) Guidelines for Community Noise and the Institute of Acoustics (IoA) Professional Practice Guidance (ProPG) on planning and noise for residential developments . These are discussed in more detailed along with national and local policy in section 2.0 of the report.

1.4 Section 3.0 of this report sets out the findings of an acoustic survey, undertaken at noise sensitive areas around the site. Prior to carrying out the assessment, SR contacted the Environmental Health Department at Elmbridge Borough Council to agree the scope of the noise survey.

1.5 The impact of the proposed masterplan is considered in sections 4.0 – 6.0. The assessment conclusions contained in section 7.0 of this report.

2.0 Assessment methodology and criteria

National Policy

2.1 The National Planning Policy Framework (NPPF), July 2018, sets out the Government's planning policies for England and "these policies articulate the Government's vision of sustainable development." In respect of noise, Paragraph 180 of the NPPF states the following:

"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; and

c) Limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation".

2.2 Guidance on the interpretation of the policy aims contained within the NPPF is contained within National Planning Policy Guidance (NPPG). The NPPG introduces the concept of a noise exposure hierarchy based on likely average response. The guidance contained in the NPPG is summarised in the table below:

TABLE 1: Noise Exposure Hierarchy

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	No specific measures required
		Lowest Observed Adverse Effect Level	
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, 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
		Significant Observed Adverse Effect Level	

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	Unacceptable Adverse Effect	Prevent

2.3 The NPPF and NPPG reinforce the March 2010 DEFRA publication, "Noise Policy Statement for England" (NPSE), which states three policy aims, as follows:

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

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

2.4 Together, the first two aims require that no significant adverse impact should occur and that, where a noise level which falls between a level which represents the lowest observable adverse effect and a level which represents a significant observed adverse effect, then according to the explanatory notes in the statement:

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

Local Policy

2.5 With regard to local policy regard to Policy DM 5 'Pollution' of the Elmbridge Borough Council Development Management Plan (DMP). With regard to noise the following advice is provided.

"All development that may result in noise or odour emissions or light pollution will be expected to incorporate appropriate attenuation measures to mitigate the effect on existing and future residents. New development located near to existing noise, odour or light generating uses will be expected to demonstrate that the proposal is compatible and will not result in unacceptable living standards, for example through the mitigation measures, the design of the building and its orientation and layout."

2.6 Taking an overview of national and local policy aims and guidance it is clear that when considering the impact of noise from a development one must consider the significance of any impact.

Guideline noise values for residential developments

2.7 There are a number of guidance documents that contain recommended guideline noise values. These are discussed below.

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

2.8 The current nationally recommended internal noise levels for dwellings are given in BS 8233:2014 'Guidance on Sound Insulation & Noise Reduction for Buildings'. BS 8233 recommends the following internal noise standards:

Table 2: Internal Noise Level Criteria

BS 8233:2014 Table 4 – Indoor ambient noise levels for dwellings			
Activity	Location	0700 to 2300	2300 to 0700
Resting	Living room	35 dB $L_{Aeq,16hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

2.9 There is no longer a L_{AMAX} standard for bedrooms In BS 8233. However, footnote 4 to Table 4 states that *"Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values."* In this case, it is proposed that the previous BS 8233 internal standard (also referenced in World Health Organisation Guidelines for Community Noise) is applied. This is 45 dB L_{AMAX}, inside bedrooms.

External Areas (Garden and Balconies)

2.10 For outdoor areas (i.e. balconies), BS 8233:2014 recommends that "it is desirable that the external noise level does not exceed 50 dB L_{AeqT}, with an upper guideline value of 55 dB L_{AeqT}" However, the document recognises that that these guideline values are not achievable in all circumstances and in higher noise areas, a compromise might be warranted. In such circumstances, development should be designed to achieve the lowest practicable levels in these external amenity spaces.

2.11 The Planning Practice Guidance on Noise, published on planningportal.gov.uk, gives further consideration relating to mitigating the impact of noise on residential developments and considers that noise may be partially off-set if residents of the dwellings have access to:

- A relatively quiet façade (containing windows to habitable rooms as part of their dwelling;
- A relatively quiet external amenity space for their sole use such as a balcony which is generally considered as desirable.
- A relatively quiet nearby external space for use by a number of residents as part of the amenity of their dwellings, and/or;
- A relatively quiet external, publicly accessible amenity space that is nearby (e.g. within a 5 minute walk).

ProPG: Planning and Noise – New Residential Development

2.12 The ProPG professional practice guidance on planning and noise has been produced by the Chartered Institute of Environmental Health (CIEH), Institute of Acoustic (IOA) and Association of Noise Consultants (ANC).

2.13 The ProPG recommends a 2 stage approach; an initial assessment which identifies the risk of noise on the proposed planning application, and where the results indicate that noise requires further consideration a full assessment in the form of an Acoustic Design Statement (ADS) which would include four key elements as follows:

- Element 1 – demonstrating a "Good Acoustic Design Process";
- Element 2 – observing internal "Noise Level Guidelines."
- Element 3 – Undertaking an "External Amenity Area Noise Assessment"
- Element 4 – Consideration of "Other Relevant Issues."

2.14 The advice contained within ProPG is based on the policy objectives contained within the NPPF and the objective noise guidelines within BS 8233:2014. However the ProPG does not constitute an official government code of practice.

<u>Assessment of commercial noise on proposed and existing residential properties</u>

2.15 The effect produced by the introduction of a certain noise source may be determined by several methods, as follows:

i) The effect may be determined by reference to guideline noise values. British Standard (BS) 8233:2014 and World Health Organisation "Guidelines for Community Noise" contain such guidelines.

ii) Alternatively, the impact may be determined by considering the change in noise level that would result from the proposal, in an appropriate noise index for the characteristic of the noise in question. There are various criteria linking change in noise level to effect. This is the method that is suited to, for example, the assessment of noise from road traffic because it is capable of displaying impact to all properties adjacent to a road link irrespective of their distance from the road.

iii) Another method is to compare the resultant noise level against the background noise level (LA90) of the area. This is the method employed by' BS 4142:2014 which describes a method for rating and assessing sound of an industrial and or/commercial nature, including sound from fixed installations of mechanical and electrical plant and sound from the loading and unloading of goods at industrial/commercial premises.

WHO Guidelines for Community Noise

2.16 There are a number of guidance documents that contain recommended guideline noise values. These are discussed below.

2.17 As discussed above British Standard 8233:2014 is principally intended to assist in the design of new dwellings; however, the Standard does state that it may be used in the assessment of noise from new sources being brought to existing dwellings.

2.18 The original BS 8233 was based on the advice contained in the draft World Health Organisation document "Guidelines for Community Noise". This document was released in final form in 2000. The World Health Organisation guidance is referenced in the NPSE.

2.19 The WHO advice is the most useful, comprehensive, and pertinent advice in this case, because it is not specific to the circumstances of the assessment. Instead, it provides guidance on acceptable limits in, for example, schools, dwellings and offices.

2.20 The WHO guideline values are appropriate to what are termed "critical health effects". This means that the limits are at the lowest noise level that would result in any psychological, physiological or sociological effect. They are, as defined by NPSE, set at the Lowest Observed Adverse Effect Level (LOAEL), but do not define the level above which effects may be considered significant (SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim.

2.21 The WHO LOAEL guideline values are summarised in the following table:

TABLE 2: Guideline Values

Document	Level	Guidance
World Health Organisation "Community Noise 2000"	L_{AeqT} = 55 dB	Serious annoyance, daytime and evening. (Continuous noise, outdoor living areas)
	L_{AeqT} = 50 dB	Moderate annoyance, daytime and evening. (Continuous noise, outdoor living areas).
	L_{AeqT} = 35 dB	Moderate annoyance, daytime and evening. (Continuous noise, dwellings, indoors)
	L_{AeqT} = 30 dB	Sleep disturbance, night-time (indoors)
	L_{AMAX} = 60 dB	Sleep disturbance, windows open at night. (Noise peaks outside bedrooms, external level).
	L_{AMAX} = 45 dB	Sleep disturbance at night (Noise peaks inside bedrooms, internal level)

2.22 For L_{AeqT} criteria the time base (T) given in the document is 16 hours for daytime limits and 8 hours for night time limits. When assessing impact, this has the tendency to smooth out the hourly variations in noise level. As such, our calculations are carried out to a 1 hour time base, which is more stringent assessment than is given in the guidance but is reflective of the actual duration of the delivery process.

Changes in noise level

2.23 Changes in noise levels of less than 3 dBA are not perceptible under normal conditions and changes of 10 dB are equivalent to a doubling of loudness. This guidance has been accepted by Inspectors, at Inquiry, to encompass changes in noise levels in the index $L_{Aeq,T.}$ in relation to road traffic noise and therefore if of limited use in this case.

2.24 The following table shows the response to changes in noise level (known as the Semantic Scale).

TABLE 3: Change in noise level

Change in noise level L_{AeqT} dB	Response	Impact
<3	Imperceptible	None
3 - 5	Perceptible	Slight
6 - 10	Up to a doubling	Significant
11 – 15	More than a doubling	Substantial
> 15	-	Severe

BS 4142:2014

2.25 As discussed, this BS described a method for rating and assessing sound of industrial and/or commercial nature according to the following summary process:

i) Carry out a numerical assessment of the noise, taking into the character and areas of uncertainty, by comparing the noise against the existing background noise level. The greater the difference between the two, the greater the impact.

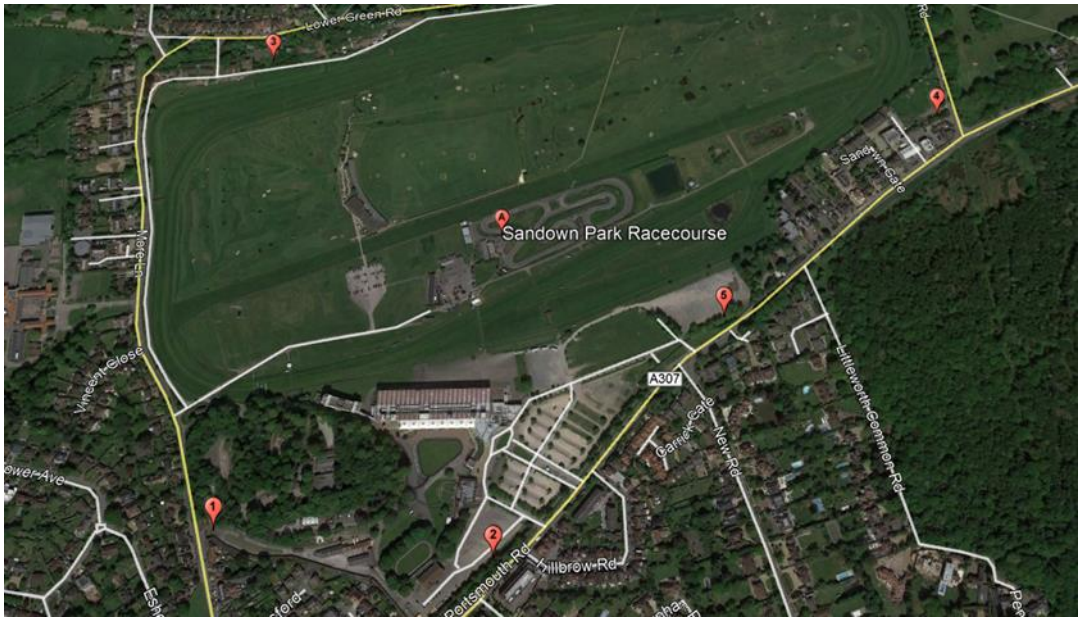
ii) By considering the noise impact against the context in which it is placed. There are many contextual points to consider when considering an assessment of sound impact including the following:

- The absolute level of sound.
- The character and level of the specific sound compared to the existing noise climate.
- The sensitivity of the receptors.
- The time and duration that the specific sound occurs. The conclusions of assessments undertaken using alternative assessment methods, for example WHO guideline noise values or change in noise level.
- The ability to mitigate the specific sound through various methods, for example by screening, the selection of quiet plant equipment, the use of attenuators, through the imposition of noise management plans and good practice, façade design and layout/orientation.
- The form and scale and scale of a development. For example, does not the proposed development involve a new industrial/commercial premises or is the proposal the installation of new plant or an extension to an existing premises?

3.0 Survey Details

3.1 A noise survey was undertaken at the site between 3rd and 5th January 2019 to determine existing noise levels. Measurements were carried out at five locations as shown in Figure 1 below. The locations chosen represent the proposed residential developments, and also the nearest existing noise sensitive properties to the site.

FIGURE 1: Monitoring Locations



3.2 Measurements were taken using Norsonic type 1 sound level meters which were calibrated before and after the survey with no drift noted. Weather conditions, as determined by site observation, during the survey were overcast, cool with light northerly wind. Weather conditions were suitable for taking noise measurements. All measurements were recorded in free field conditions.

3.3 At locations 1, 3 and 5 unattended measurements were carried out over several days to determine existing ambient, background and maximum noise levels. The survey included times on 5th January 2019, when a race meeting was taking place. At locations 1 and 4 measurements were taken over a three hour period in accordance with the shortened measurement procedure within the Calculation of Road Traffic Noise (CRTN). Measurements were also taken at location 2 and 4 on the 5th January whilst racing was taking place.

3.4 A summary of period background and ambient noise levels during the survey are presented in Table 4 and 5 below and presented in full in Appendix B.

TABLE 4: Survey results – Monitoring Locations 1, 3 and 5

Location	Date	Day (0700 – 2300 hrs)		Night (2300 – 0700 hrs)		
		$L_{Aeq15min}$	$L_{A90,15min}$	$L_{Aeq15min}$	$L_{A90,15min}$	L_{Amax}
ML 1	3.1.19	46 - 65	35 - 50	26 - 54	24 - 38	35 – 78
	4.1.19	47 - 57	36 - 48	29 - 47	27 - 35	36 – 67
	5.1.19	48 - 56	36 - 57	--	--	--
ML 3	3.1.19	46 - 59	33 - 44	29 - 57	23 - 39	42 – 76
	4.1.19	45 - 58	34 - 49	30 - 46	28 - 35	35 – 65
	5.1.19	46 - 65	34 - 48	--	--	--
ML 5	3.1.19	62 - 66	48 - 61	48 - 66	26 - 58	67 – 80
	4.1.19	58 - 67	49 - 63	52 - 62	31 - 49	68 – 76
	5.1.19	61 - 66	47 - 61	--	--	--

TABLE 5: Survey Results – Monitoring Locations 2 and 4

Location	Time	$L_{Aeq15min}$	L_{Amax}	$L_{A10,15min}$	$L_{A90,15min}$
ML 2	13:45 hrs	63	71	66	54
	14:45 hrs	62	71	65	54
	15:45 hrs	63	69	65	55
ML 4	13:25 hrs	53	66	55	48
	14:22 hrs	55	65	57	49
	15:20 hrs	54	60	55	48

3.5 On the 5th January 2019 measurements were taken immediately before (1000 – 1200 hrs) and after (1200 – 1345 hrs) the racing started at 12 midday. Measurements were taken at each location, with the exception of ML 4.

TABLE 6: Survey Results – Comparison of noise events

Date	Before racing		During racing	
	$L_{Aeq15min}$	$L_{A90,15min}$	$L_{Aeq15min}$	$L_{A90,15min}$
ML 1	54 - 56	44 - 47	54 - 56	44 – 47
ML 2	58	55	47	55
ML 3	53 - 57	43 - 48	51 - 58	41 – 47
ML 5	61 - 66	54 - 61	61 - 66	56 - 61

3.6 Existing noise levels are dominated by road traffic along Portsmouth Road, which is a busy route carrying a high volume of traffic. At location 3, existing noise levels include noise from the adjacent rail line operated by South Western Railways.

4.0 Assessment of existing noise on proposed residential developments

4.1 As shown in section 1.0 of this report, the masterplan redevelopment includes 5 residential sites for which outline planning permission will be sought.

4.2 Using the survey data recorded on site, the predicted daytime and night time ambient noise levels has been calculated. At locations 1,3, and 5, this is based on survey data recorded. At locations 2 and 4 measurements were taken in accordance with the shortened shortened measurement procedure within the Calculation of Road Traffic Noise (CRTN) as shown below:

The $L_{A10,18hr}$ noise level is calculated as:

$L_{A10.18hr}$ = Average $L_{A10(3hours)}$ – 1 dB

This can then be corrected to provide a 16 hour L_{Aeq} as per the guidance in BS 8233 by using the calculation below:

$L_{Aeq16hr} = L_{A10.18hr}$ – 2 dB

4.3 Night time noise levels at Site 2 have been determined by measurements carried out at location 5 which is also adjacent to Portsmouth Road. Similarly night time noise levels at Site 4 is based on noise levels at Site 5 but corrected to take into the distance attenuation. This is based on the level difference of 10 dB measured during the daytime.

4.4 The predicted ambient and maximum noise levels at each site are shown in Table 7 below.

TABLE 7: Measured noise levels

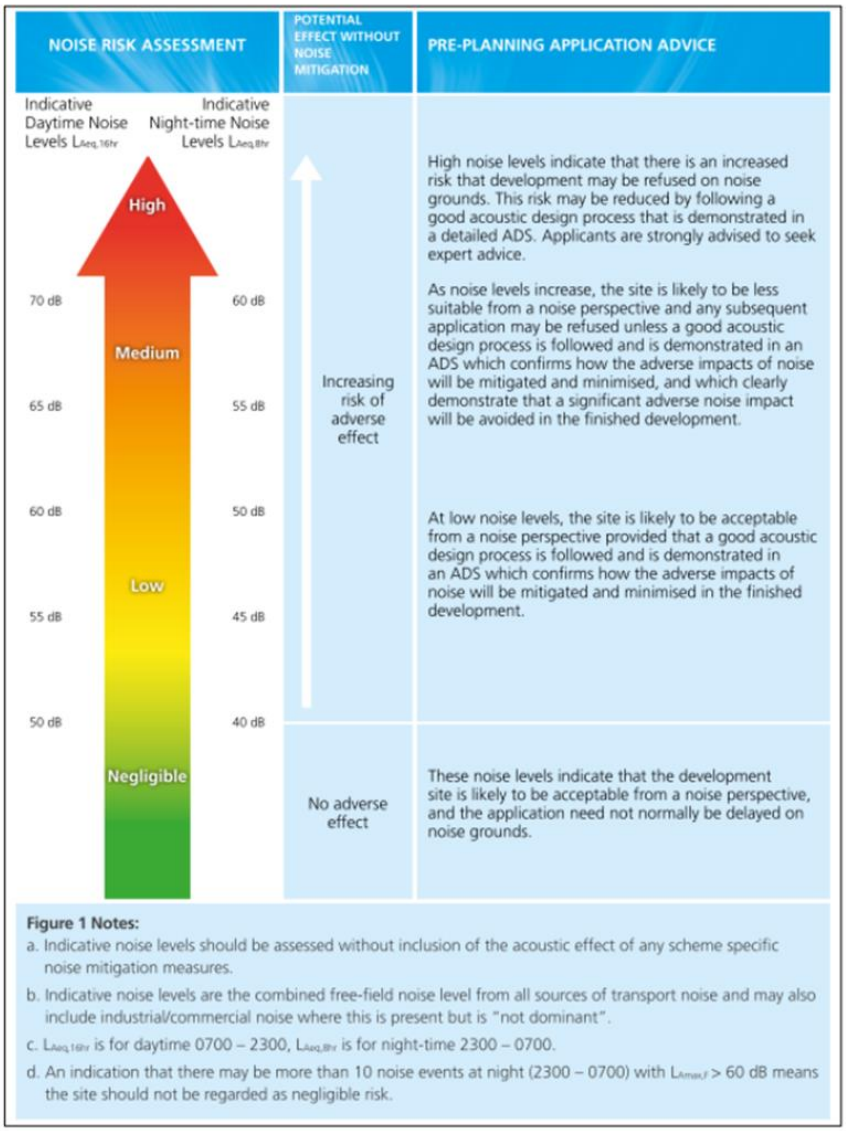
Location	Noise Level dB		
	Day time (0700 – 2300 hrs)	Night time (2300 – 0700 hrs)	
	$L_{Aeq16hr}$	L_{Aeq8hr}	L_{Amax}
Site 1	54 dB	45 dB	65 dB
Site 2	63 dB	57 dB	76 dB
Site 3	52 dB	45 dB	61 dB
Site 4	53 dB	47 dB	65 dB
Site 5	65 dB	57 dB	76 dB

4.5 Based on the measured noise levels an initial site noise risk assessment has been carried out in line with the Stage 1 advice in the ProPG. The purpose of the assessment is to provide an indication of the likely risk of adverse effects. The initial risk assessment does not include the impact of any mitigation measures that may be subsequently designed into the residential developments. The risk is assessment is determined using Figure 3 and summarised in the Table 8 below:

TABLE 8: Initial Noise Risk Assessment

Location	Noise Level dB	
	Day time (0700 – 2300 hrs)	Night time (2300 – 0700 hrs)
Site 1	Low	Low
Site 2	Low/Medium	Medium
Site 3	Low	Low
Site 4	Low	Low
Site 5	Low/Medium	Medium

Figure 3: ProPG Stage 1 Initial Site Noise Risk Assessment



4.6 The advice for low risks sites (Site 1, 3 and 4) is that the site is likely to be *"…acceptable for a noise perspective provided that a good acoustic design process and demonstrated…"* The risk of an application being refused on noise grounds is more likely as the noise increases, and for medium risk sites there is a risk an application may be refused unless a good acoustic design process is followed which confirms how the adverse impacts of noise will be mitigated and minimised.

4.7 The residential developments (Sites 1 – 5) are outline only and therefore there is insufficient detail, at this stage, available to enable an acoustic design statement (ADS) to be carried out. However an assessment of transportation noise on a residential development should cover four main elements as follows:

- Element 1 – demonstrating a "Good Acoustic Design Process"
- Element 2 – observing internal "Noise Level Guidelines"
- Element 3 – Undertaking an "External Amenity Area Noise Assessment"
- Element 4 – Consideration of "Other Relevant Issues"

4.8 An ADS should be proportionate to the scale of the development and to the degree of noise risk at the proposed at the proposed development. Priority should be given, as part of the good acoustic design, to enable the use of openable windows as extensively as is practical across the development site.

4.9 With regard to Sites 1, 3 and 4, suitable internal noise levels can be achieved through the use of standard thermal glazing and the provision of acoustically treated trickle vents to comply with Building Regulation ventilation requirements. With windows open internal noise levels will exceed the internal L_{Aeq} target in BS 8233:2014 however this would not be considered unreasonable as this will only occur occasionally, during hot weather and for purge ventilation.

4.10 Sites 2 and 5 will require further consideration and it is recommended that a detailed noise assessment is secured by planning condition to be carried out. The layout of the residential units should be considered at the detailed design stage, included internal layout, innovative façade and window designs e.g. plenum windows. The requirement to carry out a detailed acoustic design statement can be secured by planning condition which would demonstrate how the site the site complies with the above requirements.

<u>Impact of other noise sources</u>

4.11 The ProPG advice is restricted to site that are exposed predominantly to noise from transportation sources. As identified by the Environmental Health Department, Site 4 is located to the north of the Café Rouge Restaurant, which trades between 0900 and 2230 hours each day. To determine the impact of the existing restaurant, noise levels were measured in the car park of the restaurant adjacent to the boundary of the proposed residential Site 4.

4.12 Noise from the kitchen extract system on the roof of the premises was clearly audible, and at the boundary, approx. 14 metres from the extract fan, noise levels of 60 dB L_{Aeq} were recorded.

4.13 Based on the indicative plan for Site 4 the nearest residential apartment will be approx. 50 metres from the extract fan. Taking into account the distance attenuation 20 log($^{14}/_{50}$), predicted noise levels from the fan at the residential properties will be 49 dB. This is consistent with the background noise levels measured at location 4.

4.14 The impact of the operation of the kitchen extract fan at Café Rouge will depend on the final layout of the residential apartments and whether any habitable rooms will face towards the restaurant. However standard thermal double glazing which will be fitted as standard to the development will be sufficient to ensure that internal noise levels from the fan are acceptable. This is dependent on windows being closed and therefore alternative means of ventilation will have to be provided to the apartments.

Impact of existing activity at racecourse on proposed residential properties

4.15 In addition to the above, a noise survey of existing activity at the racecourse was carried out during a meeting on the 5th January 2018. Measurements were taken at each development location before and during periods when racing was taking place. Activity from the racecourse, with the exception of the tannoy system at Site 2, was inaudible at each site.

4.16 Whilst noticeable at Site 2, the tannoy made no difference to the existing noise climate as shown in Table 6 above and was only noted when the race was taking place. Considering the short duration of the races, the overall number of races each year, noise from the tannoy is unlikely to cause a significant adverse impact to future residents, and can be controlled through mitigation measures such as acoustic window systems.

4.17 SR is aware that live concerts are held each year at the racecourse in the area in front of the grandstand. The number of concerts is limited (3 planned for 2019) and finish before 10.30 pm. The proposed residential properties will be no closer than existing residential homes in the area, and although noise from the concerts will clearly be audible, taking into account the low number of events and the times they occur it is not considered that noise from the concerts will cause significant impact to the proposed residential units.

5.0 Assessment of proposed changes to racecourse existing noise on proposed and existing residential developments

5.1 The overall master plan currently includes the following:

1) Replacement of lodge and racecourse staff accommodation;
2) Rationalisation of existing operational areas and , including stabling, pre-parade rind and associated facilities;
3) New Hotel;
4) Family/Community Zone including consolidation of existing outdoor leisure area, including remodelling of the kart track as a new cycle track;
5) Provision of an indoor soft play area and café;
6) Rationalisation of the existing car park areas, and
7) Widening changes to the racetrack.

5.2 The objectives of the improvements proposed are to improve customer experience and not increase the maximum capacity of the race course.

5.3 In terms of noise, the main impact will be from the new hotel and rationalisation of the car parking and the new children's play areas in centre of the racecourse. The noise impact from the other changes to the racecourse is considered negligible.

Noise from New Hotel

5.4 A new hotel will be erected (Site B) adjacent to the existing grandstand. SR has been advised that the hotel will compliment and not compete with the existing facilities on site. Existing facilities for functions and conferencing are provided in the existing facilities on site, and SR is advised that it is not intended to provide facilities for functions in the new hotel. However if functions facilities are provided, mitigation measures will be included at the detailed design stage to ensure that noise from any amplified music does not cause impact to existing or future residents. This can be secured by planning condition.

5.5 The hotel will be served by mechanical plant, such as air handling systems, a/c units and refrigeration plant. The exact type and its associated noise characteristics will depend on the hotel operator. It would therefore be appropriate to impose a planning condition to control noise output from the plant serving the propose hotel.

5.6 The objective assessment of plant sound sources in commercial premises should be undertaken in accordance with British Standard 4142:2014. This Standard enables the resultant sound levels from new plant equipment to be compared against the existing background sound level (LA90) of an area to assess the impact.

5.7 In terms of seeking to set appropriate plant rating sound limits, the advice in BS 4142:2014 is that "*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 of having a low impact, depending on the context"* (clause 11, note 'd').

5.8 The nearest existing residential properties to the proposed hotel are those on Portsmouth Road, opposite the site. Based on survey data at Site 5 the typical daytime

and night time background noise levels during the survey were 52 dB during the day time and 30 dB during the night time.

5.9 It is recommended that noise from any mechanical plant serving the hotel are designed not to exceed the existing background noise level, i.e. low impact. This can be secured by planning condition.

5.10 With regard to other noise impacts, deliveries to the hotel will take place in a similar manner and times to the existing race course. It is not considered that delivery noise will cause a significant adverse impact.

Noise from rationalisation of car park

5.11 The development will see rationalisation of the car park, Site D. Observations of car park activity were made during a race meeting on 5th January 2019. No noise was audible from car park activity above the existing noise climate which was dominated by road traffic noise.

5.12 SR have undertaken many surveys of noise levels at the boundaries of retail/commercial car parks, which show a range of noise levels (depending on the level of activity in the car park) from $L_{Aeq,1hr}$ = 43 – 48 dB at a distance of 10 metres. Typical peak noise levels from car door/boot slams were found to be 68 dB L_{Amax} (free-field) at 10 metres.

5.13 The closest residential properties to Site D are those in Esher Green and Vincent Close to the west of the site. These properties are approx. 110 metres from Site D.

5.14 Assuming a robust baseline assessment of 48 dB $L_{Aeq,1hr}$ and a peak noise level of L_{Amax} = 68 dB, the predicted noise levels at the nearest residential will be 27 dB $L_{Aeq,1hr}$ (48 – 21 dB[distance]) with peak noise of 47 dB $L_{Amax.}$

5.15 The above assessment is based on all noise sources from and includes noise from people talking and car movements. Predicted noise levels are significantly below the existing noise climate and also within the WHO Guidelines and therefore it can be concluded that noise from rationalisation of the car park will not cause any noise impact.

5.16 The rationalisation of the car park is a re-working of the existing car park arrangements and therefore in terms of noise there will be no changes to existing noise levels.

Noise from proposed play areas

5.17 New children play areas will be provided in the family enclosure which is located in the centre of the race course at Site C. This will also include provision of a new indoor play area and café. SR understands that the upgrading of the family area will see the existing kart track remodelled by a cycle track and use of Zone C and Zone B as outdoor recreational play areas. The detail design of these areas is not known at this outline stage however it is likely to be an informal play area.

5.18 The remodelling of the existing kart track with a cycle track will significantly reduce noise levels from this area. It is understood that the kart track regularly operated into the late evening period and noise from screeching tyres, engine noise was cause of complaint to local residents. By comparison, the noise from the play areas will be significantly less.

5.19 To determine the impact of children playing in these areas, SR has used library data recorded at schools of children shouting. Measured noise levels at 10 metres from the boundary of children play areas were typically 58 dB $L_{Aeq1hr.}$ The nearest residential properties are those to the west of the site on Esher Green, which are approx. 350 metres from the play area. At these distances noise from children playing will be around 40 dB. This is below both the existing daytime ambient noise levels and also below the WHO daytime guideline values. It is therefore concluded that noise from an outdoor play area at Site C will not cause impact to local residents.

6.0 Summary and Conclusions

6.1 Sharps Redmore has undertaken an initial environmental noise assessment to accompany a masterplan-led hybrid planning application at Sandown racecourse. Following a pre-application scoping exercise with Elmbridge Borough Council Environmental Health Team, the assessment has considered both the impact of existing noise sources on the proposed residential developments, Plots 1 – 5, and also the impact of changes to the racecourse as a result of the development.

6.2 A detailed survey has been carried out at 5 locations around the site and existing noise levels determined. The existing noise climate is dominated by road traffic on Portsmouth Road.

6.3 An initial assessment has been carried out in accordance with the guidance contained within ProPG Planning and Noise: New Residential Developments which indicates there that for Sites 1, 3 and 4 there will be a low risk in terms of noise. The risk as sites 2 and 5 will be medium to high. Acceptable internal and external noise levels can be achieved however without the need for specialised acoustic mitigation measures and can be secured through a suitably worded planning condition.

6.4 With regard to the proposed changes to the racecourse the objective is to improve customer experience not increase the maximum capacity. The impact of the proposed improvements has been assessed against national guidance and it is concluded that the impact will be negligible on both existing and new residential properties. Noise from any mechanical services plant will be designed not to exceed the existing background noise levels.

6.5 In conclusion, the proposed development accords with relevant national and local policy and guidance and therefore is acceptable in noise terms.

APPENDIX A

MASTERPLAN

Figured dimensions only are to be used. All dimensions to be checked onsite.
Differences between drawings and between drawings and specification or bills of quantites to be reported to the PRC Group.
For Planning purposes, drawings can be scaled using the scale bar.

Revisions:		Drawn / Chkd:	Date:
A	Building updated to date	MC	041218
B	Round up of sites. Boundaries adjusted to topo / Titles. Track widening boundaries added	MC	080119
C	Site boundaries added	MC	110119
D	Site G Broundary line removed	MC	170119
E	Site F removed. Site 2 boundary adjusted	MC	230119
F	Site F added. Parking layouts updated	MC	030219
G	Site F zoning added. Site 5 nursery boundary removed	MC	150219

Legend

- (blue line) Jockey Club Race course boundary line
- (red line) Application Site Boundary

Scale 1:2000

0 60 100 m

North

Preliminary Issue

Client:
Jockey Club Racecourses Ltd

PRC

Project:
Sandown Park

24 Church St. West,
Woking, Surrey,
GU21 6HT

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Drawing Title:
Masterplan

Architecture
Planning
Master Planning
Urban Design
Interiors
Landscape

Scale @ A0:	Checked by:	Date:
1 : 2000	MC	12.11.2018

Job No:	Stage _ Drawing No:	Rev:
11071	FE_101	G

Offices
Woking
London
Milton Keynes
Warsaw

Issue Status:
Construction ☐ Preliminary ■
Information ☐ Approval ☐
Tender ☐

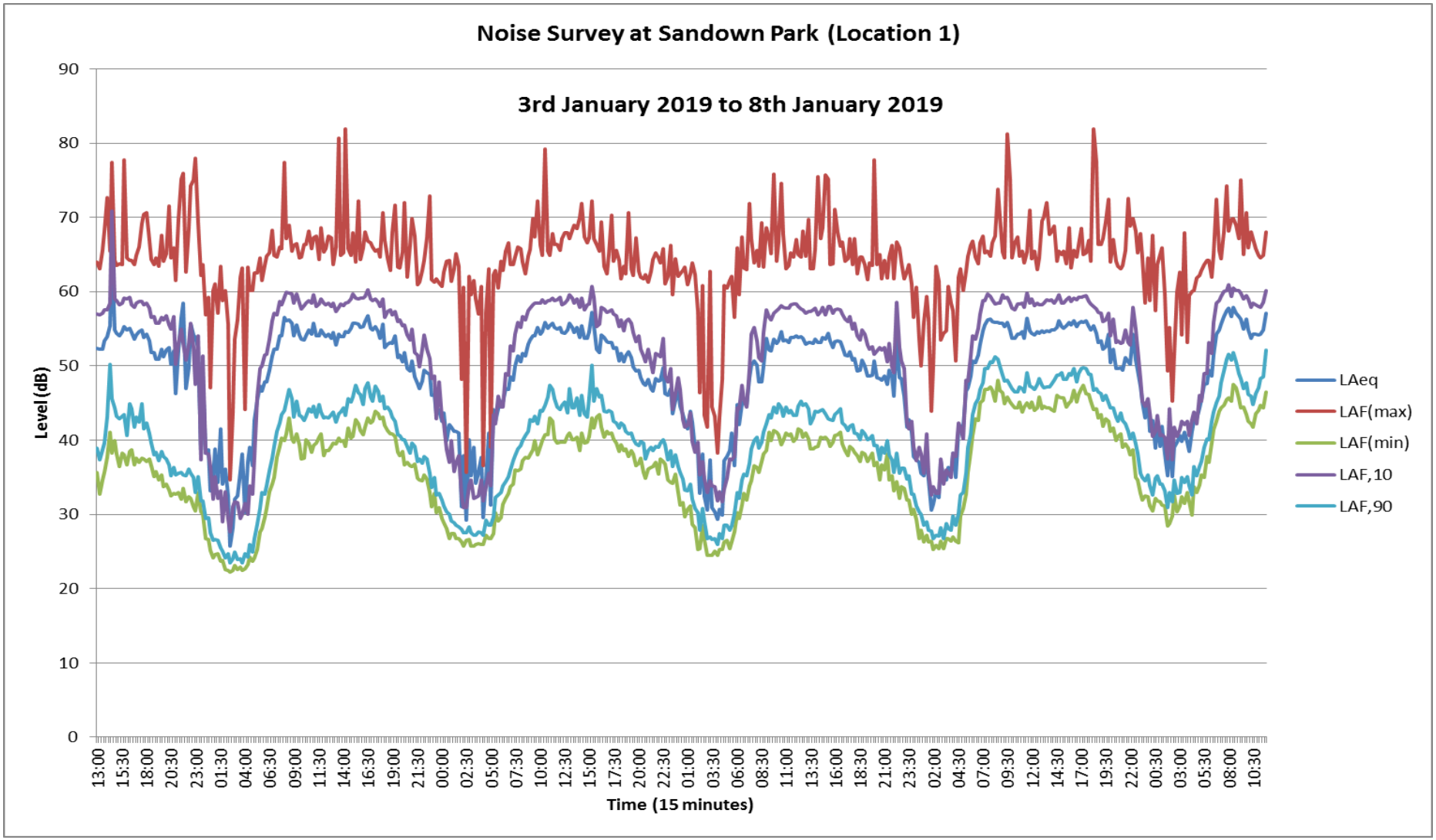
PRC Architecture & Planning

15/02/2019 14:31:00

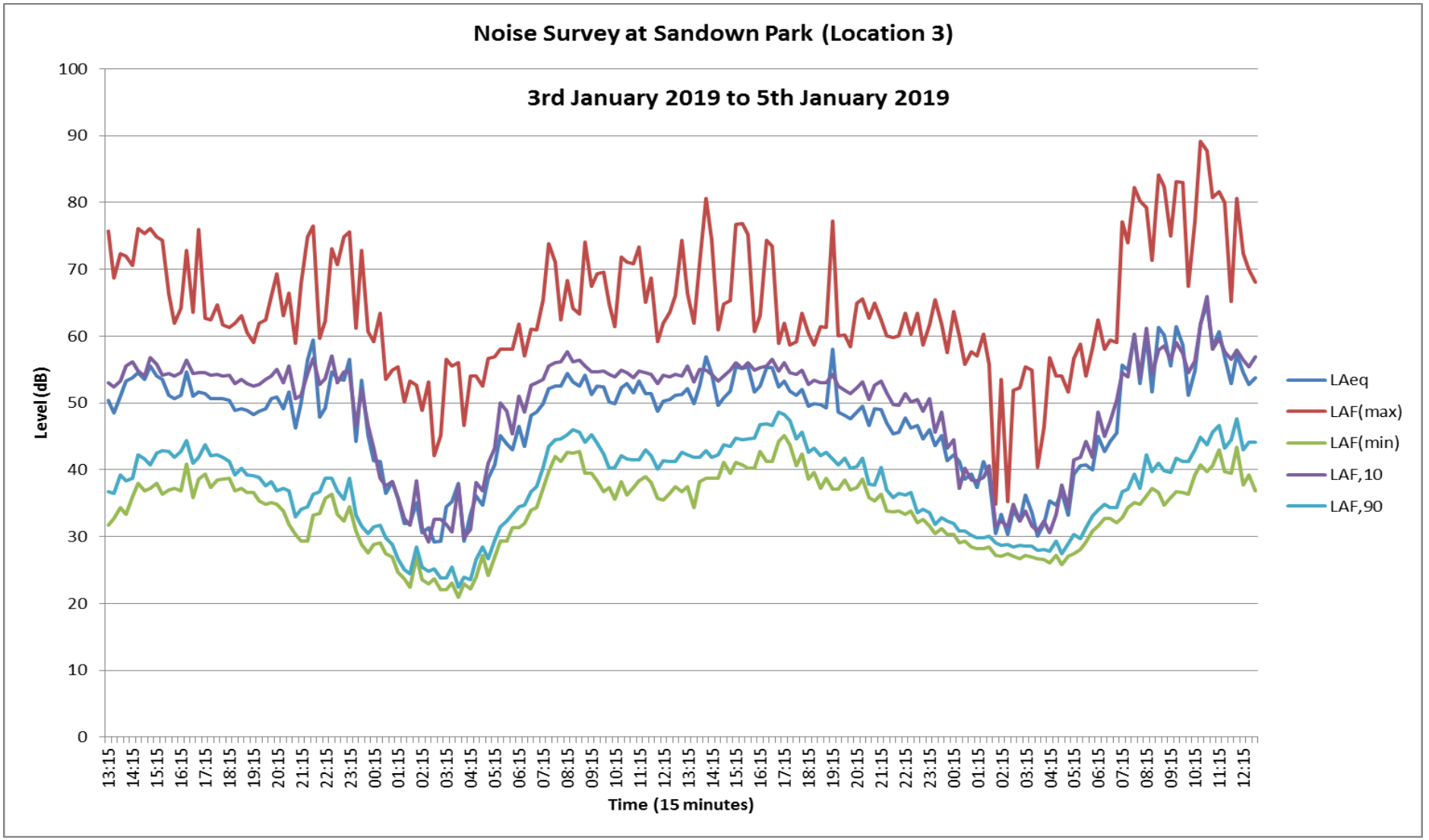
APPENDIX B

NOISE SURVEY RESULTS

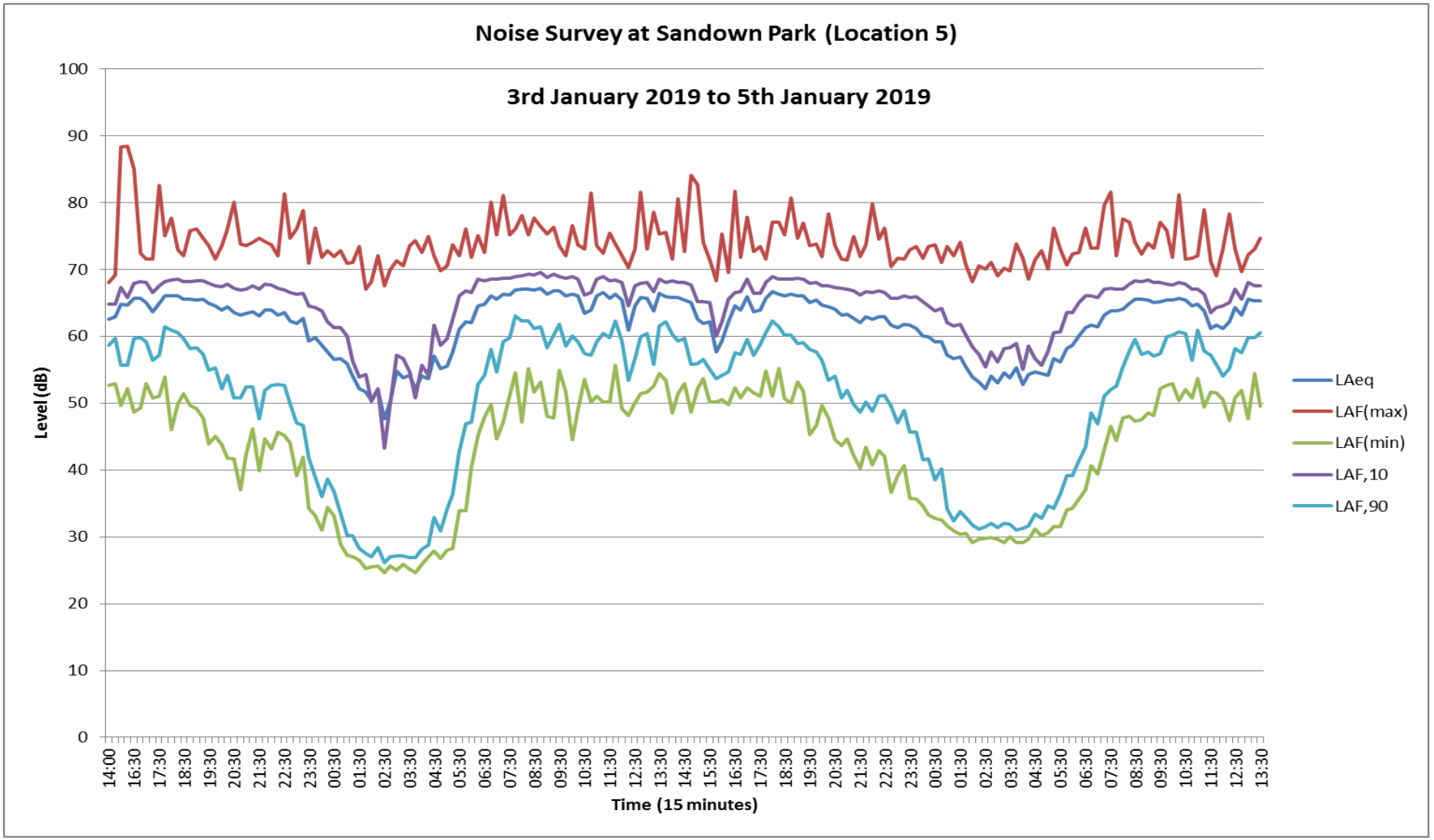
Appendix A1


Noise Survey at Sandown Park (Location 1)
3rd January 2019 to 8th January 2019
Level (dB)
90
80
70
60
50
40
30
20
10
0
13:00
15:30
18:00
20:30
23:00
01:30
04:00
06:30
09:00
11:30
14:00
16:30
19:00
21:30
00:00
02:30
05:00
07:30
10:00
12:30
15:00
17:30
20:00
22:30
01:00
03:30
06:00
08:30
11:00
13:30
16:00
18:30
21:00
23:30
02:00
04:30
07:00
09:30
12:00
14:30
17:00
19:30
22:00
00:30
03:00
05:30
08:00
10:30
Time (15 minutes)
LAeq
LAF(max)
LAF(min)
LAF,10
LAF,90

Appendix A2


Noise Survey at Sandown Park (Location 3)
3rd January 2019 to 5th January 2019
Level (dB)
100
90
80
70
60
50
40
30
20
10
0
13:15
14:15
15:15
16:15
17:15
18:15
19:15
20:15
21:15
22:15
23:15
00:15
01:15
02:15
03:15
04:15
05:15
06:15
07:15
08:15
09:15
10:15
11:15
12:15
13:15
14:15
15:15
16:15
17:15
18:15
19:15
20:15
21:15
22:15
23:15
00:15
01:15
02:15
03:15
04:15
05:15
06:15
07:15
08:15
09:15
10:15
11:15
12:15
Time (15 minutes)
LAeq
LAF(max)
LAF(min)
LAF,10
LAF,90

Appendix A3


Noise Survey at Sandown Park (Location 5)
3rd January 2019 to 5th January 2019
Level (dB)
100
90
80
70
60
50
40
30
20
10
0
14:00
16:30
17:30
18:30
19:30
20:30
21:30
22:30
23:30
00:30
01:30
02:30
03:30
04:30
05:30
06:30
07:30
08:30
09:30
10:30
11:30
12:30
13:30
14:30
15:30
16:30
17:30
18:30
19:30
20:30
21:30
22:30
23:30
00:30
01:30
02:30
03:30
04:30
05:30
06:30
07:30
08:30
09:30
10:30
11:30
12:30
13:30
Time (15 minutes)
LAeq
LAF(max)
LAF(min)
LAF,10
LAF,90

APPENDIX C

ACOUSTIC TERMINOLOGY

Acoustic Terminology

C1 Noise, defined as unwanted sound, is measured in units of decibels, dB. The range of audible sounds is from 0 dB to 140 dB. Two equal sources of sound, if added together will result in an increase in level of 3 dB, i.e. 50 dB + 50 dB = 53 dB. Increases in continuous sound are perceived in the following manner:

1 dB increase - barely perceptible.

3 dB increase - just noticeable.

10 dB increase - perceived as twice as loud.

C2 Frequency (or pitch) of sound is measured in units of Hertz. 1 Hertz (Hz) = 1 cycle/second. The range of frequencies audible to the human ear is around 20Hz to 18000Hz (or 18kHz). The capability of a person to hear higher frequencies will reduce with age. The ear is more sensitive to medium frequency than high or low frequencies.

C3 To take account of the varying sensitivity of people to different frequencies a weighting scale has been universally adopted called "A-weighting". The measuring equipment has the ability automatically to weight (or filter) a sound to this A scale so that the sound level it measures best correlates to the subjective response of a person. The unit of measurement thus becomes dBA (decibel, A-weighted).

C4 The second important characteristic of sound is amplitude or level. Two units are used to express level, a) sound power level - L_w and b) sound pressure level - L_p. Sound power level is an inherent property of a source whilst sound pressure level is dependent on surroundings/distance/directivity, etc. The sound level that is measured on a meter is the sound pressure level, L_p.

C5 External sound levels are rarely steady but rise or fall in response to the activity in the area - cars, voices, planes, birdsong, etc. A person's subjective response to different noises has been found to vary dependent on the type and temporal distribution of a particular type of noise. A set of statistical indices have been developed for the subjective response to these different noise sources.

C6 The main noise indices in use in the UK are:

L_{A90}: The sound level (in dBA) exceeded for 90% of the time. This level gives an indication of the sound level during the quieter periods of time in any given sample. It is used to describe the "background sound level" of an area.

L_{Aeq}: The equivalent continuous sound level in dBA. This unit may be described as "the notional steady noise level that would provide, over a period, the same energy as the intermittent noise". In other words, the energy average level. This unit is now used to measure a wide variety of different types of noise of an industrial or commercial nature, as well as aircraft and trains.

L_{A10}: The sound level (in dBA) exceeded for 10% of the time. This level gives an indication of the sound level during the noisier periods of time in any given sample. It has been used over many years to measure and assess road traffic noise.

L_{AMAX} The maximum level of sound measured in any given period. This unit is used to measure and assess transient noises, i.e. gun shots, individual vehicles, etc.

C7 The sound energy of a transient event may be described by a term SEL - Sound Exposure Level. This is the L_{Aeq} level normalised to one second. That is the constant level in dBA which lasting for one second has the same amount of acoustic energy as a given A weighted noise event lasting for a period of time. The use of this unit allows the prediction of the L_{Aeq} level over any period and for any number of events using the equation;

$$L_{AeqT} = SEL + 10 \log n - 10 \log T \text{ dB}.$$

Where

n = Number of events in time period T.

T = Total sample period in seconds.

C8 In the open, known as free field, sound attenuates at a rate of 6 dB per each doubling of distance. This is known as geometric spreading or sometimes referred to as the Inverse Square Law. As noise is measured on a Logarithmic scale, this attenuation in distance = 20 Log (ratio of distances), e.g. for a noise level of 60 dB at ten metres, the corresponding level at 160 metres is:

$$60 - 20 \text{ Log } {}^{160}/_{10} = 60 - 24 = 36 \text{ dB}$$