PLANNING ADDENDUM

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COPIES TO	
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THE RAILWAY, WEST HAMPSTEAD
ADDENDUM TO PLANNING APPLICATION REGARDING CONDITIONS 5 & 7

This addendum has been prepared to address two planning conditions received from the London Borough of Camden on 19 May 2014 in relation to application ref 2013/7823/9. The conditions read as follows:

> *"5 Prior to the commencement of develpment* [sic.] *an acoustic report prepared by a suitably qualified acoustic engineer, demonstrating how the plant/machinery complies with condition 4, shall be submitted to and approved in writing by the Council. The plant and acoustic attenuation measures shall thereafter be installed, retained and maintained in accordance with the details thus approved and the manufacturer's recommendations."*
>
> and
>
> *"7 Prior to commencement of development details of a sound insulation scheme between the second and third floor of the building shall be submitted to and approved in writing by the local planning authroity.*[sic.] *The sound insulation shall be provided in accordance with the approved scheme prior to first occupation of the residential units and permanently* [sic.] *retained thereafter."*

The above planning conditions relate to noise from building services plant (condition 5), and internal sound insulation between residential properties on levels 2 and 3 (condition 7).

An assessment was previously undertaken in December 2013 to demonstrate that the proposed building services plant would comply with the local authority's criteria. The methodology and results of this assessment were included in our Acoustic Planning Report submitted with the application. We are not aware of any queries arising from the local authority regarding this report.

Information regarding the internal floor construction at third floor level was omitted from this report as it was still under design. The construction has now been designed and is submitted herein for inspection by the local authority.

We trust that the following information is sufficient to discharge the above planning conditions but please do not hesitate to contact me directly on 07881 267783 or Robert.Marriner@WSPGroup.com for any further clarification if required.

1 Condition 5: Plant Noise Emissions

The following information, first presented in our Acoustic Planning Report dated 2 December 2013, presents an assessment undertaken to determine the noise emissions associated with the proposed plant, and concludes that the noise emissions should meet the local authority's planning requirements.

1.1 Environmental Noise Survey

Two environmental noise surveys have been undertaken at 100 West End Lane in connection with the current proposals for redevelopment. The first was undertaken by Hepworth Acoustics in March 2012, as detailed in their report 31119.1v1 issued in May 2012.

This has since been supplemented by an additional survey undertaken by WSP Acoustics, as described below. The results of both surveys have been used in the assessments detailed herein.

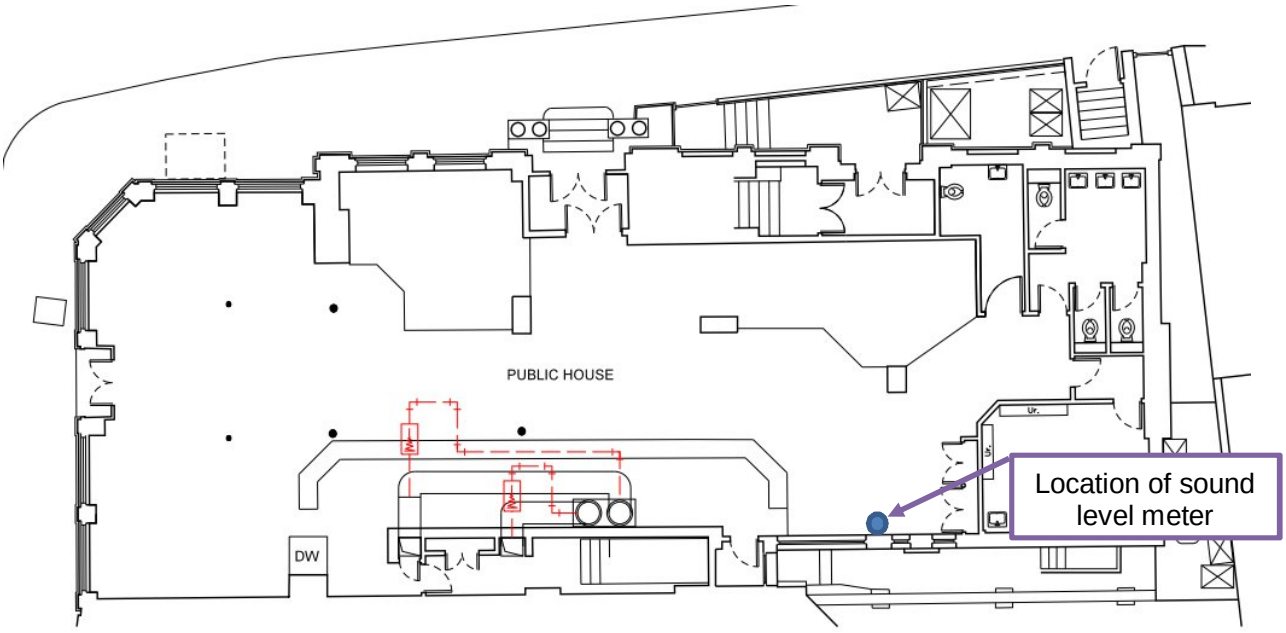
1.1.1 Method

An un-attended environmental noise survey was undertaken from approximately 14:00 on Tuesday 30th April 2013 to 14:00 on Wednesday 1st May 2013, to determine the lowest noise levels at noise sensitive windows near to the proposed plant area.

The sound level meter was installed at ground floor level at the rear of the site; the microphone was tripod mounted 1.5 metres above the ground, approximately 1 metre from reflective surfaces. This location was chosen to avoid any contribution from existing plant currently installed.

The location used for the survey can be seen in Figure 1 below and the annotated photograph in Appendix B.

Figure 1: Plan showing measurement location



The measurement location was selected to obtain representative measurements of the lowest background noise levels present at the nearby noise sensitive property, and the typical ambient noise levels at the rear of 100 West End Lane for subsequent use in specifying the glazing and ventilation strategy for the proposed dwellings.

1.1.1.1 Equipment Details

Details of the equipment used to undertake the environmental noise survey are presented in the table below.

Table 1 Equipment calibration details

Equipment description	Manufacturer and model	Serial number
Sound level meter	Svantek Hand-held Noise and Vibration Analyser Type 948	6534
Pre-amplifier	Svantek Pre-amplifier Type SV12L	10673
Microphone	Svantek Pre-polarised Condenser Microphone Model: SV22	4010518

The sound level meter had been calibrated to traceable standards within the preceding two years, and the acoustic calibrator within the preceding 12 months.

The sound level meter was located inside a weatherproof case and connected to its microphone via an extension cable. The microphone was tripod mounted at 1.5 meters above the ground level and at least 1 meter from reflecting surfaces; this is considered to be free field conditions.

The entire signal chain, including cable, was calibrated prior to, and on completion of, the survey. No significant deviations were found to have occurred. The microphone was fitted with a Svantek windshield.

1.1.1.2 Weather Conditions & Noise Climate

At the beginning and end of the survey, the weather was fine and dry. Available historical information shows that the weather during the survey was dry throughout the survey period.

The environmental noise climate on the north and west sides of the site is dominated by road traffic noise from West End Lane and Broadhurst Gardens. The rear of the pub has a service access road with car parking spaces accessible off West Hampstead Mews. The noise levels in this area are considerably lower than the front due to lack of direct traffic noise from West End Lane which is screened by the building itself and neighbouring buildings.

1.1.2 Results

The full results of the environmental noise surveys are presented in the time history graphs in Appendix C.

For the purposes of setting plant noise emission limits, it is considered appropriate to determine the lowest $L_{A90(15min)}$ noise levels measured during the environmental noise surveys.

Since future items of building services plant serving the various elements of the scheme will operate over various time periods, it is most appropriate to establish lowest background levels during the periods of expected operation of the plant.

The following plant operational hours are considered in this assessment, although it is considered preferable that none of the plant should be restricted to these hours:

- ‘Typical ’ Daytime (07:00 – 23:00): Commonly taken to be a typical daytime period, which includes the hours of opening of the public house (except Saturdays)
- ‘Extended’ Daytime (07:00 – 24:00): Extended daytime period, to include the later opening hours of the public house on a Saturday night

- Office hours (06:00 – 22:00): This time period reflect anticipated hours of operation for plant serving the proposed commercial office.

- 'Typical' night (23:00 – 07:00): Commonly taken to be a typical night-time period. Plant from the public house will not be in operation during this period (except Saturdays)

The lowest background noise levels measured during the environmental noise surveys have been corrected for façade reflections and are summarised as follows.

Table 1: Lowest $L_{A90(15min)}$ background noise levels (corrected to free-field levels)

Position	'Typical' Day (07:00 – 23:00)	'Extended' Daytime (07:00 – 24:00)	Office hours (06:00 – 22:00)	Night (23:00 – 07:00)
Front	54	52	52	39
Rear	39	39	39	37

1.2 Plant Noise Impact Assessment

An environmental noise survey and plant noise assessment have been undertaken to enable the building services design to meet the local authority's planning requirements.

1.2.1 Nearest Noise Sensitive Façades

The three closest noise sensitive façades to the proposed plant locations have been identified as followed:

- East: Existing commercial windows immediately to the east of the site, approximately 8 metres from the proposed VRF units, 15 metres from the kitchen supply duct and 16 metres from the kitchen extract duct.

- West: Existing residential properties immediately to the west of the site, approximately 6 metres from the kitchen supply duct, 8 metres from the kitchen extract duct and 13 metres from the VRF units.

- South elevation of 100 West End Lane: The proposed apartments at levels 2 and 3 are located very close to the proposed plant, but benefit from significant screening due to the locations of their doors and windows. A door is located on the east façade, at approximately 6 metres from the VRF units. Windows are located approximately 2 metres and 6 metres from the proposed kitchen supply and extract ducts respectively.

Additionally, mechanical ventilation and heat recovery (MVHR) units will be installed around the building, but their exact positions are subject to confirmation in the detailed design stage. Therefore, for the purposes of this assessment, it has been assumed that the nearest noise sensitive windows to these grilles will be 1.5 metres directly above or below them.

1.2.2 Plant Noise Emission Criteria

WSP has held discussions with Mario Houska at the Environmental Health department at LBC. Based on our discussions we were referred to the Borough's Local Development Policy DP28, which states that the following planning requirements will apply to the proposed fixed plant:

Table 3 London borough of Camden Noise and Vibration Policy DP28

Noise description and location of measurement	Period	Time	Noise Level
Noise at 1 metre external to a sensitive façade	Day, evening and night	0000-2400	5 dB(A) <LA90
Noise that has a distinguishable discrete continuous note (whine, hiss, screech, hum) at 1 metre external to a sensitive façade.	Day, evening and night	0000-2400	10 dB(A) <LA90
Noise that has distinct impulses (bangs, clicks, clatters, thumps) at 1 metre external to a sensitive façade.	Day, evening and night	0000-2400	10 dB(A) <LA90
Noise at 1 metre external to sensitive façade where LA90>60dB	Day, evening and night	0000-2400	55 dB L_{Aeq}

Since this discussion, the following planning condition has been provided by the local authority in the planning decision notice dated 19 May 2014:

> *"4 Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (LA90), expressed in dB(A) when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10dB(A) below the LA90, expressed in dB(A)."*

It is not considered that this planning condition changes the criteria against which the plant was previously assessed.

Based on the plant noise data summarised below it is not considered that the noise emissions will be tonal or distinguishable. All plant will be designed to run continuously or to vary its operation gradually, so as not to be audibly intermittent. As such, it is recommended that the plant is designed to achieve a noise level 5 dB lower than the otherwise prevailing $L_{A90(15min)}$ background noise level. On this basis the following plant noise emission limits are proposed:

Table 2: Plant noise emission limits

Noise sensitive receptor location	'Typical' Day (07:00 – 23:00)	'Extended' Day (07:00 – 24:00)	Office hours (06:00 – 22:00)	Night (23:00 – 07:00)
Proposed apartments with view of West End Lane	51	47	47	34
Existing noise sensitive properties at rear (south) of 100 West End Lane	34	34	34	32
Proposed apartments at rear of 100 West End Lane	34	34	34	32

1.2.3 Plant Noise Impact Assessment

1.2.3.1 Proposed Plant

The proposed items of mechanical plant consist of kitchen supply and extract fans for the pub kitchen, two condensers for the offices, and six MVHR units for the apartments. Manufacturer's type information and noise data for these units are presented in the table below.

Table 3: Manufacturer's noise data for proposed kitchen supply and extract fans

Description	Manufacturer's ref	Data type	Sound level (dB) at octave band centre frequencies (Hz)							
			63	125	250	500	1000	2000	4000	8000
Office VRF unit	MXZ-8A140VA	SPL at 1m (heating)	60	55	52	51	47	42	36	40
		SPL at 1m (cooling)	57	52	49	49	45	42	36	37
Residential MVHF units	Nuaire MRXBOX95-WH1	Open inlet SWL	48	51	58	49	47	39	25	16
		Open outlet SWL	56	63	67	67	62	60	50	41
Kitchen supply/extract fans	Nuaire - AX56M-213A	SWL	88	91	96	101	103	96	89	84

The attenuators to be installed on the various fans are detailed in the Acoustic Planning Report. These may be revised following final ductwork layouts on a dwelling-specific basis.

Due to the amount of attenuation required in order to control break-out of fan noise and duct-borne environmental noise to habitable rooms, environmental noise emissions from the MVHR units are predicted to be substantially lower than the plant noise emission limits. A combined noise level of 14 dBA is predicted at 1.5 m from the atmosphere side grilles of each unit, and will therefore not contribute to the overall plant noise emissions of the development. These units are therefore not considered further in this assessment.

1.2.3.2 Proposed Plant Location

1.2.3.2.1 Kitchen Fans

The proposed kitchen fans are to be installed vertically in the bar cupboard area, with the attenuators on the atmospheric side of both supply and extract ducts. The duct work is proposed to be hidden (horizontally) in the bar ceiling void with room for an extra attenuator on each duct before rising up and out of the building. The supply duct terminates at first floor level and extract duct at roof level. The location of the proposed duct work can be seen in Figure 2.

Figure 2: Section of proposed kitchen extract duct supply and extract ducts

1.2.3.2.2 Office Condensers

The VRF condensers serving the offices will be located on the second floor level terrace at the east side of the building.

In order to attenuate noise from the proposed VRF units, an acoustic screen shall be erected on the north and east sides of the units, to attenuate plant noise to the proposed apartments at 100 West End Lane and existing properties to the east. This screen is to extend to a minimum height of 1.8 metres or 400 mm above the plant (whichever is greater), and at least 2 metres either side of the plant.

The condensers shall be oriented so that the fans point away from the proposed apartment façade.

1.2.3.3 Noise Impact Assessment to Neighbouring Properties

To predict the noise impact from the proposed plant, an assessment has been made to predict future plant noise emissions at the nearest noise-sensitive properties.

For simplicity, only two periods have been considered – during opening hours and outside opening hours. The lowest relevant criterion for each period is provided below for reference.

Based on the information summarised above, plant noise levels have been calculated as follows.

Table 4: Summary of predicted plant noise emissions

Noise sensitive receptor	Predicted plant noise level (dB L_{Aeq})	Criterion during pub and office opening hours	Criterion after hours
Existing residential properties to the west of 100 West End Lane	27 dBA during opening hours	34 dBA – pass	32 dBA – pass
Proposed apartments on west portion of south façade of 100 West End Lane	31 dBA during opening hours	34 dBA – pass	32 dBA – pass
Proposed apartments on east portion of south façade of 100 West End Lane	32 dBA during condenser operation	34 dBA – pass	32 dBA – pass
Existing properties to east of West End Lane	31 dBA during opening hours 24 dBA after hours	34 dBA – pass	32 dBA – pass

A full summary of calculations is appended to the Acoustic Planning Report dated 2 December 2013.

As the assessment summarised above indicates, the plant is predicted to be compliant with the local authority's planning requirements during the proposed operational periods and also the quieter night-time period. Thus, it is considered that no time restrictions should be placed upon the proposed plant.

2 Condition 7: Sound Insulation between Levels 2 and 3

The building's internal sound insulation design needs to meet Approved Document E and BREEAM requirements as well as preventing noise from events held in the ground floor pub from adversely affecting the apartments on levels 2 and 3.

2.1 Criteria

The BREEAM Hea13 credit requires the sound insulation between apartments to achieve sound insulation performance levels that are 5 dB better than required by Approved Document E. As such, the following design criteria apply to party walls and floors.

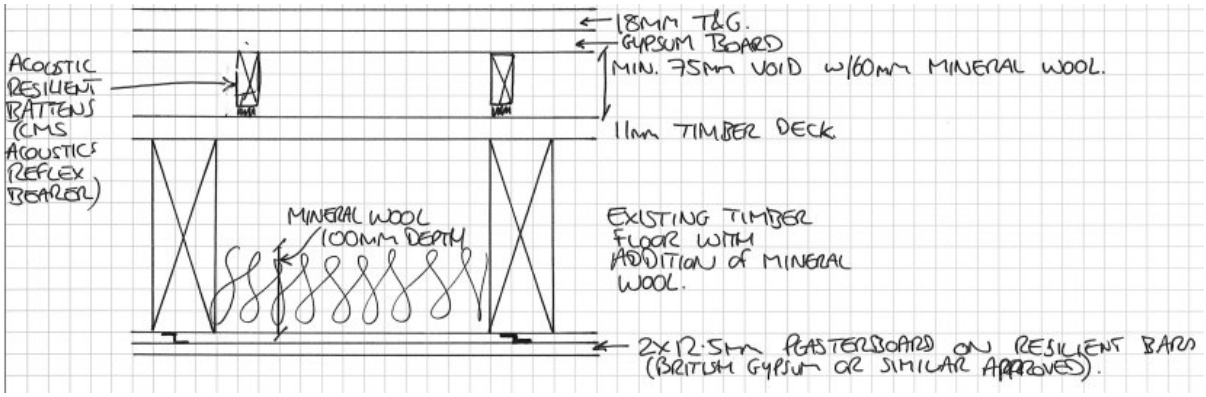
Table 5: Sound insulation performance criteria for residential party walls and floors formed by a material change of use

Reference criteria	Airborne sound insulation for party walls/floors (dB $D_{nTw + Ctr}$)	Impact sound insulation between dwellings (dB L'_{nTw})
Approved Document E	≥ 43	≤ 64
BREEAM Hea13	**≥ 48**	**≤ 59**

2.2 Third Floor Construction Details

The existing third floor construction will be refurbished to include a new upper timber deck and include 100 mm mineral wool between the existing joists. An upper floating floor will be installed, comprising 18 mm tongue and groove boards on 19 mm gypsum board, supported on resilient battens (CMS Acoustics Reflex Bearers or similar approved) with a void of 75 mm lined with 60 mm mineral wool. The ceiling shall comprise two layers of 12.5 mm SoundBloc on resilient bars.

Figure 3: Third floor construction sketch



It is considered that the above floor construction should be capable of achieving an airborne sound insulation performance of at least 48 dB $D_{nTw + Ctr}$ and an impact sound insulation performance of 59 dB L_{nTw} or better.