Email: Rhian.Harris@howplanning.com

4 November 2014

C/41520/L01/RM

Ms R Harris
HOW Planning LLP
40 Peter Street
Manchester
M2 5GP

Dear Rhian

Barnfield Road, Leek

Further to your email dated 30 October 2014 I understand you are resubmitting the application for a mixed use development at Barnfield Road, Leek, alongside an appeal.

You have indicated the new submission will actually be for a smaller development (i.e. up to 175 dwellings). On that basis, the findings in my assessment C/41520/T01/RM, are still current and relevant.

As set out in my report, the potential noise sources surrounding, and forming part of the development can be adequately mitigated.

I hope this is clear, please contact me if you have any queries.

Ryan McNulty
For and on behalf of
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Technical Report

Ref Number	**C/41520/T01v2/RM**
Date	**28 January 2014**

Project

Land at Barnfield Road and Sunnyhills Road - Cornhill, Leek -
Mixed Use Development

Noise Assessment

Prepared for

Barnfield Hughes Ltd
c/o HOW Planning LLP
40 Peter Street
Manchester
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By

Ryan McNulty MIOA

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Summary

SRL was commissioned by HOW Planning LLP, on behalf of Barnfield Hughes Ltd to provide a noise assessment which supports a planning application for a proposed mixed use development at land off Barnfield Road and Sunnyhills Road, Cornhill, Leek.

The site is generally quiet, but is affected by noise from HGV movements along Sunnyhills Road, and distant traffic on Newcastle Road (A53) to the west. There is also noise associated with a pumping station immediately west of the site and a small coach depot also to the west. In addition my assessment considers future potential noise sources associated with the proposed public house included in the development.

I have used the results of the noise survey to provide outline advice on the noise insulation requirements to achieve the “good” internal noise limits as set out in British Standard 8233:1999 ‘*Sound insulation and noise reduction for buildings - Code of practice*’ (BS8233).

On the basis of average noise levels recorded during the day and night, and maximum noise levels recorded during the night, standard thermal double glazing units can be used throughout most of the development. To control maximum noise levels associated with HGV and coach movements, a higher specification of glazing will be needed to the bedrooms of properties overlooking these sources. Acoustically rated vents will also be necessary for some rooms as outlined in this report.

To control noise from the other sources, such as the pumping station, activity at the coach depot, and potential future activities, windows will need to remain closed in some parts of the site with an alternative means of ventilation provided. A more detailed noise insulation strategy can be prepared once the site layout has been fixed, and plot details have been finalised.

Based on the measured survey data, any plant associated with the public house or any other building should not exceed 29dB L_{Aeq} at the nearest properties during the daytime or 25dB L_{Aeq} at night.

The potential noise sources surrounding, and forming part of the development can be adequately mitigated. Therefore, noise need not be considered a constraint on the progress of this development.

Prepared by	Checked by
	
Ryan McNulty	**Tris Edwards**

For and on behalf of
SRL Technical Services Limited
Tel: 0161 929 5585
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Contents

1.0 Introduction

SRL was commissioned by HOW Planning LLP to provide a noise assessment which supports a planning application for a proposed mixed use development at land off Barnfield Road and Sunnyhills Road, Cornhill, Leek.

The site was historically operated by Hughes Concrete and latterly by CPM Ltd.

The current proposals are to develop the land to create 211 dwellings, a public house/restaurant, a small marina/basin, and redevelop the Churnet Valley railway line as a tourist attraction including a museum and public conveniences.

In the northeast of the development, there is potential for a link road following from Sunnyhills Road to the east. To the north of this 'link' will be several small commercial units, included as part of this application.

Many of the noise sources affecting the site will have the greatest impact during the night. I have spoken with Mr Denis Colgan at Staffordshire Moorlands District Council (SMBC) to agree our assessment methodology. It was agreed that we would assess the potential noise sources affecting the site over a representative day and night-time period. The noise sources requiring consideration are:

- Severn Trent Water sewerage pumping station in the northwest of the site;
- HGVs along Sunnyhills Road;
- Activity associated with the business to the west of the development, including late night jet washing, and coach movements.

Mr Colgan noted that the development should achieve the internal and external noise level criteria of the 'good' standard of British Standard 8233:1999 'Sound insulation and noise reduction for buildings - Code of practice' (BS8233).

This report details the noise levels affecting the site and provides details of mitigation necessary to meet the good standard of BS8233.

The proposed indicative Masterplan site layout is shown on Figure 1.

2.0 Noise Criteria

The BS8233 'good' standard for internal noise levels in living rooms and bedrooms is presented in Table 1 below.

Table 1 – Internal noise level criteria to achieve the 'good' standard of BS8233

Room	Time Period	Maximum Internal Noise Level
		Good
Living Rooms	Day (07:00 – 23:00)	30 dB $L_{Aeq,T}$
Bedrooms	Night (23:00 – 07:00)	30 dB $L_{Aeq,T}$
Bedrooms	Night (23:00 – 07:00)	45dB L_{Amax}*

*Individual noise events should not normally exceed this level at night.

BS8233 also suggests that in occupied gardens and balconies the ambient noise level should not exceed 55dB L_{Aeq}.

3.0 Noise Survey

Based on our noise surveys across the development site, it was observed that noise levels are low during the daytime and very low at night. The presence of some noise sources in localised parts of the site are the only consideration in terms of noise.

We have used data from measurements made at key times and locations to determine the daytime and night time noise levels across the site. We have used worst case values to make sure our assessment and recommendations are robust.

The primary sources of noise affecting the daytime are distant road traffic from Newcastle Road (A53) to the west, and noise associated with the industrial developments to the north of the development site.

During the daytime, noise levels across the site were generally between 42-50dB L_{Aeq}. Noise levels are slightly higher close to Sunnyhills Road during any idling or passing HGVs on the road. However, over an hourly or full daytime period noise levels would still be expected to be 50dB L_{Aeq} or less on average.

At night general noise levels, in the absence of occasional activity at nearby premises, are low (40dB L_{Aeq}). However, noises from the sources identified in Section 1.0 have the potential to affect the development.

We noted several HGV movements which were connected to the operations of the Adams Foods and Adams Food Ingredients Ltd units to the north of the development site. During the surveys, plant serving these buildings was audible but not subjectively intrusive. With exception to some daytime fork lift truck movements external to these buildings we did not observe any other noise activity associated with this business. The

control of any HGV noise would also sufficiently mitigate fork lift truck noise should these activities occur at night.

At approximately 6m from the pump adjacent to the northwest of the site, a noise level of 66dB L_{Aeq} was measured at night.

At 5m from the coach depot, noise levels of around 67dB L_{Aeq} were measured due to the operator jet washing vehicles. Maximum noise levels from these activities were up to 69dB L_{Amax}.

Technical details of the survey are given in Appendix A. Full results are given in Appendix B.

4.0 Noise Assessment

The external walls of the dwellings are expected to be of a brick or block construction. This type of construction will provide sufficient sound insulation against external noise, leaving the windows and ventilation units as the critical elements acoustically.

I have assumed that up to a quarter of any room façade could be glazed and that a free area of 4000mm^2 is adequate for all ventilators.

4.1 Façade Specification – Living Rooms

There are no onerous mitigation requirements to consider in order to achieve appropriate internal noise levels during the day.

On the basis of average noise levels (L_{Aeq}) recorded during the day, which were between 42dBL_{Aeq} in the south of the site, and up to 50dB L_{Aeq} nearest to Sunnyhills Road. This means that for the majority of the site any standard thermal double glazing unit may be used in living rooms on all façades of the dwellings proposed.

This standard of glazing is also sufficient when external noise levels are up to 56dB L_{Aeq}, which was the highest daytime noise level measured in the north of the development site.

Windows can be open for ventilation purposes but to meet the good standard of BS8233 they will need to remain closed with an alternative means of ventilation provided. This can easily be satisfied using a standard trickle vent.

A more detailed noise insulation strategy can be prepared once the site layout has been fixed, and plot details have been finalised, which may allow the 'good' standard to be met in some houses with ventilation provided by open windows.

4.2 Façade Specification - Bedrooms

At night, general noise levels across the site were no greater than 40dB L_{Aeq} in the absence of noise from activities associated with HGV/Coach movements, the coach depot and the pumping station. Therefore, standard thermal glazing and a standard trickle vent should be sufficient in all areas not affected by localised noise sources.

With regard to the effect of localised noise sources on future dwellings, I have considered each source separately below.

4.2.1 Maximum noise levels due to HGV movements

HGV movements associated with operations at the Adams Foods and Adams Food Ingredients Ltd units to the north of the site, as well as coach movements associated with the coach depot to the west of the site, will result in high maximum noise levels throughout the night at the houses close to these operations.

Based on our survey we do not expect this to be regular, but frequent enough to require additional mitigation to minimise the risk of disturbance to the proposed development.

During our survey, we measured maximum noise level data from HGV movements. These levels, adjusted to 10m were found to range between of 73-76dB L_{Amax}. I have also considered worst case noise levels from HGV movements of 82dB L_{Amax} at 10m based on our own archive data.

A standoff distance from Sunnyhills Road has been incorporated into the Masterplan to help protect against noise from passing HGVs and coaches. The nearest proposed dwellings to Sunnyhills Road are approximately 16m from the carriageway edge. Based on predictions using SRL's archive data, an enhanced specification of glazing would be required to control all maximum noise events from HGVs to no greater than 45dB L_{Amax} internally. Such a specification will need to be developed once the site layout has been fixed and plot details have been finalised. However, as a provisional specification I would suggest as a minimum that this glazing will need to be a 10mm glazed element, 12mm air gap, and a 6mm glazed element. An acoustically rated trickle vent will need to be allowed for that provides approximately 40dB $D_{n,e,w}$.

4.2.2 Pumping Station

Noise levels from the pumping station were up to 66dB L_{Aeq} at 6m during the night-time survey, with maximum noise levels of 67dB L_{Amax}.

To the west of the development, the nearest proposed bedrooms are approximately 26m from the pump. Noise from the pump would be approximately 53dB L_{Aeq} at the façade of these houses.

Windows of the nearest bedrooms facing the pump will need to be kept closed, with an alternative means of ventilation provided. Any standard thermal glazing and trickle vent would be sufficient.

4.2.3 Coach depot

Noise associated with the coach depot to the west of the development includes maximum noise levels from late night movements and jet washing. Although we understand some maintenance does occur at night, we did not observe this type of noise source. I expect any mitigation which sufficiently controls maximum noise levels from coach movements and jet washing will also adequately control noise from maintenance activities.

The nearest proposed properties to the road adjacent to the depot are approximately 25m away. Based on similar maximum noise levels to those discussed in Section 4.2.1, I would expect the highest maximum noise levels from coaches to be in the order of 74dB L_{Amax} outside these bedrooms. Noise levels of around 67dB L_{Aeq} at 5m were

measured from washing during the night survey, with maximum noise levels from these activities up to 69dB L_{Amax}.

Standard thermal glazing and a standard trickle vent will be adequate to control maximum noise levels from movements associated with coaches and other activity from the coach depot in the nearest bedrooms overlooking this noise source.

4.2.4 Scrap yard

The adjacent scrap yard operates during daytime hours only.

During our survey, noise levels at a location representative of the nearest proposed houses to the scrap yard were up to 51dB LAeq, with maximum noise levels around 65dB LAmax.

Within dwellings, noise levels from this source can be mitigated by an appropriate noise insulation scheme (i.e. glazing and ventilation).

Within gardens, activities from the scrap yard are expected to be audible, but noise levels should be below WHO guidance for outdoor areas. However, it is important to note that the WHO guidance relates to steady noise source such as road traffic, not irregular sources such as this.

4.2.5 Other considerations

The development itself will create some additional noise sources that will require consideration. These are:

- Vehicles on the potential future Link Road;
- Noise associated with the public house;
- Noise from the new units in the northeast of the development site.

Link Road

Where properties are located near to the proposed Link Road, windows will need to remain closed as advised for properties proposed immediately south of Sunnyhills Road. Due to the potential impact of maximum noise levels from HGV movements, a higher specification of glazing will be required where properties are within 20m of the carriageway to control all maximum noise levels throughout the night, and acoustically rated ventilation will also be necessary.

Public house

Several noise sources could be associated with the public house once built. In particular these would be noise from music, patrons leaving the premises, smoking shelter, bottle bin emptying, and vehicles leaving the car park. I would expect these sources to have

limited impact on the surrounding residencies if careful consideration is given to these items and I would suggest the location of smoking shelters and access doors is given priority. With regard to the other sources of noise, these can be appropriately addressed within a suitable management policy, which may include operating levels for music, suitable times when bottles may be emptied externally, and signage for patrons near to exit points.

Commercial units

The potential for noise emanating from the units in the northeast of the site will depend on the use of these buildings. However, to protect against noise future uses, I recommend a 2.5m solid fence along the boundary of these units.

Churnet Valley Railway

The development of the Churnet Valley Railway is likely to have a limited impact on the properties located nearest to the railway line. I recommend a solid fence will be provided at the boundaries of these properties.

With regard to the movements of trains on this line, this is likely to be limited and although this noise source will be audible I would not expect such infrequent movements to have a negative impact on nearby properties.

4.3 External Areas

Based on the Masterplan site layout shown in Figure 1, there will be no gardens fronting directly on to Sunnyhills Road. As general noise levels are already below 50dB L_{Aeq} in the absence of any traffic on this road, noise levels in outdoor areas are already well below 55dB L_{Aeq} as recommended in BS8233.

During the day, the pump was not identified as a particularly noisy source. However, during the survey at night noise levels from the pump were up to 66dB L_{Aeq} at 6m. To make sure this source is fully considered I have used this data to assess the requirements of any mitigation in gardens during the day.

To the west of the site, the nearest gardens to the pump are approximately 15m away. Noise levels at the boundaries of these gardens would be expected to be around 58dB L_{Aeq}. To mitigate noise levels to below 55dB L_{Aeq} I would recommend that a solid barrier is provided to provide attenuation from this source, which could be subjectively intrusive to any occupants of these gardens if not addressed. This would also provide mitigation from jet washing at the coach depot. I recommend that a 2m (minimum height) close boarded fence (min mass of 10kg/m^2) is provided along the western boundary of the site and surrounding the pump compound. This would reduce noise levels by around 10dB to the occupants of these gardens.

4.4 Plant noise limits

It is not known at this stage of the project what items of external plant, such as air handling units or extract fans could be installed to serve the public house or any other buildings. However noise from any external plant must be controlled to avoid adversely impacting on the residential amenity of properties surrounding the site, especially if plant runs during the night.

The lowest background levels measured in the east of the development, in the general vicinity of the proposed public house were 39dB L_{A90} during the day and 35dB L_{A90} during the night.

I recommend that the cumulative plant noise rating level from all items of plant associated with the development is at least 10dB below existing background level, this is consistent with the recommendations of BS4142:1997 *"Rating industrial noise affecting mixed residential and industrial areas"* , where complaints would be unlikely.

Due to the public house being situated close to a potential plot location, the location and choice of any plant should be considered with regard to this receiver. Therefore, any plant should not exceed 29dB L_{Aeq} at the nearest properties during the daytime or 25dB L_{Aeq} at night.

Figure 1 – Proposed Site Plan Showing Survey Measurement Positions

Appendix A

Survey Details

A1. Location of Survey

A2. Date & Time of Survey

1 August 2013: 09:00 to 13:30
13 September 2013: 23:00 to 01:00, 05:55 to 07:00

A3. Personnel Present During Survey

Tris Edwards (SRL)
James Gill (SRL)

A4. Instrumentation

Description	SRL No.	Make	Type	S/N
Sound Level Analyzer	516	Brüel & Kjaer	2250	2506736
Preamplifier	516	Brüel & Kjaer	ZC-0032	8088
Microphone	516	Brüel & Kjaer	4189	2529958
Calibrator	517	Brüel & Kjaer	4231	2528393

Description	SRL No.	Make	Type	S/N
Sound Level Analyzer	696	Brüel & Kjaer	2260	2467018
Preamplifier	569	Brüel & Kjaer	ZC-0026	4466
Microphone	554	Brüel & Kjaer	4189	2689671
Calibrator	698	Brüel & Kjaer	4231	2482655

A5. Calibration Procedure

Before and after the survey the measurement apparatus was check calibrated to an accuracy of $\pm$0.1 dB using the appropriate Type 4231 Sound Level Calibrator above. These calibrators produce a sound pressure level of 93.8dB re 2 x 10^{-5} Pa at a frequency of 1 kHz. No significant drift was observed.

A.6 Survey Procedure

Noise levels were monitored at the positions shown in Figure 1 using a sound level meter mounted on a tripod at 1.5m in height (see figure 1).

A7 Weather Conditions

August: Warm, no rain, no surface water, very light breeze from west
September: Occasional light rain, cool, wet road surface, no wind

Appendix B - Measured Noise Levels

Sound pressure levels (dB re 20 μPa)

Position	Date	Start Time	L_{Aeq}	L_{A10}	L_{A90}	L_{Amax}
1	01/08/13	09:12	46.1	51.0	43.6	56.4
1	01/08/13	09:18	47.1	55.6	44.2	59.5
1	01/08/13	09:25	58.1	70.8	45.6	75.6
2	01/08/13	09:35	47.2	59.0	41.0	64.7
2	01/08/13	09:41	47.3	61.2	39.8	66.9
2	01/08/13	09:48	42.5	46.2	40.6	51.0
3	01/08/13	09:58	42.4	48.2	40.6	58.2
3	01/08/13	10:03	43.0	49.8	40.2	57.4
3	01/08/13	10:09	42.1	46.8	39.8	52.1
4	01/08/13	10:25	55.9	65.0	44.0	69.5
4	01/08/13	10:30	47.6	60.0	43.2	66.5
4	01/08/13	10:37	49.6	62.2	43.6	68.6
5	01/08/13	11:00	45.0	52.8	40.2	56.1
5	01/08/13	11:07	43.7	51.6	39.2	55.3
5	01/08/13	11:12	47.2	55.4	42.6	58.1
6	01/08/13	11:22	44.9	51.2	41.8	57.2
6	01/08/13	11:28	43.9	50.2	40.2	56.3
6	01/08/13	11:34	48.0	58.0	41.4	67.0
1	01/08/13	11:48	46.4	50.8	43.4	63.1
1	01/08/13	11:54	48.7	55.0	44.0	57.7
2	01/08/13	12:02	56.0	68.6	41.8	74.8
2	01/08/13	12:09	42.3	47.6	40.0	54.9
2	01/08/13	12:15	53.7	68.4	40.2	70.8
3	01/08/13	12:33	41.6	45.4	39.6	53.0
3	01/08/13	12:29	40.5	44.8	38.8	48.3
4	01/08/13	12:37	58.8	64.8	54.4	76.5
4	01/08/13	12:44	56.2	63.8	44.2	74.6
5	01/08/13	12:52	45.6	53.4	41.8	56.7
5	01/08/13	12:59	50.7	61.0	43.2	64.1
6	01/08/13	13:08	47.4	60.6	40.8	64.0
6	01/08/13	13:14	42.9	47.4	40.8	53.6

Position	Date	Start Time	L_{Aeq}	L_{A10}	L_{A90}	L_{Amax}
A	13/9/13	23:05	58.9	59.5	58.4	62.0
A	13/9/13	23:11	60.1	60.5	59.6	61.4
A	13/9/13	(20 sec)	66.3	66.6	65.9	67.1
B	13/9/13	23:14	52.1	52.8	51.3	58.1
B	13/9/13	23:20	52.6	63.2	51.6	54.8
B	13/9/13	(20 sec)	75.0	80.5	75.5	84.5
B	13/9/13	(20 sec)	54.3	54.7	53.9	55.4
B	13/9/13	23:29	50.2	50.8	49.6	53.8
C	13/9/13	23:36	39.6	40.6	36.6	52.7
C	13/9/13	23:42	38.7	40.3	36.5	49.7
C	13/9/13	(20 sec)	39.7	41.5	38.1	43.1
C	13/9/13	(20 sec)	38.0	38.9	37.1	43.4
D	13/9/13	23:54	36.0	36.6	35.3	45.6
D	14/09/13	00:00	36.1	36.9	35.1	47.5
A	14/09/13	00:10	66.8	67.3	66.4	67.8
A	14/09/13	00:14	60.2	60.7	57.7	61.4
A	14/09/13	00:20	61.8	64.8	59.7	72.2
A	14/09/13	(20 sec)	64.7	65.4	63.4	70.5
B	14/09/13	00:34	51.9	52.3	50.9	62.6
B	14/09/13	00:40	53.0	54.1	50.8	63.7
B	14/09/13	(20 sec)	54.7	54.9	54.0	63.5

Appendix C – Noise Measurement Parameter Definitions

L_{Aeq} The "A" weighted equivalent continuous sound pressure level. A representation of a continuous sound level containing the same amount of sound energy as the measured varying noise, over the measurement period. It can be considered as the "average" noise level.

L_{A90} The "A" weighted sound pressure level that is exceeded for 90% of the measurement period. It is commonly used as the "Background Noise Level".

L_{Amax} The maximum "A" weighted sound pressure level during a given time.

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