Noise Impact Assessment

Redevelopment of Cat & Fiddle Public House
Clyst St Mary
Exeter EX5 1DP

Client:

Design Management Partnership
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Prepared

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1 Executive Summary

The proximity of residential dwelling to the north of the Cat & Fiddle Public House and any potential noise impact on their amenity have been addressed in this report.

A site noise survey has been carried out close to the static caravans on Hazelmead Road over five days and this has shown that the soundscape is controlled by traffic passing along the very busy A3052 with levels of 59 dB $L_{Aeq,day}$ and 54 dB $L_{Aeq,night}$ existing at these dwellings. This soundscape provides a considerable masking of customer vehicle noise on the site, which is low speed and low in volume by comparison.

The proposed redevelop of the site includes for the construction of a two storey hotel building in the western car park of the pub. This will remove 57 parking spaces and the hotel building will provide some visual and acoustic screen of traffic noise for the properties on Hazelmead Road.

The noise created by delivery vehicles serving the hotel has also been considered and shown that its impact, provide the hours of delivery are limited by condition to day time only, will be negligible.

The site noise survey has enabled the background sound levels to be quantified so that any new plant noise, from the hotel and the refurbished pub, can be Conditioned (5 dB below background) to ensure its impact will not be unacceptable. Thus complying with East Devon Districts Council's planning policy EN14.

The potential impact of the use of the proposed new car parking areas, has also been considered and shown numerically that it will have no impact of significance, over the existing soundscape, provided that a 1.8m high solid timber fence is erected along the northern residential boundary of the site.

In this way it can be demonstrated that noise from the proposed development will not be excessive, suitable mitigation has been recommended and this includes, controlling delivery hours, limiting fixed plant levels and the inclusion of a boundary acoustic screen and the planning policy objectives both locally and national have been complied with. Noise therefore should not be a factor for the local authority in determining this application.

2 Introduction

A planning application is about to be submitted to East Devon District Council for the redevelopment of the Cat & Fiddle Public House at Clyst St Mary near Exeter which has been run by St Austell Breweries for that last 20 years. The proposed work will involve a major remodeling and refurbishment of the existing pub plus the construction of a new, two-storey hotel lodge (33 rooms) in the existing car park of the pub.

Pre-application advice has been sought and Lynne Shwenn, Senior Planning Officer at East Devon DC has set out the council's response in her letter dated 23rd November 2016 (ref' 16/0314/PREAPP). This deals with noise in part and states the planning application should be accompanied by a Noise assessment.

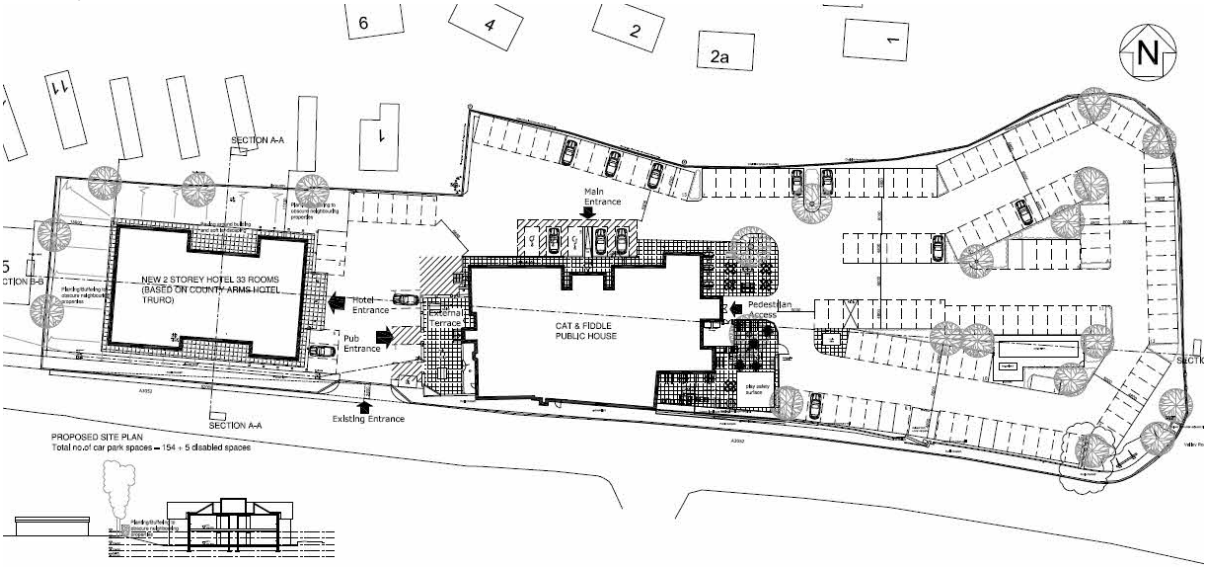
> Residential Amenity
>
> In addition to the concerns about the principle of development on this site, Officers are also concerned regarding the physical impact of the proposal, particularly in respect of the impact on amenity arising from the physical presence and close proximity of the proposed building to the boundaries of the site (north and west) and the impact which this would have on the residential amenity of the occupiers of the park homes abutting the site. These concerns relate to loss of outlook and privacy, visual intrusion, and additional noise and disturbance.
>
> Further, introducing an additional business use onto the site would significantly increase activity levels with deliveries to and from the site, potential customers and staff etc which coupled with the need to provide on-site car parking, highway and improvements to the vehicular access will urbanise the site and be likely to have a detrimental impact on the rural character and appearance of the area. This adds further concern as to the suitability of this site for the proposed development.

Mr Steve Peacock of Design Management Partnership has instructed myself Mr Peter Ashford, BSc, MIOA, ANC and managing director of Acoustic Associates South West Ltd to complete a comprehensive noise assessment covering;

- Survey of existing noise levels close to the static caravans along the northern boundary,
- Details of the proposed development,
- Prediction of the noise created by customers using the hotel,
- Local and national planning policy aims relating to noise,
- Comparison between predicted noise levels and planning criteria, setting out required mitigation and suggested Conditions.

3 Proposal

The 33 bed 2 storey hotel building is proposed to be constructed on the western end of the existing pub car park as shown on DMP's drawing No. 203 revH a portion of which is shown below;



From this plan it should be noted;

- The entrance to the site will remain in the same location as currently,
- 58 park spaces in the western portion of the car park will be removed for the hotel building,
- The existing beer garden to the east will be used for additional parking,
- The western car park is on ground approximately 1.5 m lower in height than that of the neighbours on Hazelmead Road to the north and this will reduce the perceived height of the proposed two storey hotel building for these neighbours.

4 Existing Noise Levels

The existing ambient noise climate was sampled from Thursday 31st August through to Monday 4th September 2017. A Rion type NL52 sound level meter (Serial No. 00732148, Calibration Cert' No. TCRT16/1212, re-calibration due 5th August 2018) with the microphone protected using a Rion type WS-03 protection system mounted on a tripod (1.2m high) on the border against the northern site boundary, the apex of static caravan No. 7 Hazelmead can be seen over the fence in the photograph over page;

The photograph below shows the microphone position across the car park to the A3052. It was traffic noise on this busy road that dominated the soundscape when I set up and collected the meter;

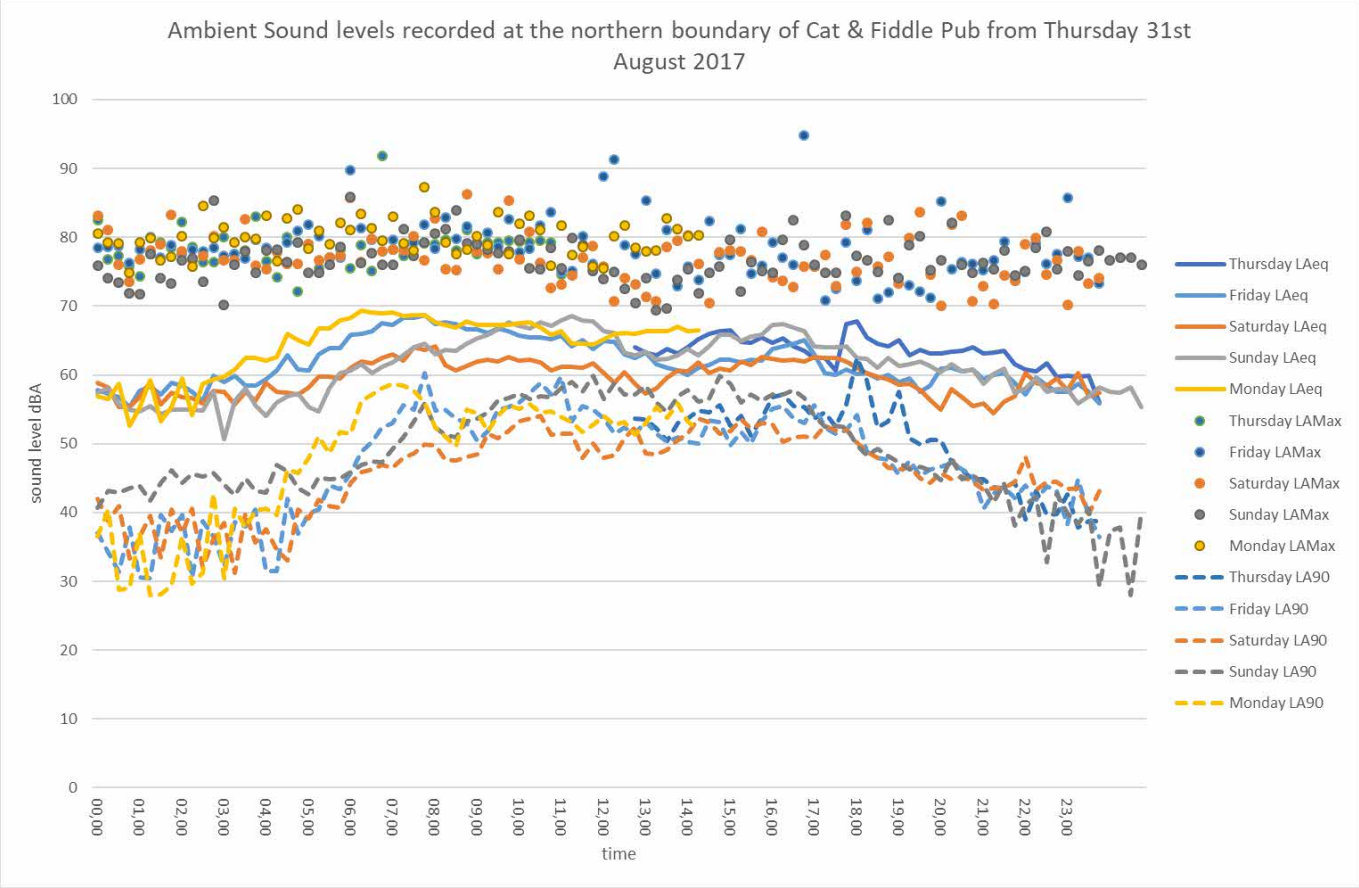
The meter was calibrated with a Rion NC-74 calibrator (serial No. 34794316 certificated TRAC17/04089 re-calibration due 5th May 2018) before and after the survey but no variances of significance was noted.

The weather during the survey was unsettled with spells of rain on Thursday 31st August but fine after that. Wind speeds reported at Exeter Airport[1] were largely below 18 kmph throughout the survey period and range from northerly through to southerly. These conditions can be considered suitable for environmental measurement.

During the survey the pub was open and trading but according to the management the car park was at no time full.

1 https://www.wunderground.com/history/airport/EGTE/2017/9/27/WeeklyHistory.html?req_city=EGTE&req_state=DEV&req_statename=United Kingdom&reqdb.zip=00000&reqdb.magic=35&reqdb.wmo=03839

The meter was set to record noise parameters over consecutive 15 minute periods and the results recorded are shown in the charts below;



This chart shows three noise descriptors, lower dotted lines for the background sound level (L_{A90}), then the solid lines represent the equivalent energy level (L_{Aeq}) and dots the event levels recorded in each 15 minute period ($L_{Amax,event}$). The L_{A90} & L_{Aeq} levels follow a familiar diurnal pattern, with an approximate 15 dB separation. The event or L_{Amax} values are more constant across the day at around 95 dB L_{Amax} dropping marginally overnight to 90 dB.

The table below summarizes these levels;

Period	Sound level		
	LAeq	LAmax	LA90
Day 7am to 11pm	64	NA	42
Night 11pm to 7am	59	75[2]	37

The sound levels experienced by the residents of the static caravans on Hazelmead Road, directly behind the pub, will be lower than those levels recorded at the fixed microphone position due the extra distance from the A3052 and the screening of it offered by the pub's boundary fence. Attended short term measurements carried out at the being and end of the

[2] Mean lowest L_{Amax} recorded in any 15 minute over night period

survey demonstrate that the L_{Aeq} and L_{Amax} levels are approximately 5 dB lower and the L_{A90} level some 2 dB less.

Period	Sound level		
	LAeq	LAmax	LA90
Day 7am to 11pm	59	NA	40
Night 11pm to 7am	54	70	35

These table below sets out the baseline sound levels upon which the impact of;

- Hotel customer parking noise,
- Screening provided by the hotel,
- Delivery vehicles to the hotel,
- Hotel & pub mechanical services noise,
- Pub customers using the enlarged car park,

can be assessed.

5 Environmental Noise Criterion

5.1 East Devon District Council Requirements

East Devon District Council

EN14 - Control of Pollution – Permission will not be granted for development which would result in unacceptable levels, either to residents or the wider environment of:

1. Pollution of the atmosphere by gas or particulates, including. smell, fumes, dust, grit, smoke and soot.
2. Pollution of surface or underground waters including:
a) Rivers, other watercourses, water bodies and wetlands.
b) Water gathering grounds including water catchment areas, aquifers and groundwater protection areas.
c) Harbours, estuaries or the sea.
3. Noise and/or vibration.
4. Light intrusion, where light overspill from street lights or floodlights on to areas not intended to be lit, particularly in areas of open countryside and areas of nature conservation value.
5. Fly nuisance.
6. Pollution of sites of wildlife value, especially European designated sites or species.
7. Odour.

5.2 National Planning Policy

National Planning Policy Framework (NPPF) provides noise policy aims within Section 11 "Conserving and enhancing the natural environment" and paragraph 123 states;

123. Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impact on health and quality of life as a result of new development;
- mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established, and
- identify and protect areas of tranquility which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

The Framework states that the planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of noise pollution. It does not, however, provide any specific formal guidelines.

Further guidance was published by Department for Communities & Local Government in March 2014 relating to Noise and is known as Planning Practice Guidance, this states.

Local planning authorities' plan-making and decision taking should take account of the acoustic environment and in doing so consider:

- whether or not a significant adverse effect is occurring or likely to occur;
- whether or not an adverse effect is occurring or likely to occur; and
- whether or not a good standard of amenity can be achieved.

In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation. As noise is a complex technical issue, it may be appropriate to seek experienced specialist assistance when applying this policy.

Significant Observed Adverse Effect Level (SOAEL) occurs above the perception of "noticeable and intrusive" and examples of this are given in the table below, which has been taken directly from Paragraph 006 of PPG;

Perception	Examples of Outcomes	Increasing Effect Level	Action
		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	
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 environment.	Significant Observed Adverse Effect	Avoid

NPSE states;

"Promote good health and good quality of life"

This statement expresses the long term desired policy outcome, but in the use of "promote" and "good" recognizes that it is not possible to have a single objective noise-based measure that is mandatory and applicable to all sources of noise in all situations.

"Effective management of noise"

This concept confirms that the policy applies to all types of "noise" (environmental, neighbour and neighbourhood) and that the solution could be more than simply minimising the noise.

"Within the context of Government policy on sustainable development"

Sustainable development is a core principle underpinning all government policy. For the UK Government the goal of sustainable development is being pursued in an integrated way through a sustainable, innovative and productive economy that delivers high levels of employment and a just society that promotes social inclusion, sustainable communities and personal wellbeing. The goal is pursued in ways that protect and enhance the physical and natural environment, and that use resources and energy as efficiently as possible.

There is a need to integrate consideration of the economic and social benefit of the activity or policy under examination with proper consideration of the adverse environmental effects, including the impact of noise on health and quality of life. This should avoid noise being treated in isolation in any particular situation, i.e. not focusing solely on the noise impact without taking into account other related factors.

The document "Noise Policy Statement for England" referenced within the NPPF sets out the following vision for on-going noise policy:

> "Promote good health and quality of life through the effective management of noise within the context of Government policy on sustainable development."
> This vision should be achieved through the following Noise Policy Aims:
> "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".

To achieve these objectives, the Noise Policy Statement sets out three noise levels to be defined by the assessor:

NOEL - No Observed Effect Level
This is the level below which no effect can be detected. In simple terms, below this level there is no detectable effect on health and quality of life due to the noise.

LOAEL - Lowest Observed Adverse Effect Level
This is the level above which adverse effects on health and quality of life can be detected.

SOAEL - Significant Observed Adverse Effect Level
This is the level above which significant adverse effects on health and quality of life occur.

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

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

Where noise levels are below the LOAEL it is considered there will be no adverse effect. Once noise levels are below the NOEL there will be no observable change. No objective values are offered within the NPSE, as the document does indicate that each site should be considered on its own merits.

5.3 Noise Impact Criterion

The noise generated by customer vehicles is transitory in nature and no different than the transport noise generated by passing traffic. It should not therefore be considered as "industrial or commercial in nature".

The institute of Environmental Management & Assessment has published Guideline for environmental Noise Impact Assessment[3], although not ratified by the Institute of Acoustics, does provide some numerical guidance for the onset of adverse and significant adverse effect levels[4] as shown in the table below;

Long-term Impact Classification	Short-term Impact Classification	Sound level change dB L_{pAeqT} (positive or negative) T = either 16hr day or 8hr night
Negligible	Negligible	≥ 0 dB and < 1 dB
	Minor	≥ 1 dB and < 3 dB
Minor	Moderate	≥ 3 dB and < 5 dB
Moderate	Major	≥ 5 dB and < 10 dB
Major		≥ 10 dB

From this it can be seen that in the long term increase in sound levels of less than 3 dB can be considered to have a negligible impact.

6 Assessment of Hotel Customer Parking Noise

The proposed redevelopment of the western portion of the pub car park for the hotel will remove 58 car parking spaces from the immediate vicinity of the neighbours on the western end of Hazelmead Road.

The closest of the six parking spaces, shown on the proposal drawing either side of the hotel entrance to the east, is further from the northern residential boundary than the current parking spaces.

It can therefore be seen that the proposed hotel will reduce, in absolute terms, the level of sound generated by parking activity.

It should also be noted that the majority of the hotel customers once parked will not be leaving the car park in the late evening as pub customers do.

This development will therefore have a small positive benefit for its immediate neighbours.

[3] Iema Guideline for Environmental Noise Impact Assessment version 1.2 (November 2014)
[4] Source HS2 Phase 1 Environmental Statement

7 Assessment of Screening Provided by the Hotel

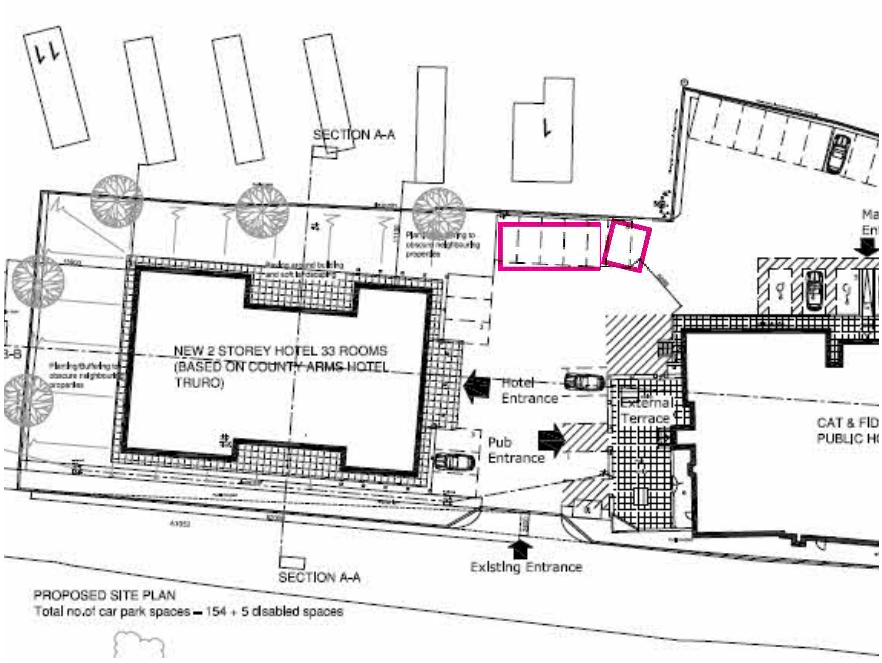
The hotel will break the immediate line of sight for the four closest neighbours and partially for those on either side, this will provide a degree of acoustic screening of passing traffic on the A3052, which is the dominate noise source in the area.

The level of screening has been assessed using IMMI 3D noise modelling software, which implements the latest requirements of ISO9613:Part2[5], this shows that the occupants of No. 8 Hazelmead Road can expect a 6 dB reduction in traffic noise.

This development will therefore have a small positive benefit for its immediate neighbours.

8 Assessment of Hotel Delivery Noise

Routine deliveries to the hotel will be limited to laundry and sundry supplies, the site plan below shows a delivery vehicle parked across the six parking bays on the northern boundary;



An HGV delivery vehicle can typically be expected to create a sound level of 67 dB $L_{Aeq,10\ minute}$ at 5m to pull off the road, maneuver, park up, lower the tractor tail gate, offload/load, then start up and pull away. It would be reasonable to assume that normally there would not be more than 1 delivery per hour and consequently the $L_{Aeq,1hr}$ at the nearest neighbours (5m away) could be expected to be 54 dB (-8 dB time correction, - 5 dB screening loss).

The site noise survey has shown typical day time noise levels are likely to be around 59 dB $L_{Aeq,day}$ and therefore the combined delivery noise and ambient would be only 1 dB higher than without the delivery activity taking place.

[5] ISO 9613-2:1996 Acoustics -- Attenuation of sound during propagation outdoors -- Part 2: General method of calculation

A 1 dB increase in sound level can be considered to have a "Negligible" impact (see table in 5.3), however this assessment is made on the basis that;

- There will be a solid timber fence running along the northern boundary at least as high as at present (1.8m),
- Delivery times are limited by Condition to day time hours only, say 7am to 7pm.

9 Assessment of Hotel & Pub Mechanical Services Noise

Noise from any new fixed external mechanical services plant should be controlled to ensure the neighbours do not experience a loss of amenity or be at "unacceptable levels" according to East Devon District Council's policy EN14. To achieve this total plant noise should be limited to no more than background – 5 dB when measured at the nearest sensitive receiver.

The representative background sound levels revealed by the survey are;

Period	Background LA90
Day 7am to 11pm	40
Night 11pm to 7am	35

This would therefore require levels to be limited to no more than 35 dB $L_{A,r}$ during the day and 30 dB L_{Ar} at night, however consideration does need to be given to the absolute levels as a limit of 30 dB $L_{A,r}$ is considered to be very low. BS4142[6] recommends that where the exceedance of background sound level gives rise to a rating level which is low, the context of the absolute level must also be considered. Here with a derived rating level of only 30 dB, outside the nearest sensitive window, this would give rise to internal levels (even with windows open) of 15 dB. The imposition of this criteria can therefore be seen to be unreasonable and unnecessary when compared to the 30 dB $L_{Aeq,night}$ standard set out in BS8233 for internal ambient sound levels within bedrooms. A lower limit of 35 dB L_{ar} is therefore recommended here.

The required maximum plant noise levels should therefore be Conditioned to be no more than 35 dB L_{Ar} when measured 1m outside the nearest sensitive window, day or night.

10 Pub customers using the enlarged car park

The proposal redevelopment of the site includes for the use of the existing pub beer garden, on the eastern side of the site for parking. This will provide a further 57 parking spaces.

Acoustically the impact of this will be to remove customer voices from the beer garden and replace them with the much more anonymous sound of cars parking.

[6] BS 4142:2014 Methods for rating and assessing industrial and commercial sound

Typically, a level of around 60 dB L_{Aeq} at 5m can be expected over 1 minute for the activity of parking which includes arrival, finding a parking space, parking in the bay, getting out and closing the doors followed by the reverse of this process and driving out.

So if 10 customer vehicles were to come and go from the nearest parking spaces to No. 1 Hazelmead Road, which is 15m back from the boundary a level of dB $L_{Aeq,1hr}$ could be expected to be 38 dB L_{Aeq}[7] this is 21 dB below the existing ambient day time level (59 dB $L_{Aeq,day}$) and 16 dB below the night level of 54 dB $L_{Aeq,night}$.

There should be net increase in the existing sound level by the use of these new spaces and the use of new parking spaces further from the boundary would be correspondingly less.

The event noise of a car door being slammed can also be considered, typically a door slam is no louder than 87 dB L_{Amax} at 1m and therefore the predicted level at No. 1 Hazelmead would be 70 dB L_{Amax}[8]. With day time typical L_{Amax} event levels already 75 & 85 dB these slam events are less than those currently existing at the neighbours. Parking in these bays overnight will not increase the current ambient levels.

The impact of using these new spaces can therefore be seen to have at worst a “negligible” impact.

[7] 60 dB $L_{Aeq,1minute}$ = 42 dB $L_{Aeq,1hr}$ at 5m = 33 dB $L_{Aeq,1hr}$ at 15m = 28 dB $L_{Aeq,1hr}$ at No.1 Hazelmead Rd allowing 5 dB attenuation from the boundary fence = 38 dB $L_{Aeq,1hr}$ for 10 parking activities

[8] 87 dB L_{Amax} at 1m = 75 dB L_{Amax} at 15 = 70 dB L_{Amax} at 15m when the 5 dB attenuation of the fence is allowed for