Noise at Work Risk Assessment:

Client: International Widgets Ltd

Client Address: South West Business Park
North Road
Small Town
Dorset
AB1 2CD

Assessment Site: South West Business Park
North Road
Small Town
Dorset
AB1 2CD

Assessment date: 10th October 2013

Prepared By: Rob Shaddick, MSc, MIOA

Company: Soundguard Acoustics Ltd

Our Reference: SGA123/1

<table>
<thead>
<tr>
<th>Prepared By:</th>
<th>Checked By:</th>
</tr>
</thead>
</table>
| Rob Shaddick, MSC, MIOA
Acoustic Consultant, Director | Rob Shaddick, MSC, MIOA
Acoustic Consultant, Director |

14th October 2013 15th October 2013
Note on reading this report:

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party. This report replaces any previous report released by Soundguard Acoustics Ltd for this specific project.

We advise that you read this report in conjunction with the free HSE leaflet entitled ‘Noise at work – Guidance for employers on the Control of Noise at Work Regulations 2005’ which will cover some of the generic information in more detail.

Whilst this noise risk assessment has been undertaken as thoroughly as possible, in practice it is not feasible to perform the type of exhaustive monitoring or assessment which would be required to guarantee that all results were absolutely representative of all working conditions. Soundguard Acoustics Ltd can accept no responsibility for occasions or incidents where differing levels of noise or personal exposures are reported subsequent to this report. Ambient levels of noise (and as a direct result personal exposure to noise) are subject to potentially significant variations due to changes in plant condition or performance, processes and other working activities and the actions, behaviour and working styles of employees. There may be further variations in concentrations related to different shifts, processes or individuals. Therefore the aim of this programme of monitoring is to obtain a best estimate of occupational noise exposure risk. Accuracy of findings may be diminished where monitoring was undertaken unwittingly during abnormal conditions or where access was prevented for reasons of security, safety or other client imposed restrictions.

Where specialist suppliers, products or installers are mentioned in this report then this is for the benefit of the client. Soundguard Acoustics Ltd has no association with the companies mentioned in this report and it is at the recipient’s discretion when further advice and products are obtained.

If you require further assistance in application or understanding of this report then please contact us.

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Bideford
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1. Assessment criteria:

A noise risk assessment enables you to demonstrate that you have, from the earliest opportunity, considered all the factors related to the risks from noise exposure. This enables you, as the employer, to make a valid decision about whether your employees are at risk from exposure to noise and prevent or reduce the risks to health and safety from exposure to noise at work. This is achieved by first identifying your risks and introducing a plan of controls to prevent or adequately reduce your employee noise exposure. Your employees have a duty under the Regulations to effectively make use of any control measures identified or introduced.

The Control of Noise at Work Regulations 2005 (CONAWR) is the current regulation for assessing noise risk in the workplace and requires specific action in relation to the daily (or weekly) averaged level of noise exposure of your employees and the maximum (peak) sound pressure of exposure. A useful visual guide is provided in Annex 4 and with regard to reducing the risk of hearing damage the Regulations define three action levels indicated in the table below.

<table>
<thead>
<tr>
<th>Description</th>
<th>Lower Exposure Action Value (LEAV)</th>
<th>Upper Exposure Action Value (UEAV)</th>
<th>Exposure Limit Value (ELV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A daily ($L_{eq,d}$) or weekly ($L_{eq,w}$) personal noise exposure of:</td>
<td>80dB(A)</td>
<td>85dB(A)</td>
<td>87dB(A)</td>
</tr>
<tr>
<td>Maximum peak exposure level of:</td>
<td>135dB(C)</td>
<td>137dB(C)</td>
<td>140dB(C)</td>
</tr>
<tr>
<td>Action:</td>
<td>Have available and provide hearing protection to employees who request them.</td>
<td>Provide hearing protection and enforce their mandatory use in identified hearing protection zones</td>
<td>A level of exposure not to be exceeded (at the ear). Takes into account level of protection afforded by hearing protectors.</td>
</tr>
</tbody>
</table>

The regulations require employers to prevent or reduce the noise risk exposure by:

- Assess the risk to your employees from noise at work
- Eliminate or reduce the risk of exposure to noise
- Provide hearing protection if noise cannot be reduced by other means
- Ensure that the legal limits of occupational noise are not exceeded
- Provide employees with information, instruction and training
- Carry out health surveillance where risks to health are identified
- Ensure employees understand their role within reducing noise exposure
2. Approach and methodology:

Measurements were undertaken by a consultant certified as competent in workplace noise assessment and in accordance with the guidance presented in the CONAWR. Measurements were conducted by Rob Shaddick, MSc, MIOA of Soundguard Acoustics Ltd on the 10th October 2013.

A Class 1 Norsonic NOR140 integrating Sound Level Meter (S/N: XXXXXX) was used for the assessment. This is designed to objectively measure sound level variations over the test period for each position, the equivalent continuous noise level ($L_{Aeq}$) is Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus.

The microphone was positioned at the ‘ear level’ of operators with recordings of suitable and sufficient duration to allow the collection of representative personal exposure data to occupational noise. Where measurements have been Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.

Dominant noise sources have been identified in each area from the raw data and typical levels have been indicated on the site plans in Annex 5. This has been used to predict likely daily noise exposure dose for employees, section 4, and a summary of noise risk is Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede.

All acoustic measurement equipment used during the noise survey was used as described by the manufacturer’s operating instruction, was within calibration and conformed to Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est.
3. Site description and activity:

International Widgets Ltd is located in Small Town, Dorset. The company has been manufacturing and packaging varieties of widgets since 1972. A noise risk assessment was requested to manage noise level exposure and to achieve CONAWR across the site. A previous noise risk assessment has been undertaken although this is now outdated.

The main manufacturing areas are all block & composite panel built with a concrete floor and high open composite panel roof. The main production area contains Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magnis quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.

There are approximately 20 employees at International Widgets Ltd working within the production lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magnis quis urna. Nunc viverra imperdiet enim The standard working week on the site is 40 hours. Overtime occasionally occurs and may result in a further 8 hours per week.

Observed work practices at International Widgets Ltd determined that due to the nature of the work that most employees spend their working day moving between a few core processes. Normal activity occurred during the survey offering a good consistent sample for noise sampling.

No existing mandatory hearing protection zones exist although hearing protection is available from a PPE cupboard in the main production area. The current hearing protection provided on site is indicated in the table below.

<table>
<thead>
<tr>
<th>Product</th>
<th>Fitting Type</th>
<th>Standard</th>
<th>SNR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Plugs</td>
<td>Plugs</td>
<td>EN352-2</td>
<td>35dB</td>
</tr>
<tr>
<td>dB Super Earmuffs</td>
<td>Muffs</td>
<td>EN352-1</td>
<td>27dB</td>
</tr>
</tbody>
</table>
4. Employee daily noise dose:

<table>
<thead>
<tr>
<th>Line 2 Widget manufacturing operator</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>Process</td>
<td>Duration (exposure time)</td>
<td>Level dB(A)</td>
</tr>
<tr>
<td>Production</td>
<td>Widget Press</td>
<td>210 min</td>
<td>80 dB</td>
</tr>
<tr>
<td></td>
<td>Slider &amp; Fixer</td>
<td>210 min</td>
<td>80 dB</td>
</tr>
<tr>
<td></td>
<td>General Background noise</td>
<td>30 min</td>
<td>77 dB</td>
</tr>
<tr>
<td>Break</td>
<td>Breaks away from noise</td>
<td>30 min</td>
<td>60 dB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily noise dose worked example for a possible (8 hour) shift</td>
<td>L_{ep,d} = 80dB(A)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4 Widget finishing operator</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>Process</td>
<td>Duration (exposure time)</td>
<td>Level dB(A)</td>
</tr>
<tr>
<td>Production</td>
<td>Widget finish and grind</td>
<td>210 min</td>
<td>79 dB</td>
</tr>
<tr>
<td></td>
<td>Widget packing</td>
<td>210 min</td>
<td>84 dB</td>
</tr>
<tr>
<td></td>
<td>General Background noise</td>
<td>30 min</td>
<td>78 dB</td>
</tr>
<tr>
<td>Break</td>
<td>Breaks away from noise</td>
<td>30 min</td>
<td>60 dB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily noise dose worked example for a possible (8 hour) shift</td>
<td>L_{ep,d} = 82dB(A)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 6 Widget boring Operator</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>Process</td>
<td>Duration (exposure time)</td>
<td>Level dB(A)</td>
</tr>
<tr>
<td>Production</td>
<td>Widget bore &amp; thread</td>
<td>210 min</td>
<td>79 dB</td>
</tr>
<tr>
<td></td>
<td>Widget grinding &amp; CNC</td>
<td>210 min</td>
<td>88 dB</td>
</tr>
<tr>
<td></td>
<td>General Background noise</td>
<td>30 min</td>
<td>77 dB</td>
</tr>
<tr>
<td>Break</td>
<td>Breaks away from noise</td>
<td>30 min</td>
<td>60 dB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily noise dose worked example for a possible (8 hour) shift</td>
<td>L_{ep,d} = 85dB(A)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) These values estimate noise exposure time and assume that the noise is not constant for the entire shift pattern
5. Employee noise exposure risk:

Manufacturing Lines: The assessment indicates that employees working within the main production and manufacturing lines will be exposed to a typical daily noise exposure above Upper Exposure Action Value (UEAV) of 85dB(A)_{LEP,d} but Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.


Grinding & Stacking Area: The assessment indicates that employees working within the main grinding and stacking area will be exposed to a typical daily noise exposure above the Upper Exposure Action Value (UEAV) of 85dB(A)_{LEP,d} but Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.


Peak noise levels are Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa.
6. Action plan of noise control:

The noise control provided within this section has been prioritised based upon the level of risk to employees, the simplicity of installation and the Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus.


WITHIN <1mnths   Sharing the findings of this report

Under the Control of Noise at Work Regulations 2005, employees are permitted access to the results, records and any other site observations presented in this report. It is also a Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci.

WITHIN <1mnths   Manage punch press levels


WITHIN <3mnths   Introduce mandatory hearing protection zones

The main production area must be designated as an mandatory hearing protection zone. Mandatory zones exist where porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci. Managing hearing protection zones and appropriate signage can be found in Annex 3. The extent of the mandatory zones are indicated in Annex 5.
### WITHIN <3mnths

**Provide hearing protection dispensers**

It was noted that hearing dispensers were not provided in easy to access locations. Hearing protection must be easily porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci.

**WITHIN <3mnths**

Noise control for circular cutting equipment


**WITHIN <3mnths**

Noise control for punch press tables


**WITHIN <3mnths**

Acoustic enclosure advice and construction

### WITHIN <3mnths
Review of existing hearing protection

The CONAWR require that employees have a choice of hearing protection type; by this a choice between porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci., the optimum level ‘at the ear’ when the hearing protection is fitted (to avoid isolation through over protection and more importantly to avoid under protection) should be between 70 – 80dB(A). The existing provided ear protection on site is porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci.measured levels in Annex 6. These may still provide some ‘over protection’ due to the type of noise frequency characteristics and levels at the site but are considered as less isolating than other models. If changing suppliers a hearing protector with a low SNR is recommended. Please contact us if you require further advice regarding this.

### WITHIN <3mnths
Provide noise awareness and hearing protection training

Make available the HSE porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci. poor hearing protection compliance. You will need to reinforce the message from time to time, and you should draw employees’ attention to relevant advice provided by the HSE.

### WITHIN <3mnths
Ensure that your employees comply with hearing protection

Ensure that you demonstrate that your employees have been provided porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. magna sed pulvinar ultricies, purus lectus malesuada Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci. occupational hearing loss disputes which may arise, even when employees are no longer employed by you. See Annex 3 for an example sheet which may be printed and used.
<table>
<thead>
<tr>
<th>WITHIN &lt;3mnths</th>
<th>Noise control for circular cutting equipment</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>WITHIN &lt;6mnths</th>
<th>Overtime and extended working hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>$L_{ep,d}$ Values are typically calculated on an 8 hour working day criteria time. An individual that undertakes a 12 hour shift will incur a 2dB additional daily noise adjustment dose to their $L_{ep,d}$ value. In some situations an employee on regular overtime may porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WITHIN &lt;6mnths</th>
<th>Maintenance of machinery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of machinery, carried out in accordance with the manufacturer’s recommendations, can prevent noise emissions increasing over time. Loose panels, worn gears, porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci.unusually high noise levels and check that machines are operating properly.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WITHIN &lt;6mnths</th>
<th>Pneumatics and airlines</th>
</tr>
</thead>
</table>
### WITHIN <6mnths

**Low-noise purchasing policy**


### WITHIN <24mnths

**Hearing Health Surveillance**


### WITHIN <24mnths

**Job Rotation**

By ensuring that employees are not permanently working within high levels of noise then daily exposure porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna.

### WITHIN <24mnths

**Absorptive tiles beneath mezzanine area**


7. Conclusion:

It is estimated that most employees within the main production area are likely to be exposed at or slightly above the Upper Exposure Action Value of 80 dB(A)_{L_{EP}}. Therefore it is considered that Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci. Aenean nec lorem. In porttitor. Donec laoreet nonummy augue.


Peak noise levels are not consistently exceeded by any typical processes across the site.

Advice and guidance should be used alongside the action plan of noise control to ensure that the risk of noise exposure for your employees is Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci. Aenean nec lorem. In porttitor. Donec laoreet nonummy augue. Subsequent noise surveys (recommended at 2 yearly intervals) will help to ensure that noise in your workplace continues to be managed.
References:

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa.

Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim.

Fusce est. Vivamus a tellus.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede.

Mauris et orci. Aenean nec lorem.

In porttitor. Donec laoreet nonummy augue.

Suspendisse dui purus, scelerisque at, vulputate vitae, pretium mattis, nunc. Mauris eget neque at sem venenatis eleifend.

Ut nonummy. Fusce aliquet pede non pede.

Suspendisse dapibus lorem pellentesque magna. Integer nulla.

Donec blandit feugiat ligula. Donec hendrerit, felis et imperdiet euismod, purus ipsum pretium metus, in lacinia nulla nisl eget sapien.

Donec ut est in lectus consequat consequat. Etiam eget dui.

Aliquam erat volutpat. Sed at lorem in nunc porta tristique.

Proin nec augue. Quisque aliquam tempor magna.

Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Nunc ac magna.

Maecenas odio dolor, vulputate vel, auctor ac, accumsan id, felis. Pellentesque cursus sagittis felis.

www.hse.gov.uk/noise  Health and Safety Executive website
www.bsi-global.com  British Standards Website
www.soundguard.co.uk  Soundguard Acoustics Ltd website
www.soundguard.ie  Suppliers of workplace noise risk assessment
www.soundguard.co.uk  Soundguard Acoustics Ltd website
www.soundguard.de  Suppliers of workplace noise risk assessment
www.soundguard.co.uk  Soundguard Acoustics Ltd website
www.soundguard.co.uk  Suppliers of workplace noise risk assessment
ANNEX 1: Glossary of terms, definitions and units

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>APV</td>
<td>Assumed Protection Value of hearing protection at the ear</td>
</tr>
<tr>
<td>Attenuation</td>
<td>Noise reduction, measured in decibels</td>
</tr>
<tr>
<td>Broadband</td>
<td>Noise measurements using parameters which include all the audible noise such as dB(A) and dB(C)</td>
</tr>
<tr>
<td>Calibration</td>
<td>A check of the function of a sound level meter by comparing the meter reading with a known sound pressure level</td>
</tr>
<tr>
<td>Class 1</td>
<td>Precision Field Grade for Sound Level Meters for noise at work or environmental assessment</td>
</tr>
<tr>
<td>dB(A)</td>
<td>Decibels ‘A’ weighted, a standard weighting of the audible frequencies designed to reflect the response of the human ear</td>
</tr>
<tr>
<td>dB(C)</td>
<td>Decibels ‘C’ weighted, a standard weighting of the audible frequencies used for measurement of peak sound pressure levels</td>
</tr>
<tr>
<td>Decibel (dB)</td>
<td>Unit of sound level and noise exposure measurement</td>
</tr>
<tr>
<td>Earmuff</td>
<td>Ear protection consisting of a cup enclosing the outer ear</td>
</tr>
<tr>
<td>Earplug</td>
<td>Ear protection in the form of a plug inserted into the ear canal</td>
</tr>
<tr>
<td>Ear Protection</td>
<td>A term used to cover all forms of hearing protection</td>
</tr>
<tr>
<td>Exposure Action Value</td>
<td>The Control of Noise at Work 2005 levels where specific guidance and action needs to be taken. Refer to the values within the report</td>
</tr>
<tr>
<td>Exposure Limit Value</td>
<td>The level of daily or weekly personal noise exposure or of peak sound pressure level which must not be exceeded</td>
</tr>
<tr>
<td>Frequency Analysis</td>
<td>Analysis of a sound into its frequency components (see OBA)</td>
</tr>
<tr>
<td>Hearing Loss</td>
<td>Noise induced Hearing Loss (NIHL) typically associated with high levels of occupational noise exposure over time. An irreversible deterioration of the ears sensitivity to noise due to nerve damage.</td>
</tr>
<tr>
<td>Hearing Protection Zone</td>
<td>A demarcated and signed area to indicate where a person is likely to be exposed to the upper exposure action value</td>
</tr>
<tr>
<td>Hertz (Hz)</td>
<td>The unit of frequency</td>
</tr>
<tr>
<td>L&lt;sub&gt;ep&lt;/sub&gt;</td>
<td>Daily personal noise exposure and equivalent to L&lt;sub&gt;EX,8h&lt;/sub&gt;. Directly related to the risk of hearing damage</td>
</tr>
<tr>
<td>L&lt;sub&gt;eq&lt;/sub&gt;</td>
<td>Equivalent continuous sound pressure level. Average sound pressure over a given time, t, in dB</td>
</tr>
<tr>
<td>L&lt;sub&gt;EX,8h&lt;/sub&gt;</td>
<td>Daily 8 hr personal noise exposure and equivalent to L&lt;sub&gt;eq&lt;/sub,d</td>
</tr>
<tr>
<td>L&lt;sub&gt;Cpeak&lt;/sub&gt;</td>
<td>The maximum C weighted value reached by the sound pressure at any instant during a measurement period</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Noise refuge</td>
<td>An operator enclosure in which a person can work away from the source of noise, or spend breaks away from noise</td>
</tr>
<tr>
<td>Octave Band Analysis</td>
<td>Division of the noise into a range of frequency bands, used in the analysis of hearing protection</td>
</tr>
<tr>
<td>Peak</td>
<td>The maximum value reached by the sound pressure at any instant during a measurement period. (Usually dB C weighted)</td>
</tr>
<tr>
<td>SNR</td>
<td>Single Number Rating, general reduction value of hearing protection</td>
</tr>
<tr>
<td>Sound Level Meter (SLM)</td>
<td>An instrument for measuring noise parameters, usually a Type1 integrating SLM which can accumulate an averaged total sound energy over a specified period.</td>
</tr>
<tr>
<td>Sound Level (SPL)</td>
<td>Sound Pressure Level, the basic measure of noise loudness. Expressed in decibels with Frequency weighting, such as dB(A)</td>
</tr>
</tbody>
</table>
Annex 2: Hearing Protection performance

It is considered that some types of the existing provided hearing protection will over-protect the employee leading to Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas.

<table>
<thead>
<tr>
<th>Product</th>
<th>Fitting Type</th>
<th>Standard</th>
<th>SNR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soundguard InstaMold</td>
<td>Ear Plugs</td>
<td>EN352-2</td>
<td>20dB</td>
</tr>
<tr>
<td>Noise Banded Plugs</td>
<td>Banded Plugs</td>
<td>EN352-2</td>
<td>22dB</td>
</tr>
<tr>
<td>Sound dB Muff</td>
<td>Muffs</td>
<td>EN352-1</td>
<td>27dB</td>
</tr>
</tbody>
</table>

If you require further assistance in the selection of appropriate hearing protection then please contact us at Soundguard Acoustics Ltd. If you would like to evaluate hearing protection using the HSE Excel hearing protection calculator or would like to source and browse useful online hearing protection calculators from suppliers then click the links below:

EXAMPLE ONLINE RESOURCE

EXAMPLE ONLINE RESOURCE

EXAMPLE ONLINE RESOURCE
Annex 3: Guidance on introducing hearing protection zones


Examples are provided below:

![Examples of HSE recognised 'Blue and White' mandatory Hearing Protection zone signs](https://example.com/bluewhite.png)

![Examples of appropriate HSE recognised Advisory Hearing Protection zone signs](https://example.com/advisory.png)
I confirm that I have been supplied & informed of the following:

- [ ] I have been provided with a hearing protection information leaflet
- [ ] I have been shown how to insert and wear hearing protection
- [ ] I have been supplied with hearing protectors for my work place
- [ ] I am able to recognise hearing protection signs & zones at work
- [ ] I understand where hearing protection must be worn in my work place
- [ ] I know where I can get replacement hearing protection in my work place
- [ ] I am aware of my personal responsibility in protecting my hearing at work
- [ ] I am aware that this form will be stored in my personal records

Signed:  
Print Name:  
Date:

File this hearing protection acknowledgment form in your employee records as evidence of your company's commitment to reducing noise exposure & protecting the hearing of your employees.
Annex 4: Noise levels and the decibel scale

The human ear can detect a wide range of pressure fluctuations which are perceived as sound. In order to express these fluctuations in a meaningful way the logarithmic scale called the decibel, or Lorem ipsum dolor sit amet, consectetur adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus.


**Annex 5: Site plan**

*Figure 1: Noise map of (manufacturing) w/areas that must be designated as [Mandatory (red)](80dBA) and [Advisory (orange)](77dBA) hearing protection zone.  [Suggested HP Dispensers](61dBA)*
<table>
<thead>
<tr>
<th>File Location / Task</th>
<th>LCpeak</th>
<th>Date / Time</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 GB LDM line 2</td>
<td>94.4</td>
<td>2013/10/10 10:30:00.00</td>
<td>0:1:0.0</td>
</tr>
<tr>
<td>8 GB LDM line 2</td>
<td>98.4</td>
<td>2013/10/10 10:31:02.00</td>
<td>0:1:1.0</td>
</tr>
<tr>
<td>9 OP Freemantle line 2/3</td>
<td>95.9</td>
<td>2013/10/10 10:32:03.00</td>
<td>0:1:2.0</td>
</tr>
<tr>
<td>10 GB conveyor line 2</td>
<td>97.1</td>
<td>2013/10/10 10:33:04.00</td>
<td>0:1:3.0</td>
</tr>
<tr>
<td>11 GB line 2</td>
<td>97.6</td>
<td>2013/10/10 10:34:05.00</td>
<td>0:1:4.0</td>
</tr>
<tr>
<td>12 OP packing line 2</td>
<td>97.2</td>
<td>2013/10/10 10:35:06.00</td>
<td>0:1:5.0</td>
</tr>
<tr>
<td>13 GB behind MMA line 3</td>
<td>95.9</td>
<td>2013/10/10 10:36:07.00</td>
<td>0:1:6.0</td>
</tr>
<tr>
<td>14 GB IMA line 3</td>
<td>97.3</td>
<td>2013/10/10 10:37:08.00</td>
<td>0:1:7.0</td>
</tr>
<tr>
<td>15 OP foil wrap line 3</td>
<td>97.2</td>
<td>2013/10/10 10:38:09.00</td>
<td>0:1:8.0</td>
</tr>
<tr>
<td>16 OP Freemantle line 2</td>
<td>98.2</td>
<td>2013/10/10 10:39:09.00</td>
<td>0:1:9.0</td>
</tr>
<tr>
<td>17 GB conveyor line 3</td>
<td>97.6</td>
<td>2013/10/10 10:40:09.00</td>
<td>0:1:10.0</td>
</tr>
<tr>
<td>18 GB between CDI line 2/3</td>
<td>97.6</td>
<td>2013/10/10 10:41:09.00</td>
<td>0:1:11.0</td>
</tr>
<tr>
<td>19 OP packing line 3</td>
<td>97.4</td>
<td>2013/10/10 10:42:09.00</td>
<td>0:1:12.0</td>
</tr>
<tr>
<td>20 GB foil wrap line 4</td>
<td>97.2</td>
<td>2013/10/10 10:43:09.00</td>
<td>0:1:13.0</td>
</tr>
<tr>
<td>21 OP MMA line 4</td>
<td>97.5</td>
<td>2013/10/10 10:44:09.00</td>
<td>0:1:14.0</td>
</tr>
<tr>
<td>22 OP CAM line 4</td>
<td>97.2</td>
<td>2013/10/10 10:45:09.00</td>
<td>0:1:15.0</td>
</tr>
<tr>
<td>23 GB conveyor line 4</td>
<td>97.1</td>
<td>2013/10/10 10:46:09.00</td>
<td>0:1:16.0</td>
</tr>
<tr>
<td>24 GB between CDI line 3/4</td>
<td>97.2</td>
<td>2013/10/10 10:47:09.00</td>
<td>0:1:17.0</td>
</tr>
<tr>
<td>25 OP line 4 packing</td>
<td>97.3</td>
<td>2013/10/10 10:48:09.00</td>
<td>0:1:18.0</td>
</tr>
<tr>
<td>26 GB worksatons</td>
<td>97.0</td>
<td>2013/10/10 10:49:09.00</td>
<td>0:1:19.0</td>
</tr>
<tr>
<td>27 OP IMA line 5</td>
<td>97.1</td>
<td>2013/10/10 10:50:09.00</td>
<td>0:1:20.0</td>
</tr>
<tr>
<td>28 OP weigher line 5</td>
<td>98.0</td>
<td>2013/10/10 10:51:09.00</td>
<td>0:1:21.0</td>
</tr>
<tr>
<td>29 GB behind IMA line 5/6</td>
<td>97.6</td>
<td>2013/10/10 10:52:09.00</td>
<td>0:1:22.0</td>
</tr>
<tr>
<td>30 GB conveyor line 5</td>
<td>97.4</td>
<td>2013/10/10 10:53:09.00</td>
<td>0:1:23.0</td>
</tr>
<tr>
<td>31 GB CDI line 5</td>
<td>97.7</td>
<td>2013/10/10 10:54:09.00</td>
<td>0:1:24.0</td>
</tr>
<tr>
<td>32 OP line 5 packing</td>
<td>97.4</td>
<td>2013/10/10 10:55:09.00</td>
<td>0:1:25.0</td>
</tr>
<tr>
<td>33 GB lift load, hopper changover</td>
<td>97.7</td>
<td>2013/10/10 10:56:09.00</td>
<td>0:1:26.0</td>
</tr>
<tr>
<td>34 GB belting line 6</td>
<td>97.1</td>
<td>2013/10/10 10:57:09.00</td>
<td>0:1:27.0</td>
</tr>
<tr>
<td>35 OP foil wrap line 6</td>
<td>97.2</td>
<td>2013/10/10 10:58:09.00</td>
<td>0:1:28.0</td>
</tr>
<tr>
<td>36 OP line 6 packing</td>
<td>97.4</td>
<td>2013/10/10 10:59:09.00</td>
<td>0:1:29.0</td>
</tr>
<tr>
<td>37 OP loading</td>
<td>97.5</td>
<td>2013/10/10 11:00:09.00</td>
<td>0:1:30.0</td>
</tr>
<tr>
<td>38 OP line 6 packing</td>
<td>97.2</td>
<td>2013/10/10 11:01:09.00</td>
<td>0:1:31.0</td>
</tr>
<tr>
<td>39 OP line 8 outfeed</td>
<td>97.6</td>
<td>2013/10/10 11:02:09.00</td>
<td>0:1:32.0</td>
</tr>
<tr>
<td>40 OP Freemantle line 2/3</td>
<td>96.2</td>
<td>2013/10/10 11:03:09.00</td>
<td>0:1:33.0</td>
</tr>
<tr>
<td>41 OP packing area line 7/8</td>
<td>97.2</td>
<td>2013/10/10 11:04:09.00</td>
<td>0:1:34.0</td>
</tr>
<tr>
<td>42 GB shrinkrap line 6</td>
<td>97.2</td>
<td>2013/10/10 11:05:09.00</td>
<td>0:1:35.0</td>
</tr>
<tr>
<td>43 GB conveyor line 7</td>
<td>97.1</td>
<td>2013/10/10 11:06:09.00</td>
<td>0:1:36.0</td>
</tr>
<tr>
<td>44 below radio speaker A (off)</td>
<td>97.1</td>
<td>2013/10/10 11:07:09.00</td>
<td>0:1:37.0</td>
</tr>
<tr>
<td>45 below radio speaker B (off)</td>
<td>97.8</td>
<td>2013/10/10 11:08:09.00</td>
<td>0:1:38.0</td>
</tr>
<tr>
<td>46 below radio speaker C (off)</td>
<td>97.3</td>
<td>2013/10/10 11:09:09.00</td>
<td>0:1:39.0</td>
</tr>
<tr>
<td>47 below radio speaker D (off)</td>
<td>97.7</td>
<td>2013/10/10 11:10:09.00</td>
<td>0:1:40.0</td>
</tr>
<tr>
<td>48 below radio speaker B (off)</td>
<td>97.1</td>
<td>2013/10/10 11:11:09.00</td>
<td>0:1:41.0</td>
</tr>
<tr>
<td>49 below radio speaker C (off)</td>
<td>97.8</td>
<td>2013/10/10 11:12:09.00</td>
<td>0:1:42.0</td>
</tr>
<tr>
<td>50 below radio speaker B (off)</td>
<td>97.5</td>
<td>2013/10/10 11:13:09.00</td>
<td>0:1:43.0</td>
</tr>
<tr>
<td>51 below radio speaker C (off)</td>
<td>97.4</td>
<td>2013/10/10 11:14:09.00</td>
<td>0:1:44.0</td>
</tr>
<tr>
<td>52 below radio speaker D (off)</td>
<td>97.7</td>
<td>2013/10/10 11:15:09.00</td>
<td>0:1:45.0</td>
</tr>
<tr>
<td>53 below radio speaker E (off)</td>
<td>97.5</td>
<td>2013/10/10 11:16:09.00</td>
<td>0:1:46.0</td>
</tr>
<tr>
<td>54 below radio speaker E (off)</td>
<td>97.4</td>
<td>2013/10/10 11:17:09.00</td>
<td>0:1:47.0</td>
</tr>
<tr>
<td>55 OP blending fill mill 2</td>
<td>97.3</td>
<td>2013/10/10 11:18:09.00</td>
<td>0:1:48.0</td>
</tr>
<tr>
<td>56 GB tumbling blender</td>
<td>97.4</td>
<td>2013/10/10 11:19:09.00</td>
<td>0:1:49.0</td>
</tr>
</tbody>
</table>

OP = Operator Position  GB = General Background noise levels within this area