

AB acoustics

4 Cumbrian Close
High Crompton
Shaw
Oldham
OL2 7RH

T : 07771 567624

e-mail : leachabacoustics@aol.com

**Cheadle Skip Hire Ltd
Unit 24
Adswood Industrial Estate
Adswood
Stockport
SK3 8LF**

**Environmental Noise Survey
at above**

**AB Acoustics
4 Cumbrian Close
Shaw
Oldham**

August 2018.

Introduction

AB Acoustics were commissioned by Oaktree Environmental Ltd of behalf of Cheadle Skip Hire Ltd to undertake an environmental noise assessment of the plant at their existing site at Unit 24 Adswood Industrial Estate Adswood Stockport in order to support a planning application for the continued present use of the site.

This is a retrospective change of use from mixed industrial (B2) to a mixed use for the reception, sorting, storage and transfer of inert and non-inert waste, the storage of skips (sui generis) and the reception, mechanical sorting and storage of aggregates (general industrial) including the retrospective erection of 2no. Steel portal framed buildings and the construction of a new vehicular access at Units 22, 23 and 24 Adswood Road Industrial Estate, Adswood Road, Stockport SK3 8LF.

The imported materials will be inert – they will be imported (and exported) in skips – they will be tipped in a designated area within the existing building and sorted both manually and by means of a 360 backactor – prior to being fed into a Trommell and then onto hand sorting on a picking line – the sorted material being feed into dedicated bays for later removal in skips.

The above is housed in a new portal framed building with steel cladding to the walls.

It is expected that there will be between 40 and 45 skip movements per day.

The equipment that it is expected to be used on site will be : 3 off wheeled loading shovels – 1 off 360 backactor – 1 off Trommel

The site operates between 07.30 to 17.00 hrs Monday to Friday and 08.00 to 12.00 hrs on Saturday.

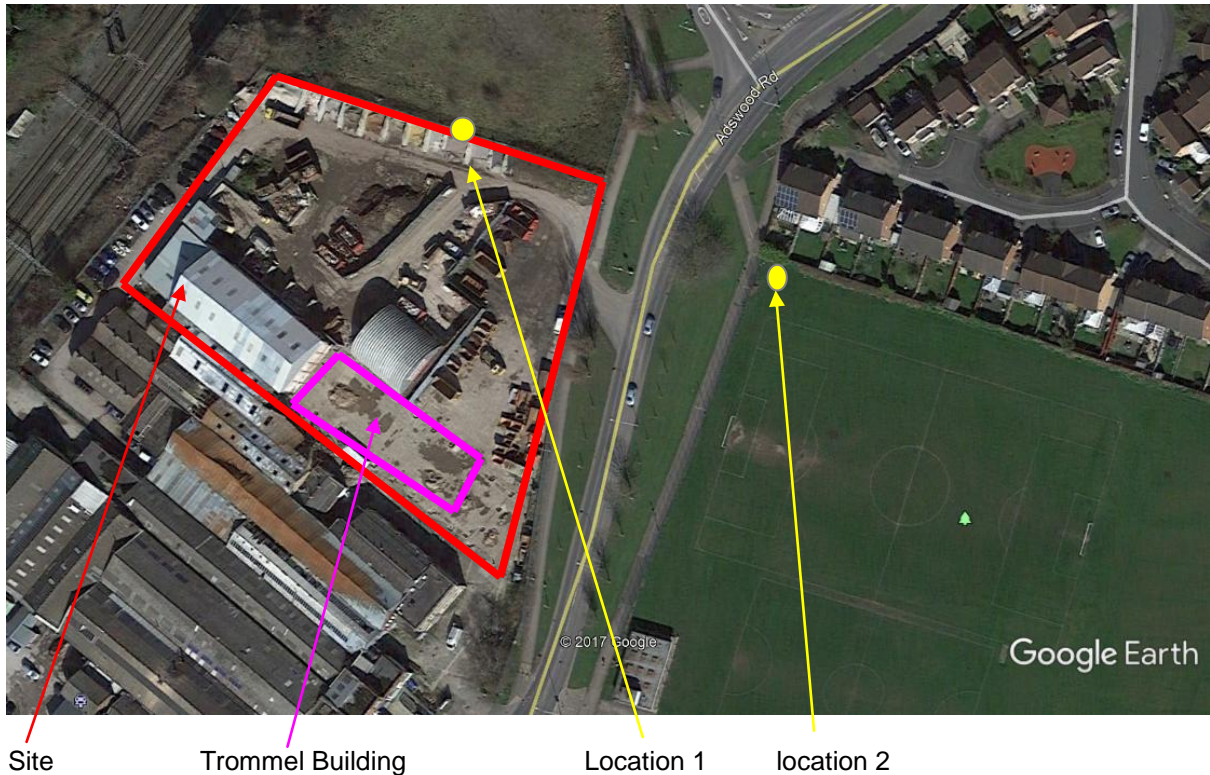
The existing site is adjacent to vacant land (Stockholm Road Adswood) that has been designated for residential development – Planning permission has been granted for the building of two blocks of residential apartments on the vacent land on Stockholm Road Adswood.

In a report dated 10 October 2017 Echo Acoustics were commissioned by MCI Developments to assess the noise affecting the residential development at Stockholm Road and if necessary make recommendations for suitable acoustic mitigation measures to ensure the protection of the residential amenity of the development from noise sources in the whole area.

The proposed development is to the North of the Cheadle Skip Hire site and is in an area of mixed commercial and residential usage.

In addition to the above proposed development there is existing housing to the North East of Cheadle Skip Hire on the opposite side of Adswood Road on Newsham Road.

Background noise level measurements were undertaken at two locations – these are shown on the map below –it was considered that these locations represented the nearest residential properties to the site.



Noise Assessment Criteria

The likelihood of complaints about noise from industrial plant can be assessed where the standard is appropriate using BS 4142 – 2014 – this has recently replaced the earlier standard BS 4142 : 1997

This standard describes methods for rating and assessing sound of an industrial / commercial nature. The methods described use outdoor sound levels to assess the likely effects of sound on people who might be inside / outside residential premises.

The significance of sound of an industrial / commercial nature depends upon the margin by which the rating level of the source exceeds the background sound level and the context in which the sound occurs.

The Standard is intended to be used for :

Investigating complaints regarding noise.

Assessing sound from proposed / new / modified or additional noise sources of an industrial / commercial nature.

Assessing sound at proposed new dwellings or premises used for residential purposes.

The sound level from a source when determined as a discrete entity distinct and free of other influences contributing to the ambient sound is referred to as the 'specific sound level'.

The specific sound level is evaluated at an identified location over the appropriate reference time intervals which are : 1 hours during the daytime – 07.00 to 23.00 hrs and 15 minutes during the night time – 23.00 to 07.00 hrs.

The specific noise may be subject to acoustic feature correction if the noise level at the measurement location is subjectively considered to contain certain acoustic features that may increase the significance of the impact of the noise over the background level.

If these features are present at the measurement location then the character correction is added to the specific sound level to arrive at the rating level.

The Standard requires the assessor to consider the subjective prominence of the character of the specific noise source at the measurement location / noise sensitive receptors and the extent to which the character of the noise will attract attention to it – such features are taken into account by applying the following corrections :

| | Tonality | Impulsivity | Other Characteristics |
|--------------------------------------------------|----------|-------------|-----------------------|
| Just Perceptible | + 2 dB | + 3dB | - |
| Clearly Perceptible | + 4dB | + 6 dB | - |
| Highly Perceptible | + 6dB | +9 dB | - |
| Readily Distinctive against Residual Environment | | | + 3 dB |

If both tonal and impulsive characteristics are both present then two corrections can be made – however if only one is dominant then only one correction need be applied.

If no corrections are deemed appropriate then the Rating Level equals the Specific Noise Level.

An initial estimate of the impact of the specific sound is obtained by subtracting the measured background level from the rating level and considering the following :

- A) Typically the greater the difference the greater the impact.
- B) A difference of around + 10 dB or more is likely to be an indication of a significant adverse impact – depending on context.
- C) A difference of around + 5 dB or more is likely to be an indication of a significant adverse impact – depending on context.
- D) The lower the rating level is to the measured background level the less likely it is that the sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the measured background level this is an indication that the sound source will have a low impact depending upon context.

Where the initial estimate of the impact needs to be modified due to the context then all pertinent factors need to be taken into consideration – these include the following :

The absolute level of the sound.

The character and level of the residual sound compared to the character and level of the specific sound.

The sensitivity of the receptor and whether residential dwellings already incorporate design measures that secure good internal and outdoor conditions eg facade insulation – ventilation / cooling that reduces the need to open windows – acoustic screening.

The standard recognises that the response to sound can be subjective as well as to the local attitudes to the source of the sound and the character of the neighbourhood.

Also relevant are the World Health Organisation (WHO) Guidelines for Community Noise – these identify that sleep may be disturbed by short term noise events and the level associated with this is 45 dB L_{Amax} inside the bedroom – this relates to 60 dB L_{Amax} external to the bedroom.

In brief an 'Outdoor Living Area' should be subject to a noise level less than 55 dBA in order to prevent serious annoyance during the daytime and evening - a level less than 50 dBA is desirable to prevent moderate annoyance : reference World Health Organisation.

BS 4142 : 2014

Regarding the residential properties the survey was undertaken – as stated above - with respect to BS 4142 : 2014 .

It is now a requirement of BS 4142 to consider the potential uncertainty of the assessment – the steps taken to reduce uncertainty as far as practical included :

All the measurements were made with a Type 1 sound level meter with certificates of calibration and field calibration checks were undertaken after each series of measurements with a minimal drift (0.1 dB) recorded.

The weather conditions were considered ideal for environmental noise measurements with no rain – dry / damp surfaces - low wind speeds (< 5.0 m /sec).

Variations in ground cover between the proposed site and the receivers could affect the ground absorption and therefore the calculated levels at the various receivers – in order to reduce this problem it has been assumed that there is acoustically reflective ground cover over the various distances.

Inaccuracies that could result from estimates of the intervening ground cover – meteorological conditions etc. will not be significant.

The measurements were undertaken over a number of days / times in order to obtain – what is considered to be – a representative measurement of the existing noise climate at this location.

Therefore taking the above into account it is considered that the uncertainty has been controlled as far as practically possible with the results being over predicted rather than under predicted and therefore the above represents a robust assessment.

National Planning Policy Framework

This provides brief guidance on planning and noise – it states that planning policies and the resultant decisions should aim to :

A – 'avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of the development.'

B – 'mitigate and reduce to a minimum other adverse impacts on health and quality of life arise from the new development – this includes the use of conditions'.

C – recognise the development will often create some noise and existing businesses wanting to expand to develop in continuance of their business should not have unreasonable restrictions placed on them because of changes in nearby land uses since they were established.

D – identify and protect areas of tranquility which have remained relatively undisturbed by noise and are prized for their recreational and amenity value.'

BS 8233 : 2014

The above standard is used to assess noise within residential property and in 'private amenity areas' that can be attached to these properties. They are used to assess the design of new buildings (or refurbishment) rather than assess the effects of changes to the external noise.

With respect to the new proposed development on Stockholm Road it is understood that there are no external amenity areas therefore whilst BS 4142 : 2014 will be used to assess the external noise level from Cheadle Skips it is primarily the actual external noise level that should determine the specification for the construction of the building in order to achieve the required internal level specified in the Standard.

The World Health Organisation and the above Standard state that it is desirable that the external noise level should ideally not exceed 50 dBA with an upper limit of 55 dBA.

However it is recognised that this is not always achievable in existing areas such as City Centres or adjacent to existing commercial development.

In such cases it is suggested that a compromise between the possible raised noise level and the advantages of the commercial development should be reached – therefore any development should be designed to achieve the lowest practical noise level and should not necessarily be prohibited.

Equipment Used and Measurement Method

The noise levels were measured using a :

Bruel & Kjaer 2238 Sound Level Meter (Type 1 instrument)

Calibration was undertaken using a :

Bruel & Kjaer type 4231 calibrator

The measurements were carried out at the location shown at a height of 1500mm above the ground and away from reflecting surfaces.

The measurements were undertaken at the times stated in the results.

The location of the measurements are indicated on the plan above.

Results

These are tabulated below :

The measurements were undertaken over two days in order to obtain a more robust assessment of the noise from the operation of the site.

The measurements were undertaken on Monday 25 September and Tuesday 26 September 2017 – the weather conditions during the measurements are detailed below :

| Date | Wind Speed M/sec | Wind Direction | Temperature C | Rain | Cloud Cover % | Road Conditions |
|-----------------------------------------|------------------|----------------|---------------|------|---------------|-----------------|
| Monday 25.09.2017 | 1 | SE | 13 | No | 80 | Dry |
| Tuesday 26.09.2017 Start - Finish | 1 – 1.5 | SE - SE | 11 – 16. | No | 60 - 80 | Dry |

The following measurements were undertaken at the entrance to the building housing the Trommel – the Trommel was being loaded with a 360 grab loader (CX 75 C) - the picking material was either being dropped into 2 skips under the Picking Line or directly onto the floor – Distance = 6m

The picked material was moved when necessary by a Front Loading Shovel (521 F).

| Date | Time | Duration | LA eq |
|----------|---------------|----------|-------|
| 25/09/17 | 13.20 – 14.20 | 1 hr | 83.7 |

Therefore at Location 2 the calculated noise level of the Trommel's operation over the reference time frame of 1 hr is $83.7 - 20 \log_{10} 6 = \mathbf{58.8 \text{ dBA}}$.

With respect to the residential development at Stockholm Road Location 1 is the relevant location to consider.

The calculated noise level at Location 1 is $83.7 - 20 \log_{10} 93 / 6 = \mathbf{60.1 \text{ dBA}}$ over the reference time interval of 1 hr.

Powerscreen being loaded by 360 (Case) shredding timber – Distance = 5m

| Date | Time | Duration | LA eq |
|----------|---------------|----------|-------|
| 25/09/17 | 14.30 – 15.30 | 1 hr | 83.4 |

At Location 1 the calculated noise level would be $83.4 - 20 \log_{10} 46 / 5 = \mathbf{64.1 \text{ dBA}}$ and at Location 2 = $83.4 - 20 \log_{10} 117 / 5 = \mathbf{56.0 \text{ dBA}}$

| Date | Operation | Duration | LA eq |
|----------|------------------------|-------------|-----------|
| 25/09/17 | | | |
| | Skip being unloaded | 8 minutes | 73.8 @ 3m |
| | Shovel moving waste | 6 minutes | 87.7 @ 8m |
| | Skip Lorry Movement | 0.5 minutes | 76.1 @ 2m |
| | 8 wheeler drive passes | 0.5 minutes | 74.8 @ 2m |
| | | | |
| | | | |

Tuesday 26 September 2017.

The microphone was set up as shown on the map above (Location 1) for the times stated :



As can be seen the overall noise level from all sources at the measurement location was recorded at **69.2 dBA**.

Table of Events

| Event Number | Event | LA eq |
|--------------|------------------------------------------|-------|
| 1 | Tracked shovel crushing material in skip | 67.1 |
| 2 | Dragging Skips | 70.6 |
| 3 | Shovel loading skip | 72.5 |
| 4 | Aggregates | 68.7 |
| 5 | Aggregates | 63 |
| 6 | Aircraft | 70.1 |

The above events vary in time but last up to 2 minutes – therefore with respect to the 1 hour time frame in BS 4142 : 2014 the following levels are calculated from $SPL + 10 \log 0.05 = SPL - 13 \text{ dB}$

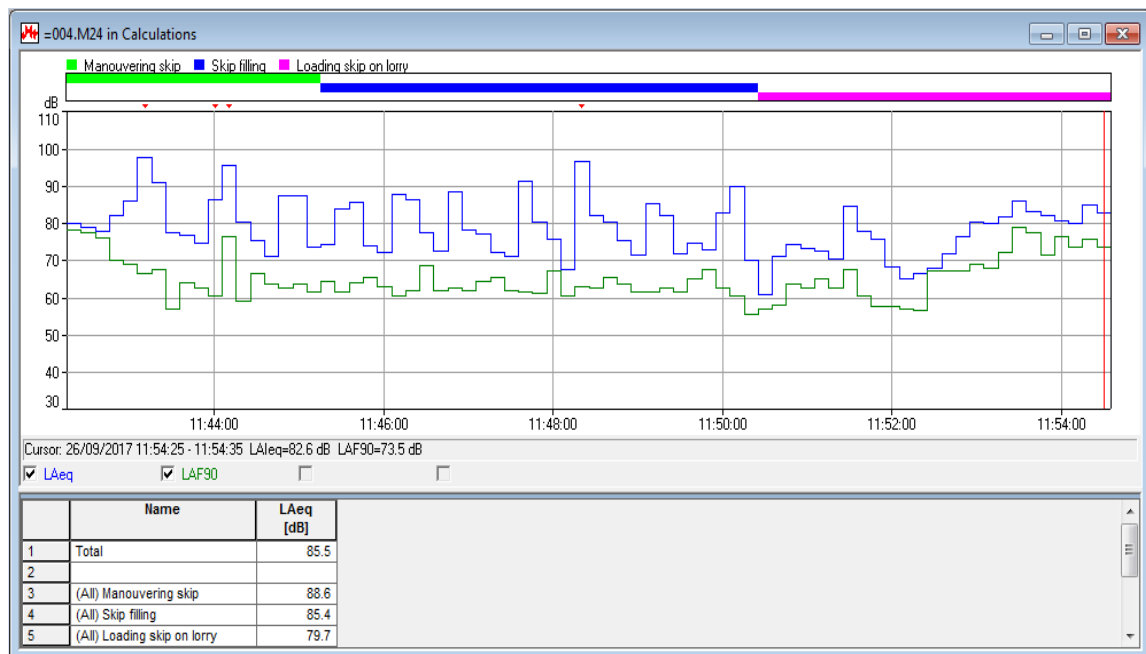
| Event | LA eq Location 1 | Calc. LA eq Location 2 |
|------------------------------------------|--------------------|------------------------|
| Tracked Shovel crushing material in skip | 67.1 @ 34m 54.1 | @ 100m – 66.1 53.1 |
| Dragging Skips | 70.6 @ 47m 57.6 | @90m – 65 52 |
| Shovel loading skip | 72.5 @ 47m 59.5 | @ 90m – 66.9 53.9 |

The above calculated noise levels are for single events in the 1 hr time frame – if the number of events increase – as is likely then so will be noise level.

The levels at Location 1 (adjacent to the residential development) are highlighted in light grey

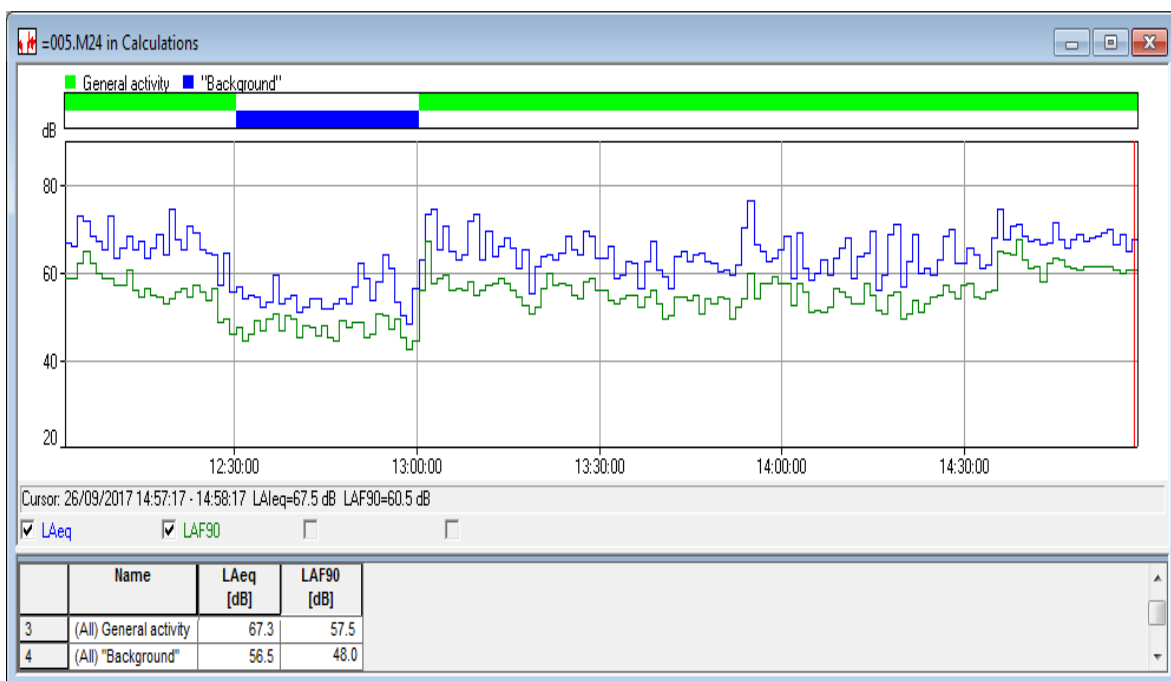
As can be seen the noise generated by the operation of Bradshaw Aggregates (highlighted in Yellow) generates levels of the same order as the operations at Cheadle Skip Hire Ltd.

The Aircraft fly over (of which there were many) again generates noise levels of the same order as the operations at Cheadle Skips.



Between the above times a 'roll on – roll off' skip was dropped off and loaded with hardcore and then pulled onto the back of the lorry – the skip was loaded with a front loader shovel – the measurements were carried out at a distance of 8m from the skip.

The distance of this operation from both Location 1 and 2 is scaled at 90m therefore the calculated noise level at these location will be $85.5 - 20 \log 90 / 8 = 64.4 \text{ dBA}$ – however this operation was timed to last 13 minutes – relating this to the reference time interval of 1 hr the overall level is calculated to be $64.4 + 10 \log 13/60 = 57.8 \text{ dBA}$.



The above is a graph of the general site activity until lunchtime at 12.30 – between 12.30 and 13.00 hrs there was no activity on site – after 13.00 hrs the activity continued.

The background noise level at the measurement location was recorded at **48 dBA**.

Calculated noise levels.

| Operation | Location 1 LA eq | Location 2 LA eq |
|-------------------------------------------|--------------------|----------------------|
| Trommel | 60.1 | 58.8 |
| Roll on – Roll off | 57.8 | 57.8 |
| | | |
| Shredder (100% operation) | 64.1 | 56 |
| 10% operation | 54.1 | 46 |
| | | |
| Crushing Material | 54.1 | 53.1 |
| Dragging Skips | 57.6 | 52 |
| Shovel loading skip | 59.5 | 53.9 |
| | | |
| Overall Calculated LA eq | 67.7 | 63.7 |
| Specific Noise Level | (65.5) | (63) |
| 10% operation in () | | |
| General Measured Level from site activity | 67.3 | - |
| | | |
| Correction re BS 4142 : 2014 | 3 | 3 |
| Rating Level | 70.7 | 66.7 |
| Measured Background | 48 | 49.9 |
| Excess over background | 70.7 – 48 = + 22.7 | 66.7 – 49.9 = + 16.8 |

The above does not consider the effects of the very audible reversing alarms – the banging of the chains on the skip lorries etc.- though the noise from them is included in the above measured noise levels.

However these can easily be reduced by using 'white noise' reversing alarms and fitting socks to the chains – which we would recommend be investigated.

The above calculated Rating Level is for the 'worst case situation' – all the plant operative at the same time within the same 1 hr time frame – this is very unlikely to be the case for the majority of the time at the Cheadle Skip site.

Below the above Table is repeated by taking into account the likely operation of the site from discussions with Cheadle Skips.

| Operation | Location 1 | Location 2 | Location 1 | Location 2 | Location 1 | Location 2 |
|-------------------------|-------------|-------------|-------------|-------------|-------------|------------|
| Trommel | 60.1 | 58.8 | 60.1 | 58.8 | | |
| Roll on Roll off | | | | | 57.8 | 57.8 |
| Shredder | | | | | 54.1 | 53.1 |
| Crushing Material | | | 54.1 | 53.1 | | |
| Dragging Skips | | | 57.6 | 52 | 57.6 | 52 |
| Shovel Loading Skip | 59.5 | 53.9 | | | | |
| Overall LA eq | 62.8 | 60 | 62.6 | 60.4 | 61.5 | 59.8 |
| General Level | 67.3 | 67.3 | 67.3 | 67.3 | 67.3 | 67.3 |
| Correction BS 4142:2014 | 3 | 3 | 3 | 3 | 3 | 3 |
| Rating Level | 65.8 | 63 | 65.6 | 63.4 | 64.5 | 62.9 |
| Measured Background | 48 | 49.9 | 48 | 49.9 | 48 | 49.9 |
| Excess over Background | 14.8 | 10.1 | 14.6 | 10.5 | 13.5 | 9.1 |

As can be seen at Location 1 – which is adjacent to the site of the proposed residential property – the Rating Level indicates that there is likely to be a *significant adverse impact* depending upon Context.

The site is within a well established and old industrial area that is used by various commercial interests and within the NPPF it is stated :*recognise the development will often create some noise and existing businesses wanting to expand to develop in continuance of their business should not have unreasonable restrictions placed on them because of changes in nearby land uses since they were established.*

This clearly applies to Cheadle Skip Hire.

In addition – with respect the the proposed residential development on Stockholm Road Adswold – BS 8233 : 2014 is used to access noise within residential property and in 'private amenity areas' that can be attached to these properties. They are used to assess the design of new buildings (or refurbishment) rather than assess the effects of changes to the external noise.

With respect to the new proposed development on Stockholm Road it is understood that there are no external amenity areas therefore whilst BS 4142 : 2014 will be used to assess the external noise level from Cheadle Skips it is primarily the actual external noise level that should determine the specification for the construction of the building in order to achieve the required internal level specified in the Standard.

It is understood rthat the existing site has been operational for a number of years and that during this time there have been no complaints regarding noise from the operation of Cheadle Skips.

In the Echo Acoustics report the following statement is made :

With respect to the commercial operations, noise from these is likely to be distributed over a relatively wide area. It was assumed that Cheadle Skip Hire operates from between 5:00 and 6:00AM whilst the Dairy is likely to operate throughout the night, peaking in the early hours of the morning as milk deliveries are prepared and despatched.

As can be seen the assumed start time is between 05.00 and 06.00 hrs – as detailed in the Introduction this is wrong as the start time will be 07.30 hrs.

However the Echo Report goes on to say :

However, the REC report determined that the noise from Cheadle Skip Hire would give rise to unacceptable levels of internal noise with windows open. This report does not provide a detailed re-assessment of noise from Cheadle Skip Hire but it can be reasonably inferred that the nature and character of the noise from this operation, occurring early in the morning as these type of operations necessarily do, would be likely to disturb sleep, irrespective of the noise 'level'. For this reason it was concluded that for bedrooms facing Cheadle Skip Hire, windows would need to remain closed in order to prevent sleep disturbance during the early morning periods.

The REC report found that the dairy gave rise to quantitatively lower levels of noise but, as with the other commercial operation, irrespective of noise level, the character and nature of the noise, involving impulsive noises and occurring overnight or in the very early hours of the morning, would be likely to lead to sleep disturbance for residents if windows were open for ventilation.

It is concluded, therefore, that in order to prevent disturbance during the day and night time, windows will need to remain closed. Consequently, alternative means of providing background ventilation will be required.

The following Mitigation requirements being detailed :

Mitigation requirements

With closed thermal double-glazing providing 33 dB $R_w + C_T$ of sound attenuation, habitable rooms on all facades of the proposed development, will be suitably protected from road and railway noise during both the day and night time. .

Alternative ventilation providing at least 36 dB $D_{n,e,w} + C_T$ will be necessary in these rooms to prevent the need to open windows for ventilation, which may necessitate the provision of acoustically attenuating trickle ventilators.

The provision of a substantial noise barrier along the site's western and southern boundaries may serve to reduce railway noise levels affecting north- and west-facing ground floor windows by between 5 and 12 dB and may be considered for dining rooms and living rooms at that level. In that instance, those rooms may be suitably protected with thermal double-glazing, providing 30 dB R_w of sound attenuation allied to non-acoustically-attenuating trickle ventilation units providing 33 dB $D_{n,e,w}$ of sound attenuation.

However, this measure is unlikely to sufficiently reduce the adverse effects of very early morning noise from Cheadle Skip Hire, whereby the character of any sudden, impulsive noises is likely to disturb at night, irrespective of noise level. Consequently bedrooms windows at ground floor windows on west- and south-facing facades will need to be provided with the greater level of protection, namely thermal double-glazing providing 33 dB $R_w + C_T$ of sound attenuation allied to acoustically-attenuating trickle ventilation units providing at least 36 dB $D_{n,e,w} + C_T$ of sound attenuation.

Again the point is raised regarding the 'very early morning noise from Cheadle Skips.....is likely to disturb at night . Irrespective of the noise level'.

Again the assumption is wrong and there will be no 'very early noise from Cheadle Skips' as the operational hours of the site are proposed to be **07.30 until 17.00 hrs.**

An acoustic fence is proposed for the Southern boundary of the residential development – this however is only likely to be effective for the Ground Floor apartments.

The remainder of the residential floors are unlikely to benefit from the provision of the acoustic barrier and therefore acoustic glazing is specified for the habitable rooms together with suitable acoustically treated ventilation to all habitable rooms.

The proposed site lay out has the advantage that the apartments in Blocks 25 - 48 do not look directly over Cheadle Skip Hire but have a gable wall to that elevation which will attenuate the noise from Cheadle Skips to the facades that contain windows and vents.

The Echo Acoustics report ends by stating :

It is concluded that with these measures in place, the residential amenity of future occupants of the development will be suitably protected and noise need not be a reason for refusal of planning permission.

Therefore the Planning Approval for the residential development at Stockholm Road was granted after a number of acoustic assessments of the noise from Cheadle Skips (and other sources) and mitigation measures were incorporated into the residential scheme which it was concluded would suitably protect the amenity of any future residents of the developed site.

However the following Recommendations are made regarding the future operation of Cheadle Skip Hire which could result in a reduction of the overall noise level from the site and therefore a reduction in the boundary level at Location 1.

A That all skip lorries operated by Cheadle Skips are fitted with chain socks in order to reduce the noise caused by the loose chains banging on the side of the skip.

B That all vehicles owned and operated by Cheadle Skips – and indeed Bradshaw Aggregates - are fitted with 'white noise' reversing alarms.

C That the sites operation is controlled by Condition – as is the operation of the Trommel so that its operation is outside 'sensitive times' early morning and late afternoon.

D The Shredder be re located at a greater distance from the residential property than it is at present.

Roger Leach

AMIOA.