

SHARPS REDMORE

ACOUSTIC CONSULTANTS



Report

Environmental Noise Assessment

Proposed redevelopment of
Industrial site – Stanbridge
Road, Havant

Prepared by
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1.0 Introduction

- 1.1 Sharps Redmore (SR) have been instructed to carry out a noise assessment for the proposed redevelopment of a vacant industrial/warehouse building at Stanbridge Road, Havant. The site was previously part of the Pfizer complex, but has been vacant since 2011.
- 1.2 Outline planning permission is being sought for demolition of the existing industrial building and redevelopment of the site to provide new B1c, B2 and B8 accommodation. At this outline stage a number of options are being considered which could suit either a single end user or options for a number of users.
- 1.3 The site is within the New Lane Industrial Estate and as such is surrounded to the west, south and north by a range of industrial warehouse and business premises. The site is bordered to the east by the Portsmouth to London main rail line, which is currently operated by South West Trains. Beyond the rail line are the residential properties to the development in Nutwick Road.
- 1.4 The purpose of this report is to assess the noise impact from the proposed redevelopment of the site on the nearest noise sensitive properties to the site in Nutwick Road, Havant.
- 1.5 A guide to the assessment methodology and criteria used within this report is included in section 2.0. Details of the noise survey to establish the existing noise climate and to determine suitable design criteria at the closest residence are presented in section 3.0.
- 1.6 Section 4.0 - Section 5.0 of the report contains an assessment of the impact from the redevelopment on the residential properties in Nutwick Road.
- 1.7 A guide to the acoustic terminology used within the report is displayed in Appendix A.

2.0 Assessment Methodology

National Policy

- 2.1 The National Planning Policy Framework (NPPF) sets out the Government's economic, environmental and social planning policies for England and "these policies articulate the Government's vision of sustainable development." In respect of noise, Paragraph 123 of the NPPF states the following:

Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts²⁷ on health and quality of life as a result of new development;
- mitigate and reduce to a minimum other adverse impacts²⁷ 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 business wanting to develop in continuance of their business should not have unreasonable restrictions put on them because changes in nearby land uses since they were established;²⁸ 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

- 2.2 It can be seen that the NPPF reinforces 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."

- 2.3 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."

²⁷ See Explanatory note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs).

²⁸ Subject to the provisions of the Environmental Protection Act 1990 and other relevant law.

Local Policy

- 2.4 With regard to local policy, consideration is given to the Havant Core Strategy Policy CS16 – High Quality Design which states the following:

“the development does not cause unacceptable (SR emphasis) to the amenity of neighbours through smell, loss of privacy, noise or overlooking.”

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

- 2.6 It is possible to apply objective standards to the assessment of noise and the effect produced by the introduction of a certain noise source may be determined by several methods, as follows:

- The effect may be determined by reference to guideline noise values. British Standard (BS) 8233:2014 and World Health Organisation (WHO) “*Guidelines for Community Noise*” contain such guidelines.
- 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.
- Another method is to compare the resultant sound level against the background sound level (L_{A90}) of the area. This is the method employed by BS 4142:2014 to determine the significance of sound impact from sources of industrial and/or commercial nature. The sources that the new standard is intended to assess are sound from industrial and manufacturing processes, sound from fixed plant installations, sound from loading and unloading of goods at industrial and/or commercial premises and the sound from mobile plant and vehicles, such as forklift trucks, train or ship movements.

Guideline noise values

- 2.7 There are a number of guidance documents that contain recommended guideline noise values. These are discussed below.
- 2.8 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.
- 2.9 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 or physiological 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 are significant (the SOAEL). Compliance with the LOAEL should, therefore, be seen as a robust aim.
- 2.10 The World Health Organisation/BS 8233 guideline noise values are summarised in the following table:

TABLE 1: WHO/BS 8233 guideline noise values

Document	Level	Guidance
World Health Organisation "Community Noise 2000"	$L_{AeqT} = 55 \text{ dB}$	Serious annoyance, daytime and evening. (Continuous noise, outdoor living areas)
	$L_{AeqT} = 50 \text{ dB}$	Moderate annoyance, daytime and evening. (Continuous noise, outdoor living areas).
	$L_{AeqT} = 35 \text{ dB}$	Moderate annoyance, daytime and evening. (Continuous noise, dwellings, indoors)
	$L_{AeqT} = 30 \text{ dB}$	Sleep disturbance, night-time (indoors)
	$L_{AMAX} = 60 \text{ dB}$	Sleep disturbance, windows open at night. (Noise peaks outside bedrooms, external level).
	$L_{AMAX} = 45 \text{ dB}$	Sleep disturbance at night (Noise peaks inside bedrooms, internal level)
BS 8233:2014 "Sound Insulation and noise reduction for buildings"	$L_{AeqT} = 55 \text{ dB}$	Upper limit for external steady noise. (gardens and patios).
	$L_{AeqT} = 50 \text{ dB}$	Desirable limit for external steady noise. (gardens and patios).
	$L_{Aeq \text{ 16 hours}} = 35 \text{ dB}$	Resting, living room day. (Internal – steady noise)
	$L_{Aeq \text{ 16 hours}} = 40 \text{ dB}$	Dining, dining room day. (Internal – steady noise)
	$L_{Aeq \text{ 16 hour}} = 35 \text{ dB}$	Sleeping, bedroom day (Internal – steady noise)
	$L_{Aeq \text{ 8 hours}} = 30 \text{ dB}$	Sleeping, bedroom night (Internal – steady noise)

- 2.11 For L_{AeqT} criteria the time base (T) given in the documents 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 a more stringent assessment than is given in the guidance documents.

Changes in noise level

- 2.12 The following table shows the response to changes in noise (known as a semantic scale):

TABLE 2: Change in noise level

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

- 2.13 Changes in noise levels of less than 3 dBA are not perceptible under normal conditions and changes of 10 dBA 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_{AeqT} .
- 2.14 Where the noise climate already exceeds the guideline noise values it would be reasonable, given the above statement to consider criteria which do not exceed the existing noise climate, thus giving rise to an overall 3 dB increase i.e. the minimum perceptible. If the increase is less than the minimum perceptible it cannot be described as disturbing or to affect the amenity of residents.

BS 4142:2014

- 2.15 As outlined, this British Standard enables the significance of sound impact to be determined in relation to industrial and commercial sources. The significance of sound impact is to be determined according to the following summary process:
- i) Determine the background sound levels, in terms of the index L_{A90} , at the receptor locations of interest.
 - ii) Determine the specific sound level of the source being assessed, in terms of its L_{AeqT} level ($T = 1$ hour for day or 15 minutes for night), at the receptor location of interest.
 - iii) Apply a rating level acoustic feature correction if the source sound has tonal, impulsive, intermittent, or other characteristics which attract attention.
 - iv) Compare the rating sound level with the background sound level; the greater the difference between the two, the higher the likelihood of adverse impact.
 - v) A difference (rating – background) of around +10 dB is an indication of significant adverse impact, depending on the context; a difference of +5 dB is an indication of an adverse impact, depending on the context. 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 upon context.
 - vi) The general intent of the planning system is to ensure that a development does not result in “significant adverse impacts on health and quality of life.” BS 4142:2014 considers that the threshold of significant adverse impact is “a difference around +10 dB or more ... depending upon the context”. However the NPPF and NPPG state 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*”.
- 2.16 BS 4142:2014 introduces the concept of ‘context’ to the process of identifying noise impact. Section 11 of BS 4142:2014 explains “*The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs* (my emphasis). *An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs/will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context*” (my emphasis).

2.17 There are many *context* points to consider when undertaking an assessment of sound impact including:

- The absolute level of sound;
- The character and level of the specific sound in the context of the existing noise climate; for example is the sound to occur in a location already characterised by similar activities as those proposed?
- The sensitivity of the receptors;
- The time and duration that the specific sound is to occur;
- The conclusions of assessments undertaken using alternative assessment methods, for example WHO guidelines 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 and louvres, through the imposition of noise management plans and good practice, façade design and layout/orientation;
- The form and scale of a development. For example, does the proposed development involve a new industrial or commercial premises being built or is the proposal the installation of new plant or an extension to an existing premises?

2.18 It is therefore entirely possible that whilst the numerical outcome of a BS 4142 assessment is indicative of adverse or significant adverse impact, when the proposal is considered in *context* the significance of the impact is reduced to an acceptable level.

3.0 Noise Survey Details

- 3.1 A series of noise measurements were taken at two locations (ML1 and ML2) between the 6th March and 10th March 2015 as shown in Figure 1 below. The monitoring locations were chosen to represent the nearest noise sensitive properties in Nutwick Road.

Figure 1 – Monitoring Locations



- 3.2 At monitoring location 1 the sound level meter was set up to continuous monitor noise levels every 15 minutes during the survey period. At ML2, short-term attended measurements were carried out directly adjacent to the residential properties in Nutwick Road. All measurements were carried out in free-field conditions.
- 3.3 The measurements were taken using two Norsonic 118 type 1 sound level meters. The sound level meters were calibrated at the start and end of the survey with no variation in levels noted. The weather conditions during the survey were suitable for taking noise measurements.
- 3.4 The steady noise level $L_{Aeq15min}$, non-steady noise level dB L_{Amax} and background noise levels dB, $L_{A90(15min)}$ were recorded during the survey. A summary of the results for each location are shown in Table 3 and Table 4 below. Full details of the survey are shown in Appendix B.

TABLE 3 – Noise survey results ML1

Date	Noise Level dB				
	Daytime (0700 – 2300 hrs)		Night time (2300 – 0700 hrs)		
	$L_{Aeq15min}$	$L_{A90(15min)}$	$L_{Aeq15min}$	$L_{A90(15min)}$	L_{Amax}^2
6.3.15 ¹	47-68	43-51	36-64	35-45	84
7.3.15	42-66	41-47	34-61	33-44	77
8.3.15	36-56	35-45	30-66	28-51	86
9.3.15	38-70	36-55	29-66	28-45	86
10.3.15 ³	49-67	43-47			

¹Daytime based on survey period 1430-2300hrs

³Daytime based on survey period 0700 – 1045 hrs

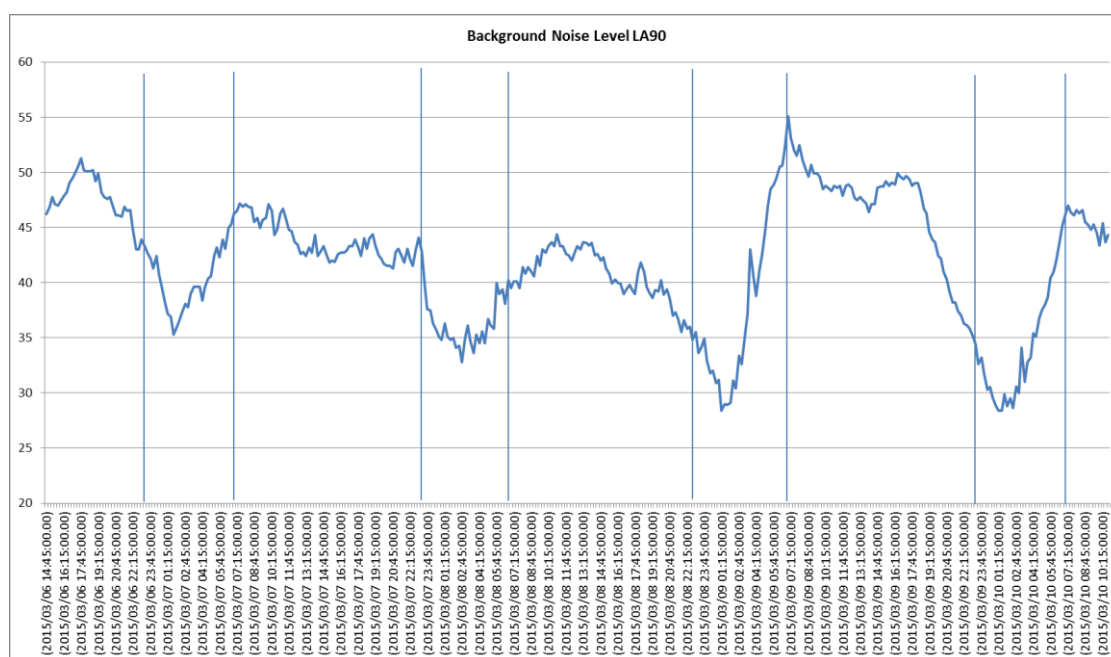
² L_{Amax} is 90th percentile measured between 2300 – 0700 hrs

TABLE 4 – Noise survey results ML2

Date/Time	Noise Level dB		
	L _{Aseq15min}	L _{Amax}	L _{A90,15min}
(2015/03/07 14:30:01.00)	58	76.9	41.9
(2015/03/07 14:45:01.00)	50.6	77.9	42.8
(2015/03/07 15:00:01.00)	58.6	79.3	42.8
(2015/03/07 15:15:01.00)	56.6	79.1	42.2
(2015/03/07 15:30:01.00)	58.1	78.7	41.7
(2015/03/07 15:45:01.00)	45.5	59.7	41.8
(2015/03/07 22:19:19.00)	61.3	82.9	42.2
(2015/03/07 22:30:02.00)	52.7	75.6	42.3
(2015/03/07 22:45:01.00)	58.7	81.2	43.6
(2015/03/07 23:00:01.00)	45.4	63.5	44
(2015/03/07 23:15:01.00)	60.6	81.1	41.6
(2015/03/07 23:30:01.00)	51.9	73.8	39.7

- 3.5 The existing noise climate is dominated by rail activity and distant road traffic. The lowest noise levels were recorded during Sunday 8th March with the highest levels recorded on Monday 9th March 2015. Noise levels measured at ML2 are similar to those measured at ML1 during the same period. Therefore it can be concluded that the noise levels at ML1 can be considered representative of the residential properties in Nutwick Road.
- 3.6 Typical background noise levels have been determined based on survey data as shown in Figure 2 below. For the daytime period (0700 – 2300 hours) typical background noise levels were found to be 43 dB L_{A90} and 35 dB L_{A90} during the night time period.

Figure 2: Background Noise Levels



4.0 Noise Assessment

4.1 The application is for outline planning permission for the redevelopment of the application site for B1c (light industry), B2 (general industry) and B8 (storage and distribution) use. The development will either consist of a single unit or a multi-unit option as shown in Appendix C to this report. In noise terms the main difference between the options is the location of the service yard area. In the case of the single unit option the service area will be located to the south of the building whilst in the case of the multi-unit option the service area will be located on the western side of the development.

4.2 Based on experience of similar developments, in terms of noise the following operational impacts have been identified:

- Noise from internal activity;
- Noise from external activity serving and car parking
- Noise from mechanical services plant

Noise from internal activity

4.3 The application is for outline only and the exact design and layout of the units is not known at this stage. Moreover the end-user is not known at this stage. However it has been assumed the units will be constructed using a composite metal panel system. This type of construction will provide a sound reduction index of 28 dB R_w and will be at least 40 metres from the nearest noise sensitive properties.

4.4 The units have been designed with noise taking into consideration. The façade facing directly towards the residential properties in Nutwick Road has been designed with no openings or doors to minimise noise break out from the units.

4.5 Taking into account the sound reduction of the building and the design measures incorporated to reduce noise breakout it is unlikely that noise from internal operations within the units will be audible during typical working hours. However should work be carried out during noise sensitive periods when background noise levels are low i.e. during the night time period, then it may be necessary to increase the sound reduction of the buildings.

Noise from external activity

4.6 The main sources of noise from external activity will be noise from service yard activity; vehicles manoeuvring, unloading and car park activity.

4.7 In terms of noise the multi-options (option 2 and 3) the service yard and car park areas are located on the western side of the building and as a result the buildings themselves will provide significant screening to the residential properties in Nutwick Road. Therefore for the purposes of the following assessment it has been assumed that the site will be used a single warehouse unit, with ancillary B1c and B2 use (Option 1), operating 24 hours a day. This is a robust assessment as service yard activity from B8 use will likely generate the higher noise levels than either B1 or B2 use.

Service Yard activity

- 4.8 Service vehicles will enter the site off Stanbridge Road and drive along the western side of the building before turning into a service area located on the southern side of the site, manoeuvring in this area before reversing onto the loading bays. Delivery lorries would either be unloaded via level dock system or by the use of fork lift trucks.
- 4.9 Sharps Redmore have measured delivery event activity noise at a large number of similar premises; the following maximum noise level and event duration has been recorded:

TABLE 5: Delivery event noise levels

Event Noise Level (at 10 metres)						Overall L_{Amax} dB
Arrival		Unloading		Departure		
Duration (mins)	L _{Aeq T} (dB)	Duration (mins)	L _{Aeq T} (dB)	Duration (mins)	L _{Aeq T} (dB)	
2	69	30	66	0.5	67	
						75-79

- 4.10 The noise levels in the table above encompass all typical delivery activity noise sources; such hydraulic tailgate lift noise, the removal of secure straps, noise associated with the lowering of tailgate flaps and the movement of roll cages.
- 4.11 Table 6 below summarises the predicted ambient (L_{AeqT}) and peak (L_{Amax}) delivery activity noise levels at first floor level 143 Nutwick Road, this being the closest residential property to the service yard area. The full delivery event activity noise calculations are included in Appendix D1; screening attenuation in respect of delivery vehicle manoeuvring is based on existing buildings and in respect of unloading by a screen as shown on site plan scheme 1. Details of the screening calculations are shown in Appendix D1 and D2. The assessment will depend on the number of vehicles being serviced at any one time, however for the purposes of the assessment it has been assumed that half the delivery bays (5) will be in use during the daytime period with a maximum number of 2 vehicles being unloaded simultaneously during the night time period. In both assessments it has been assumed that the bays closest to the residential properties are being used.

TABLE 6: Predicted delivery activity noise levels

Receptor	Predicted noise level dB	
	L _{Aeq 1 hour}	L _{Amax}
	Day/Night	Arrival-Departure/Unloading
143 Nutwick Road	42/38	54/46

- 4.12 An assessment of delivery activity noise levels using the methodology in BS 4142:2014 are presented in Appendices D2 and D3 which seek to assess delivery yard noise against the entire daytime and night time periods. Table 7 below summarises the rating level of delivery noise for each period.

TABLE 7: BS 4142:2014 Results

Time period	Rating level dB	BS 4142 guidance
Daytime (0700 to 2300 hours)	+2 dB	Indicative of low impact*
Night time (2300 to 0700 hours)	+6 dB	Indicative of adverse impact*

*Subject to context

- 4.13 As discussed in section 2.0 of this report one of the main policy aims of the NPPF is the avoidance of significant adverse impacts. In both cases, the BS 4142:2014 assessment is within the +10 significant adverse impact referred to in section 11 of the standard, subject to context.
- 4.14 The BS 4142 assessment at Appendices D2 and D3 summarises the key contextual considerations in this instance. The first is how the predicted delivery activity noise levels compare to the WHO guideline noise values; the table below, table 8, shows this comparison.

TABLE 8: Comparison of predicted delivery event noise levels with the WHO guideline noise values:

Daytime (0700 – 2300 hrs)		Night time (2300 – 0700 hrs)	
Predicted	WHO Guideline*	Predicted	Guideline**
42 dB L_{Aeq1hr}	50 dB $L_{Aeq16hr}$	38 dB L_{Aeq1hr}	45 dB L_{Aeq8hr}

* WHO Moderate annoyance criterion;

**Peak noise levels in Appendices C1 and C2 comply with the WHO peak noise criterion to avoid the onset of sleep disturbance

- 4.15 Peak noise levels from vehicles arriving will be between 46 – 54 dB L_{Amax} , which is significantly below the WHO night time peak guideline criteria for sleep disturbance of 60 dB L_{Amax} . Noise levels from delivery activity are within the WHO guideline values (both ambient and peak) and therefore in terms of absolute levels noise from the deliveries will not cause significant impact to local residents.
- 4.16 The second key contextual consideration is how the predicted delivery activity noise levels compare to the existing ambient noise climate.
- 4.17 The table below summarises the typical range of ambient noise levels derived from the noise survey results in Appendix B.

TABLE 9: Range of typical ambient ($L_{Aeq T}$) noise levels*

Measurement location	Time period	
	Daytime $L_{Aeq 1hr}$ range (dB)	Overall night time $L_{Aeq 1hr}$ range (dB)
ML 1	37 - 51	35 - 57

*Based on measurements recorded during Sunday 8th March 2015

- 4.18 Noise from deliveries will generally be below the existing noise level that occur during the daytime and night time period. Where noise levels exceed the existing ambient noise level, the overall change will be below +6 dB which is the moderate/significance criteria referred to in Table 2 above.
- 4.19 During the night time period 2300 – 0700 hours, in addition to the overall noise level, the peak level, L_{Amax} of a vehicle arriving, manoeuvring in the service yard and being unloaded has been considered. Fig 3 below shows the predicted peak level from a vehicle arriving and being unloaded against the existing L_{Amax} level recorded during the survey.

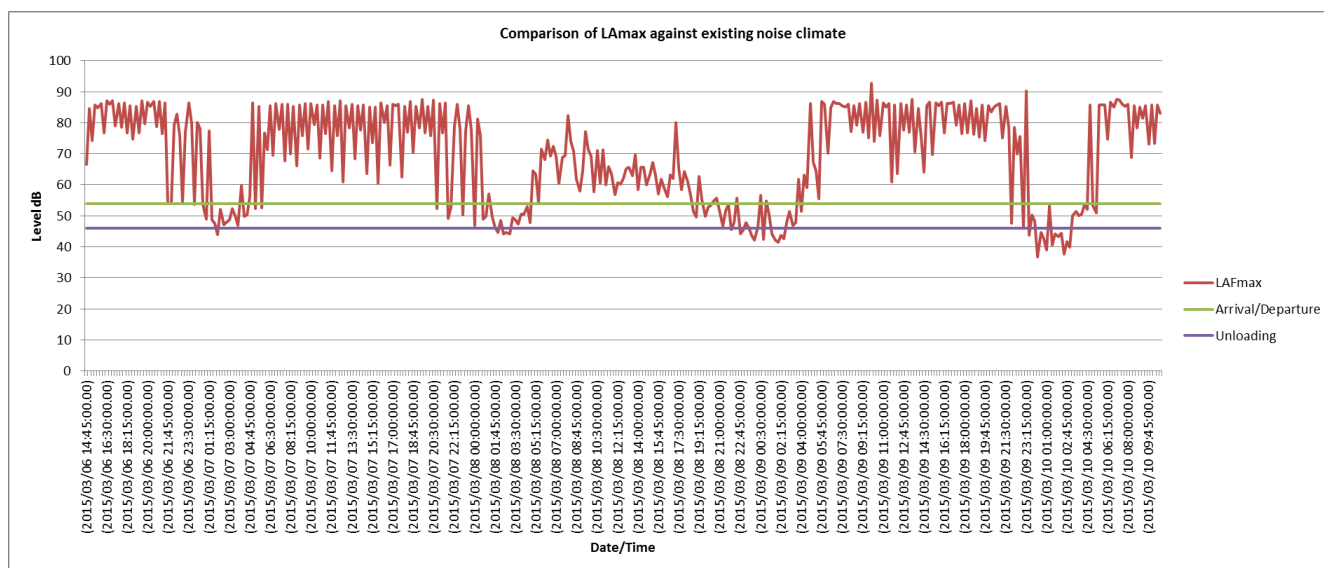


Fig 3 – Comparison of Peak noise levels Nutwick Close

- 4.20 Peak noise levels L_{Amax} are generally below the existing peak noise levels measured during the survey.
- 4.21 Overall this assessment objectively demonstrates that noise from deliveries/service yard activity will not give rise to significant adverse impact; which is the test under the NPPF.
- 4.22 The above assessment is based on assumptions made from similar type premises. The end-user of the site is not known at this stage and as a result whether any further mitigation measures are required such as additional screening, will depend on the final use of the site.

Car Parking activity

- 4.23 Option 1 shows car parking for 99 vehicles located on the northern side of the building. With regard to car park noise, the main area of concern would be noise from car door slams during the night time period, should the site operate 24 hours a day. SR have measured door slams at numerous sites and peak noise levels from door slams are typically 66 dB L_{Amax} when measured at 10 metres.
- 4.24 The nearest noise sensitive properties are approximately 40 metres from the nearest residential properties. At these distances noise levels will reduce by 12 dB ($20\log(10/40)$) resulting in noise levels of no more than 54 dB at the residential properties in Nutwick Road. Predicted noise levels will be at least 6 dB below the WHO guideline value for sleep disturbance of 60 dB. Furthermore the predicted noise levels will be significantly below the existing typical maximum noise levels measured during the noise survey.
- 4.25 Therefore noise from car parking will not have a significant impact on local residents.

Noise from mechanical services

- 4.26 The precise details of the mechanical services plant which will service the proposed development are not known at this stage but will depend on the final end user(s) of the site.
- 4.27 As discussed in paragraph 2.15 with regard to the assessment of industrial noise sources such as fixed plant, British Standard BS 4142:2014 Methods for rating industrial and commercial sound, enables the resultant sound level from new equipment to be compared against the existing background sound level of an area to determine the level of impact.
- 4.28 In determining suitable plant noise criteria SR has considered measured background levels recorded during the survey. To ensure that the amenity of local residents would not be affected the 'rating sound level' should not exceed the typical background level for the periods during which it will operate. This is an indication of the specific sound source having a low impact, depending on context and can be considered a robust target as significant adverse impact does (as referred to in the NPPF) does not occur until the specific sound level exceeds the background level by around 10 dB.
- 4.29 The typical background noise levels measured during the daytime and night time period were 43 dB during the daytime and 35 during the night time period. Therefore using the criteria referred to above the following noise criteria for mechanical services plant is recommended.
- Daytime (0700 – 2300 hrs) – 43 dB L_{A90}
 - Night time (2300 – 0700 hrs) – 35 dB L_{A90}
- 4.30 Based on experience of similar developments the above criteria are achievable.

5.0 Assessment conclusions

- 5.1 Outline planning permission is being sought for the redevelopment of a vacant industrial/warehouse building at Stanbridge Road, Havant. The impact of noise on local residents as result of the redevelopment has been considered with reference to national noise guidance.
- 5.2 SR has considered the use of the site as a multi-unit development and the development of a large single unit.
- 5.3 Based on experience of similar sites the main noise impacts from the redevelopment of the site have been identified as follows:
- Noise from internal activity;
 - Noise from external activity serving and car parking
 - Noise from mechanical services plant
- 5.4 The noise impact from internal activity will depend on the end-user of the site, however in terms of noise the buildings have been designed with no doors or openings facing directly towards the nearest noise sensitive buildings to the site.
- 5.5 Noise from external activity has been assessed based on a 24 hour operation of the site and it is concluded that noise from car parking and serving will not cause significant impact to local residents when considered in context of the site and existing noise climate.
- 5.6 A condition is recommended to control noise from fixed plant on the site. This condition limit applies to all of the plant taken as a whole. Lower limits may be applied to plant on individual units.
- 5.7 In summary, based on a thorough assessment against objective standards the proposed re-development of the industrial building would not give rise to significant adverse impact by reason of noise, and as such complies with the requirements of the NPPF.

Appendix A

Acoustic Terminology

Acoustic Terminology

- A1 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. $50 \text{ dB} + 50 \text{ dB} = 53 \text{ dB}$. 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.
- A2 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.
- A3 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).
- A4 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 .
- A5 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.
- A6 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.

- A7 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.

- A8 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:

$$60 - 20 \log \frac{160}{10} = 60 - 24 = 36 \text{ dB.}$$

Appendix B

Noise Survey Results

Time	6.3.15			7.3.15			8.3.15			9.3.15			10.3.15		
	L _{Aeq}	L _{Amax}	L _{A90}	L _{Aeq}	L _{Amax}	L _{A90}	L _{Aeq}	L _{Amax}	L _{A90}	L _{Aeq}	L _{Amax}	L _{A90}	L _{Aeq}	L _{Amax}	L _{A90}
00:00				41.8	53.6	41.3	37.8	46.9	37.5	33.6	42.1	32.9	33.4	48.2	31.7
00:15				54.8	80.1	42.4	56.5	81.3	36.3	33.7	46.5	31.8	30.8	36.8	30.3
00:30				55.4	78.1	40.7	51.3	75.7	35.7	34.4	56.6	32	32.3	44.6	30.5
00:45				40.7	53.6	39.6	36	49	35.1	31.5	42.4	30.9	30	42.5	29.6
01:00				38.8	49	38.2	35.6	49.9	34.8	33.5	54.8	31.2	29.6	39	28.8
01:15				53.7	77.4	37.2	38.2	57	36.3	29.8	50.3	28.4	32	53.2	28.4
01:30				37.7	48.8	36.9	35.4	49.7	35.1	30.4	44.1	29	29	40.5	28.4
01:45				36.1	47.6	35.3	35.5	46.1	34.8	29.8	42.2	28.9	31.4	44.2	29.9
02:00				36.6	44	35.8	35.9	44.6	35	31.1	41.5	29.1	31.4	43.2	28.8
02:15				37.7	52.1	36.6	35	48.4	34.1	31.9	43.7	31.1	32.2	44.5	29.5
02:30				38	47.2	37.3	34.9	44.1	34.3	31.4	42.6	30.4	29.2	37.7	28.6
02:45				38.9	48.1	38.1	34	44.6	32.8	36.4	47.8	33.4	31.5	41.7	30.6
03:00				38.6	48.8	37.8	35.5	44.1	35	36.4	51.3	32.6	30.9	39.9	30
03:15				40.1	52.3	39	38.9	49.4	36.1	38.1	46.8	35.2	37.1	50.1	34.1
03:30				40.9	50	39.6	39	48.7	34.7	38.6	47.7	37.2	35.9	51.4	31
03:45				40.3	46.9	39.6	36.8	47.4	33.6	46.7	61.7	43	36.7	50	32.8
04:00				42.5	59.7	39.6	39.1	50.6	35.3	41.3	51.4	40.5	35.6	50.4	33.2
04:15				39.5	49.8	38.4	38.6	50.4	34.5	41.3	63.2	38.8	37.8	53.6	35.4
04:30				41	50.3	39.6	38.9	52.9	35.6	43.2	59	41.1	37.7	52.1	35.1
04:45				41.6	56.1	40.4	36.5	47.8	34.5	61.3	86.3	42.5	60.8	85.8	36.8
05:00				62.8	86.4	40.6	42.9	64.5	36.7	46.1	67.2	44.8	40	53.3	37.5
05:15				42.9	52.3	42.4	40	63.3	36.1	47.5	64.4	47	39.6	51	38
05:30				61.9	85.2	43.2	37.5	54.2	35.8	48.9	55.5	48.5	63.2	85.7	38.7
05:45				42.8	52.5	42.3	48.1	71.6	40	66.2	86.9	48.9	63.6	85.7	40.4
06:00				53.9	76.7	43.9	50.9	68.1	39	65	86	49.5	63.6	85.7	41
06:15				45.6	71.2	43.1	47.8	74.5	39.4	52	70.1	50.5	51.4	74.7	42
06:30				61.3	85.4	45	45.9	69.2	38.1	63.7	84.9	50.6	64	86.7	43.7

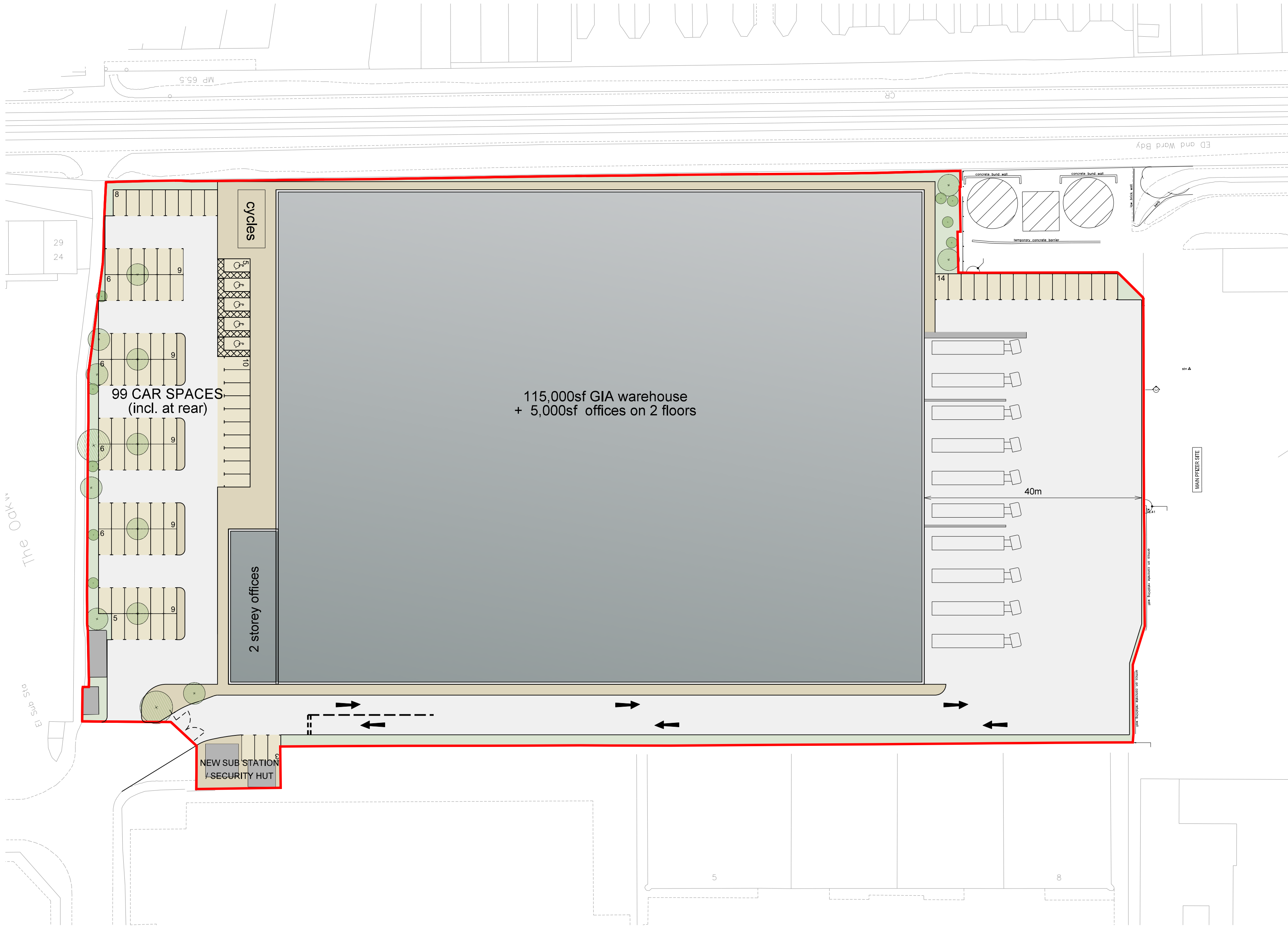
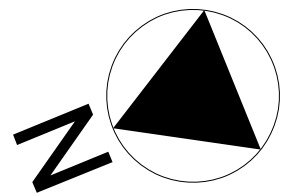
06:45				47.5	69.5	45.3	48.7	72.3	40.2	65.2	86.9	52.3	63.4	85.1	45.1
07:00				62.6	86.2	46.2	46.6	69.2	39.5	66.7	86.3	55.1	66.5	87.5	46
07:15				52.7	77.9	46.5	42.6	60.4	40.1	64.3	86.1	53.1	64.2	87.4	47
07:30				65.3	85.9	47.2	44	68.8	40.1	63.4	85.4	52	64	85.9	46.4
07:45				49.5	67.7	46.9	44	69.4	39.5	60.2	85.1	51.5	61.6	85.3	46.1
08:00				62.3	85.9	47.1	55.7	82.3	41.4	61.7	85.9	52.5	61.7	85.9	46.6
08:15				48.3	70	46.9	49.6	73.9	40.8	55.5	77.2	51.1	49.5	68.7	46.3
08:30				64.7	85.2	46.8	45.6	70.8	41.4	63.4	85.4	50.4	64.5	85.6	46.6
08:45				46.4	66	45.5	44.5	61.9	41	58.4	79.1	49.6	57	78.3	45.5
09:00				63.4	85.8	45.9	42.5	58	40.6	61.6	86.2	50.7	60.7	85.1	45.2
09:15				54.2	75.8	45	45	64.6	42.4	58.9	77	49.9	60	81.4	44.8
09:30				63.9	86.3	45.7	48.4	77.1	41.5	63.5	86.7	49.9	63.7	85.6	45.3
09:45				49.6	71.6	45.9	48.6	71.3	43	57	75.2	49.6	54.8	73.2	44.5
10:00				62.8	86.1	47.1	44.9	69.3	42.7	69.8	92.7	48.5	61.3	85.7	43.4
10:15				57.2	79.4	46.5	44.1	57.8	43.3	57.3	73.9	48.8	55.5	73.4	45.4
10:30				65.2	85.8	44.3	47.5	71.1	43.7	66	87.3	48.6	65.7	85.8	43.7
10:45				48.9	68.6	44.8	44.6	60.5	43.3	55.6	75.7	48.3	55.8	83.1	44.3
11:00				62.3	85.8	46.3	46.5	71.2	44.4	65	86.5	48.8			
11:15				58.1	76.5	46.7	44.5	60	43.3	60.2	85.1	48.6			
11:30				66.1	86.9	45.7	44.8	65.8	43.3	66.5	86.2	48.8			
11:45				48.1	64.5	44.8	44.8	63.5	42.6	48.6	60.8	47.9			
12:00				62.2	85.6	44.7	43.5	56.9	42.5	64.1	85.8	48.8			
12:15				54.3	75.8	43.7	43.3	60.6	42	49.7	63.5	48.9			
12:30				65.8	87.2	43.5	44.8	60.2	42.7	64	86.3	48.6			
12:45				44.4	61	42.6	46.3	62.1	43.3	54.8	77.7	47.7			
13:00				63	85.6	42.8	45.5	65.2	43	61	85.8	47.5			
13:15				55.7	78.2	42.4	46.6	65.7	43.7	53.7	76.9	47.8			
13:30				65.7	86	43.2	45.9	62.9	43.6	66.2	87.6	47.5			
13:45				49.4	68.3	42.7	47	69.7	43.4	50.8	70.7	47.2			

14:00				61.4	85.5	44.3	45.2	58.5	43.6	61	84.6	46.4			
14:15				55.2	77.6	42.4	45.9	65.6	42.5	52.6	75.3	47.1			
14:30				65.3	85.8	42.8	46.5	65.6	42.6	47.7	64	47.1			
14:45	46.9	66.6	46.2	46.1	63.5	43.3	43.3	59.9	42	61.2	85.6	48.6			
15:00	61.5	84.5	46.9	62	85.1	42.6	44	63.4	42.3	66.3	86.7	48.7			
15:15	53.5	74.3	47.8	52	73.6	41.8	45.8	67.2	41.3	51.1	69.7	48.7			
15:30	65.5	85.8	47.1	63.8	85.1	42	44.3	63	40.8	66.3	86.5	49.2			
15:45	63.4	84.8	47	42.5	60.5	41.9	42	57.1	39.9	63.7	85.5	48.8			
16:00	64.6	86.3	47.4	62.7	86.4	42.6	41.8	61.9	40.3	64.3	86.7	49.1			
16:15	54.4	76.8	47.9	56.8	80.1	42.7	41.9	59	40	53.5	76.7	48.9			
16:30	66.7	87.1	48.2	65.1	85.6	42.7	41.6	56.1	39.9	66.6	86.3	49.9			
16:45	65.2	85.9	49	44.9	66.3	42.9	42.2	63.2	39	65.1	86.1	49.6			
17:00	64.6	87	49.5	63.1	86	43.3	42.8	62.1	39.4	64.3	86.7	49.4			
17:15	55	79	50	63.7	85.4	43.3	51.9	80.1	39.8	55.8	79.2	49.7			
17:30	63.1	86.2	50.6	63	86	43.9	45.1	65.3	39.3	63.2	85.8	49.4			
17:45	58.8	78.6	51.3	44.9	62.5	43.2	39.9	58.5	39	56.8	76.5	48.8			
18:00	62.7	86.5	50.2	62.1	85.2	42.4	44.5	64.2	41	62	86.3	49			
18:15	57.9	76.8	50.1	55.3	76.9	44	44.3	60.8	41.8	56.9	76.6	49			
18:30	62.5	85.4	50.1	65.1	86.8	43.1	42.2	56.7	41	63.8	87	48.2			
18:45	57.2	74.6	50.2	50.4	70.3	44	40.4	51.4	39.6	56.4	76.2	46.7			
19:00	63.5	85.3	49.2	62.5	85.3	44.4	39.6	49.7	39.1	62.8	84.7	46.3			
19:15	56.9	76.7	49.9	55.7	78.2	43.4	45	62.6	38.6	55.1	75.4	44.6			
19:30	64.2	87	48.2	64.6	87.5	42.5	40.6	55.3	39.3	63.4	85.7	43.9			
19:45	57.2	79.6	47.8	54.4	76.6	42.2	39.7	49.9	39.2	54.6	74.2	43.7			
20:00	60.7	86.6	47.6	62	85.3	41.7	40.5	52.7	40.2	60.4	85.6	42.4			
20:15	63.2	85.3	47.8	54.2	75.7	41.5	39.9	53.4	38.9	60.2	83.5	42.2			
20:30	65.1	86.8	47	66.2	87.3	41.5	41.1	54.9	39.4	61.7	85	41			
20:45	56.9	78.8	46.1	41.7	52.2	41.3	39.1	55.6	38.6	62.8	85.7	40.3			
21:00	64.3	86.9	46.1	62.8	86.1	42.8	37.6	51.9	37	61	86.1	39.2			

21:15	56.4	76.5	46	54.9	76.8	43.1	37.8	46.7	37.3	53.3	75.2	38.2			
21:30	62.9	86.5	46.9	63.5	86.4	42.4	37.7	51.6	36.7	64.4	85.2	38.2			
21:45	46.9	54	46.5	42.2	49.1	41.8	36.7	53.7	35.5	53.8	78.4	37.4			
22:00	46.9	53.9	46.6	43.2	52.7	43.1	37.3	45.5	36.6	38.2	47.6	37			
22:15	56.9	79.1	44.8	57.3	79	42.1	36.5	47.7	35.8	57	78.5	36.3			
22:30	59.5	82.9	43	61.4	86	41.5	37.4	55.8	36	47	70	36.1			
22:45	52.4	75.7	43	55	77.8	43.1	35.7	44.2	34.8	50.8	75.5	35.8			
23:00	44.3	54.3	43.9	44.4	50.3	44.1	36	45.2	35.5	35.8	46.3	35.1			
23:15	54.7	77	43.3	57.1	77.3	42.8	34.7	47.9	33.6	65.9	90.2	34.4			
23:30	64	86.4	42.7	61.4	85.4	40	35	46.2	34.2	33.9	43.8	32.6			
23:45	56.7	79.8	42.2	55.6	77.9	37.6	35.4	43.8	34.9	33.9	50.2	33.2			

Appendix C

Layout Options



PARKING & AREAS

99 cars incl 5 disabled. 47 cycles.
(subject to highways consultant consideration
& agreement of LA)
BUILDING GEA- 11,363 sm- 122,311 sf

BUILDING GIA:
WAREHOUSE: 10683 sm - 115,000sf
OFFICES: 465 sm - 5,000sf
TOTAL: 11,148 sm - 120,000sf

SITE AREA: - 19,745sm 4.88 acres

COVERAGE: 55%
DENSITY: 56%

DRAFT 04.03.15

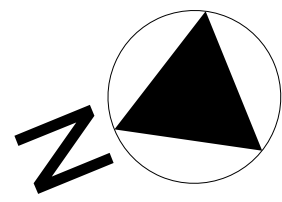
A	Scheme updated	CG	27.02.15
Rev	Description	Chkd	Date

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Project	STANBRIDGE ROAD HAVANT		
Drg Title	SITE PLAN SCHEME 1		
Status	P L A N N I N G		
Scale	1:500 @ A1	Date	@ A1
Drg No	14021 / TP / 006	Rev	A



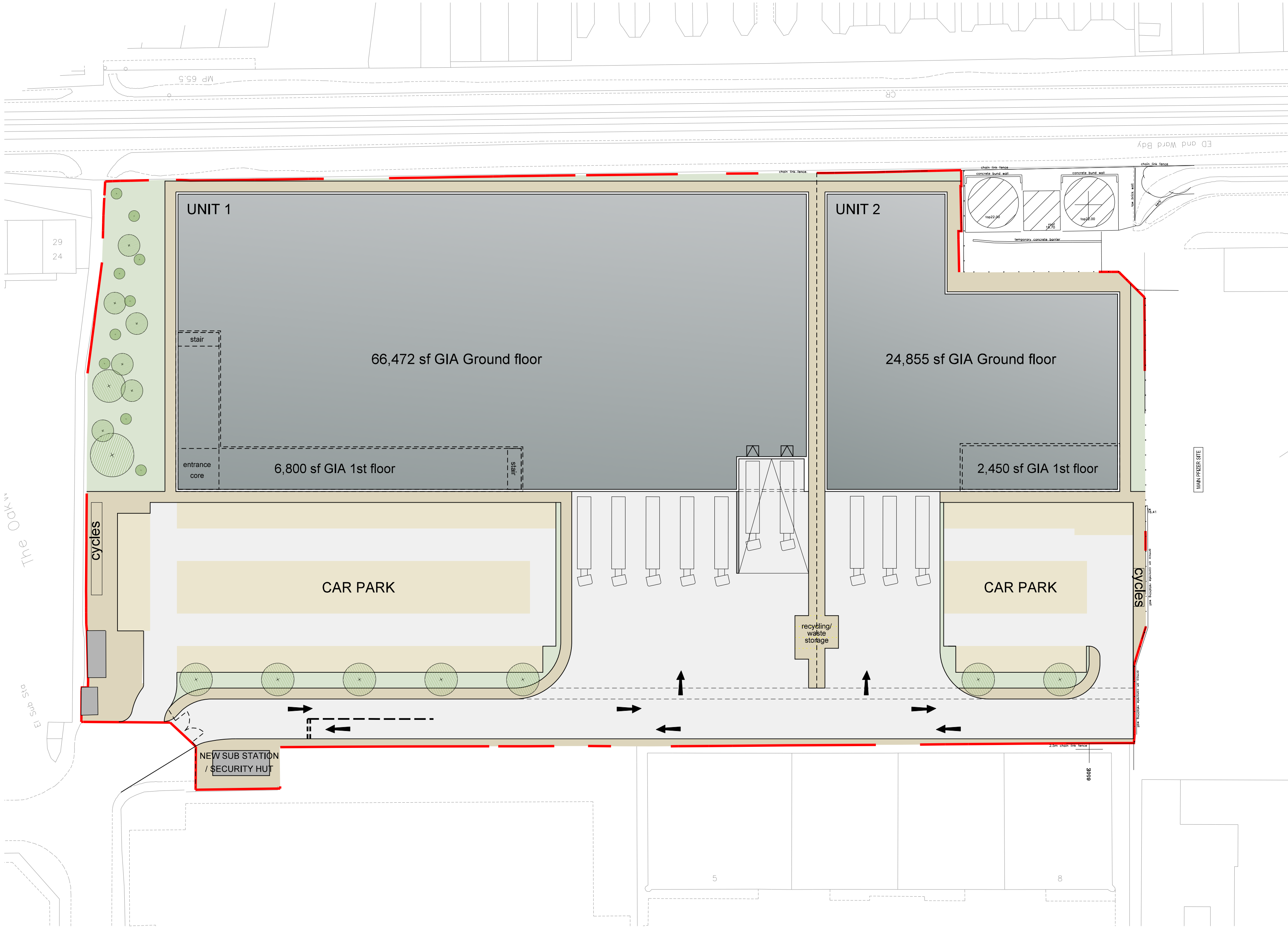
UNIT 1 GEA- 7013 sm

UNIT 2 GEA- 2654 sm

SITE AREA: - 19,745 sm 4.88 acres

COVERAGE: - 44% (on GEA)

DENSITY: - 49% (on GEA)



PRELIMINARY

DRAFT 04.03.15

NOTES

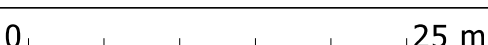
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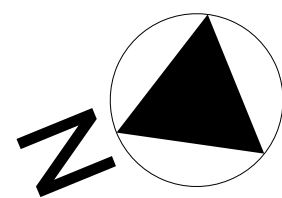
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A	Scheme revised	CG	27.02.15
Rev	Description	Chkd	Date

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Project	STANBRIDGE ROAD HAVANT		
Drg Title	SITE PLAN SCHEME 2		
Status	P L A N N I N G		
			
Scale	1:500 @ A1	Date	17.02.15
Drg No	14021 / TP / 010	Rev	B

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NOTES

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UNIT 1 GEA- 3920 sm

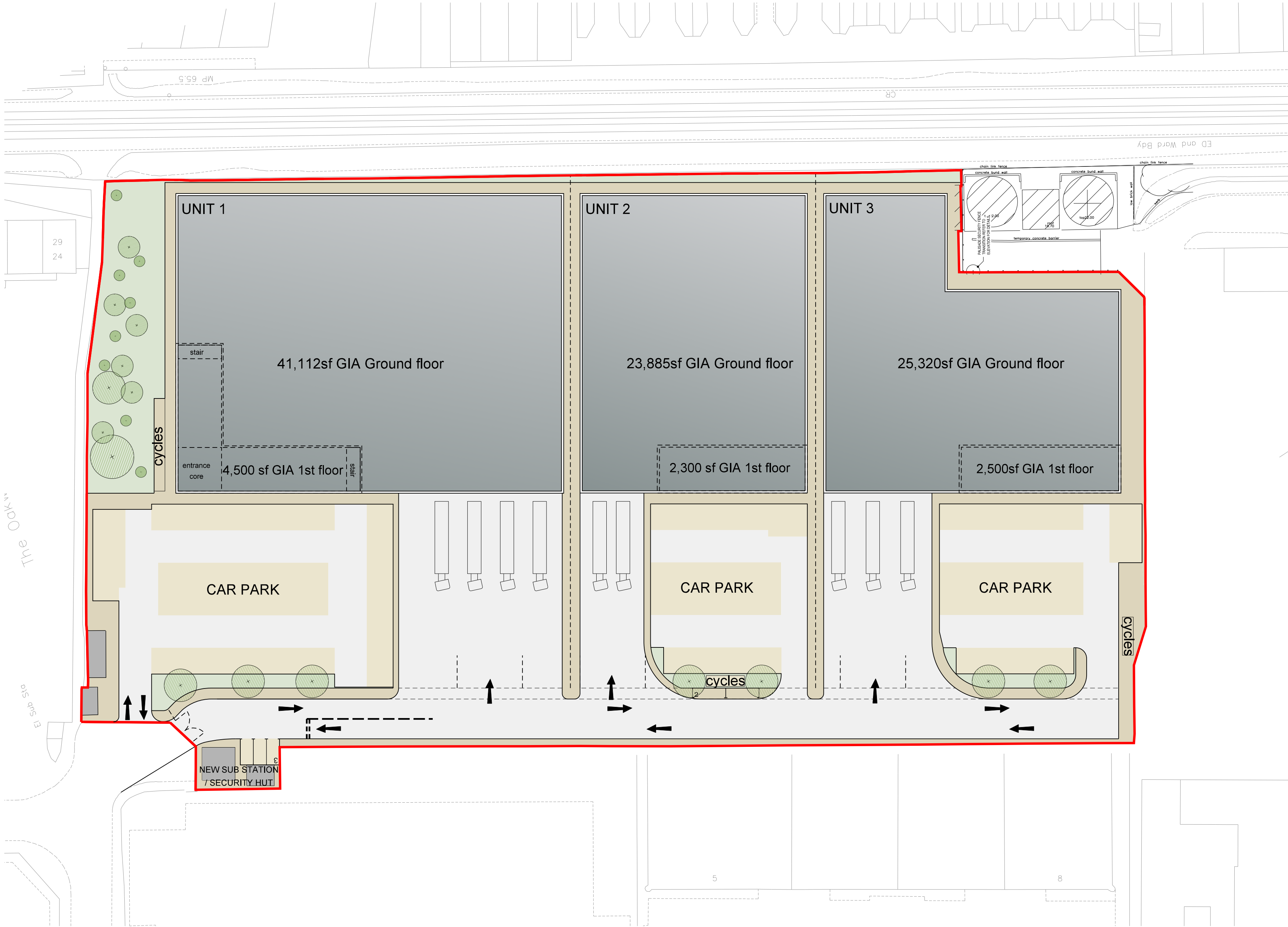
UNIT 2 GEA- 2296 sm

UNIT 3 GEA- 2440 sm

SITE AREA - 19,745 4.88 acres

COVERAGE - 44% (on GEA)

DENSITY - 49% (on GEA)

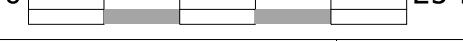


DRAFT 04.03.15

B	Scheme updated	CG	04.03.15
A	Scheme updated	CG	27.02.15
Rev	Description	Chkd	Date

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Project	STANBRIDGE ROAD HAVANT		
Drg Title	SITE PLAN SCHEME 3		
Status	PLANNING		
0  25 m			
Scale	1:500 @ A1	Date	17.02.15
Drg No	14021 / TP / 011	Rev	B

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Appendix D

Servicing Calculations

APPENDIX D1: Predicted delivery event noise at 139 Nutwick Road

Activity	Resultant noise level (dB)	
	Daytime	Night time
Arrival		
Baseline level	$L_{Aeq,2\text{ mins}} = 69$	$L_{Aeq,2\text{ mins}} = 69$
Distance attenuation to 60 metres = $20 \log^{10}/_{60} = -16$	$L_{Aeq,2\text{ mins}} = 53$	$L_{Aeq,2\text{ mins}} = 53$
Screening loss = -5 dB (assumed)	$L_{Aeq,2\text{ mins}} = 48$	$L_{Aeq,2\text{ mins}} = 48$
Convert to 1 hour = $10 \log^2/_{60} = -15$	$L_{Aeq,1\text{ hour}} = 33$	$L_{Aeq,1\text{ hour}} = 33$
Unloading		
Baseline level	$L_{Aeq,30\text{ mins}} = 66$	$L_{Aeq,30\text{ mins}} = 66$
Distance attenuation to 60 metres = $20 \log^{10}/_{60} = -16$	$L_{Aeq,30\text{ mins}} = 50$	$L_{Aeq,30\text{ mins}} = 50$
Screening loss = -17 dB (see Appendix C2)	$L_{Aeq,30\text{ mins}} = 33$	$L_{Aeq,30\text{ mins}} = 33$
Convert to 1 hour = $10 \log^{30}/_{60} = -3$	$L_{Aeq,1\text{ hour}} = 30$	$L_{Aeq,1\text{ hour}} = 30$
Departure		
Baseline level	$L_{Aeq,0.5\text{ mins}} = 67$	$L_{Aeq,0.5\text{ mins}} = 67$
Distance attenuation to 60 metres = $20 \log^{10}/_{60} = -16$	$L_{Aeq,0.5\text{ mins}} = 51$	$L_{Aeq,0.5\text{ mins}} = 51$
Screening loss = -5 dB (see Appendix C1)	$L_{Aeq,0.5\text{ mins}} = 46$	$L_{Aeq,0.5\text{ mins}} = 46$
Convert to 1 hour = $10 \log^{0.5}/_{60} = -21$	$L_{Aeq,1\text{ hour}} = 25$	$L_{Aeq,1\text{ hour}} = 25$
Overall 33+30+25	$L_{Aeq,1\text{ hour}} = 35\text{ dB}$	$L_{Aeq,1\text{ hour}} = 35\text{ dB}$
Correction for number of vehicles $10 \log n$	$L_{Aeq1\text{hour}} = 42\text{ dB}$	$L_{Aeq1hr} = 38\text{ dB}$
WHO DAYTIME CRITERION ($L_{Aeq,16hr}$)	55 dB	
WHO NIGHT TIME CRITERION ($L_{Aeq,8hr}$)	45 dB	
Existing ambient noise climate¹	$L_{Aeq,1\text{ hour}} = 37 - 51$	$L_{Aeq1\text{hour}} = 35 - 58$
Peak noise – arrival and departure		
Baseline level	$L_{Amax} = 75$	
Distance attenuation to 60 metres = $20 \log^{10}/_{60} = -16$	$L_{Amax} = 59$	
Screening loss = -5dB(assumed)	$L_{Amax} = 54$	
Peak noise – unloading		
Baseline level	$L_{Amax} = 79$	
Distance attenuation to 60 metres = $20 \log^{10}/_{60} = -16$	$L_{Amax} = 63$	
Screening loss = -17 dB (see Appendix C2)	$L_{Amax} = 46$	
WHO guideline night time criterion (L_{Amax})	$L_{Amax} = 60$	
Existing peak noise climate 2300 – 0700 hours¹	$L_{Amax} = 77$	

¹Based on noise levels measured on Sunday

APPENDIX D2: Assessment of delivery activity noise using BS 4142:2014: Daytime

Results	Receptor location	Relevant clause	Commentary
	Nutwick Road		
Background sound level: daytime	43 dB $L_{A90\ 16\ hours}$	8.1 8.1.3	The typical daytime sound level was derived from the graph of background sound levels
Specific sound level	42 dB L_{Aeq1hr}		Predicted levels from delivery sound source measurements taken over 20 years of assessing retail noise and its characteristics. Based on 5 deliveries occurring simultaneously
Acoustic feature correction	+3 dB	9.2	Delivery activity noise is typically characterised by a series of short impulsive bangs, crashes and 'rattles' associated with the movement of produce roll cages. At these receptor locations the impulsivity associated with a delivery event is considered to be just perceptible in the context of the existing noise climate which is dominated by rail and industrial noise
Rating level	45 dB	9.2	
Background level: daytime	43 dB	8.1 8.1.3	Based on measurements recorded on Sunday
Excess of rating level over background level	45-43 = +2 dB	11	
Assessment indicates likelihood of low impact subject to context	Relevant clause 11 The context is: 1. Predicted delivery event noise levels comply with the WHO daytime guideline value to avoid moderate annoyance (50 dB $L_{Aeq\ 16\ hours}$). 2. How do the predicted delivery activity sound levels compare to the existing ambient ($L_{Aeq\ T}$) noise climate? Predicted delivery activity sound levels are below the existing daytime ambient noise climate. The overall change in ambient noise level ($L_{Aeq\ 1\ hour}$) would be imperceptible (in the context of the change in hourly noise level in Table 2). 3. The character of the existing noise climate. The existing noise climate during the day is contributed to by Rail and Industrial noise. Noise from delivery activity during the day would not be out of context with the existing noise climate.		
Uncertainty of the assessment	Relevant clause 10 The excess of the rating level over the background sound level is +2 dB; the uncertainty of the measurement could have an influence to the outcome of the assessment.		

APPENDIX D3: Assessment of delivery activity noise using BS 4142:2014: Night time

Results	Receptor location	Relevant clause	Commentary
	Nutwick Close		
Background sound level: daytime	35 dB L_{A90} 8 hours	8.1 8.1.3	The typical daytime sound level was derived from the graph of background sound levels in Figures 1.
Specific sound level	38 dB		Predicted levels from delivery sound source measurements taken over 20 years of assessing retail noise and its characteristics. Based on 2 deliveries occurring simultaneously
Acoustic feature correction	+3 dB	9.2	Delivery activity noise is typically characterised by a series of short impulsive bangs, crashes and 'rattles' associated with the movement of produce roll cages. At night noise sensitive location is inside with windows open. The impulsivity associated with a delivery event is considered to be just perceptible (within the bedroom).
Rating level	41dB	9.2	
Background level: night time	35 dB	8.1 8.1.3	Based on measurements recorded between 8 th and 9 th March 2015
Excess of rating level over background level	41 - 35 = +6 dB	11	
Assessment indicates likelihood of adverse impact subject to context	Relevant clause 11 The context is: 1. Predicted delivery event noise levels comply with the WHO night time guideline value to avoid sleep disturbance (45 dB L_{Aeq} 8 hours). 2. How do the predicted delivery activity sound levels compare to the existing ambient (L_{Aeq} τ) noise climate? Predicted delivery activity sound will generally exceed the existing night time ambient noise levels.. 3. The character of the existing noise climate. The existing noise climate during the night time period is dominated by distant road traffic and noise from mechanical services plant. Noise levels are from localised activity would be out of character with existing noise climate.		
Uncertainty of the assessment	Relevant clause 10 The excess of the rating level over the background sound level is +6 dB; the uncertainty of the measurement could have an influence to the outcome of the assessment.		