25 Noise at work

This chapter is split into two parts:

Part 1: Directive. This part provides the direction that you **must** follow and to help you comply with (keep to) health and safety law, Defence policy or Government policy.

Part 2: Guidance. This part provides the guidance and best practice that **should** be followed and will help you to keep to this policy.

Contents

Amendment record

This chapter has been reviewed by the Health, Safety and Environmental Protection (HS&EP) Directorate together with relevant subject matter experts and key HS&EP stakeholders. Any suggestions for amendments **should** be sent to HSEP-GroupMailbox@mod.gov.uk.

Version No	Date	Text Affected	Authority
1.2	Oct 20	Interim update post-handover of policy from DSA to D HS&EP.	D HS&EP
1.3	Sep 22	Release of two-part chapter structure.	D HS&EP

Terms and definitions

The following table sets out definitions of some of the key terms used in this chapter. Definitions for other 375 health and safety terms are given in the master glossary on the JSP 375 Defnet or GOV.UK page.

Accountable person	The person whose terms of reference state that they are responsible for making sure there are suitable and sufficient systems in place to control health, safety and environmental protection risks in their establishment, unit or platform. The term 'accountable person' is used in place of CO, HoE, OC, Station Commander and so on, which are sometimes used by Defence organisations.
As low as reasonably practicable (ALARP)	When risk has been reduced to a level where applying further control measures would be grossly disproportionate to the benefit that would be gained.
Audiometric health surveillance	Systematic, close overview of an individual's health.
Commander	A military person responsible for planning activities, supervising activities, and making sure that personnel under their area of responsibility are safe. This term refers to a role rather than the rank of Commander, and it can be a permanent or temporary role (for example; for the duration of a training exercise). In parts of Defence this person could be referred to as a 'responsible person'.
Competent person	A person who has the training, skills, experience and knowledge necessary to perform a task safely, and is able to apply them. Other factors, such as attitude and physical ability, can also affect someone's competence. (See www.hse.gov.uk/competence/what-is-competence.htm for information on competence.)
Exposure	This refers to a period of time, for example hourly, daily, or weekly, that personnel are exposed to the noise environment. The term 'noise exposure' is the combination of a time period and the average amplitude of the noise over that time period.

Exposure action value (EAV)	This refers to a daily or weekly average noise level threshold, or peak sound pressure. The legislation defines two EAVs (an upper exposure action value (UEAV) and a Lower exposure action value (LEAV).
Exposure limit value (ELV)	This refers to the level of daily or weekly personal noise exposure, or of peak sound pressure, which **must** not be exceeded.
Manager	A person responsible for managing or supervising staff, planning activities and making sure that personnel under their area of responsibility are safe. This could be a permanent or temporary role that is generally referred to as a 'line manager' but can also be a temporary role, and in parts of Defence this person could be referred to as a 'line manager', a 'responsible person' or a 'delivery manager'.
Lower exposure action value (LEAV)	This refers to the lower of the two levels of daily or weekly personal noise exposure, or peak sound pressure which, if reached or exceed, require specific actions to be taken to reduce risk.
Noise	Is defined as 'any audible sound' whether it is wanted or not. Noise is considered to have the same definition as 'sound' which refers to wanted noise, for example the music from a band.
Noise risk assessment	This refers to a documented assessment of the risk that noise poses to personnel.
Peak sound pressure	This refers to the maximum sound pressure to which personnel are exposed.
So far as Is reasonably practicable (SFAIRP)	Legal phrase used in Health and Safety at Work Act etc 1974, the degree of risk where the trouble, time and money needed to reduce that risk starts to become disproportional to the derived benefit.
Upper exposure action value (UEAV)	This refers to the higher of the two levels of daily (or weekly) personal noise exposure, or of peak sound pressure which, if reached or exceeded, require specific actions to be taken to reduce risk. These are in addition to the actions taken if the LEAV is exceeded.

Must and should

Where this chapter says '**must**', this means that the action is a compulsory requirement.

Where this chapter says '**should**', this means that the action is not a compulsory requirement but is a recommendation of good practice to comply with the policy.

Scope

This policy applies to all those employed by Defence (military or civilian) as well as those working on behalf of Defence (for example, contractors). It applies to all Defence activities carried out in any location (UK or overseas).

Part 1 Directive

Introduction

1. This Defence policy **must** be followed to manage:

   a. noise at work risks to Defence personnel and those affected by Defence activities; and

   b. the measures to be taken to eliminate those risks or reduce them to as low as is reasonably practicable (ALARP) and tolerable, in order to minimise harm and comply with current UK HS&EP legislation.

2. Hearing damage from noise, or Noise Induced Hearing Loss (NIHL), is a loss of hearing acuity of personnel exposed to noise. NIHL can occur suddenly or over many years of exposure and depends on a range of factors. It may be caused suddenly by exposure to short impulses of high amplitude noise, for example gunfire, or more slowly from prolonged exposure to continuous lower amplitude noise, for example from a military band or an engine room.

3. The risk of damage to hearing is directly related to the magnitude of the noise, it can also be as a result of the exposure time to the noise or a combination of both. The combination of the magnitude of the noise and the exposure time to that noise together defines ‘noise exposure’. Measures of noise exposure and threshold values are set out in more detail in Part 2 of this chapter.

4. A temporary reduction in hearing sensitivity, called a Temporary Threshold Shift (TTS), can often be experienced after exposure to a noisy environment. Although hearing ability may recover within a few hours after leaving that environment, damage may still have occurred and repetitive exposure will increase the severity and the chances of permanent hearing loss or may cause tinnitus to develop.

5. Noise at work can adversely affect situational awareness (SA). This is a fundamental capacity for detecting danger, particularly in a military context, for example during tactical decision making. Harmful exposure to noise may cause false perceptions, confusion and situational projections. Lower levels of noise can be a workplace stressor (a chemical, condition or other stimulus that causes stress to a person / organism) which can cause anxiety or psychological harm to the individual.

6. In some situations, noise can be considered a form of environmental pollution, as described in ‘JSP 418 - Management of Environmental Protection in Defence’. This can affect people outside the boundaries of Defence establishments, platforms, or areas of operation, for example, causing sleep disturbance in the local community, with its associated impact on health and wellbeing. Such sleep disturbance can also affect Defence personnel, for example on board ships, which may subsequently disrupt operational performance and lead to additional risks.

Legislation

7. UK Health, Safety and Environmental Protection (UK HS&EP) legislation requires employers to make sure, so far as is reasonably practicable (SFAIRP), the health, safety and welfare of employees and anyone else who may be affected by a work activity. In line with the Secretary of State's (SofS) for Defence HS&EP Policy Statement these requirements are to be put in place and complied with for all Defence activities, including where legal exemptions exist in the UK and overseas. The key legislation (herein referred to as 'legislation') that applies to the management of noise at work are:

a. The Control of Noise at Work Regulations 2005 (CNAWR);

b. The Control of Noise at Work (Northern Ireland) Regulations 2006 (CNAW(NI)R)

c. The Merchant Shipping and Fishing Vessels (Control of Noise at Work) Regulations 2007 (MSFV(CNAR)R);

d. The Health and Safety at Work etc Act 1974;

e. The Health and Safety at Work etc. Act 1974 (Application outside Great Britain) Order 2013;

f. The Health and Safety (Safety Signs and Signals) Regulations 1996;

g. The Supply of Machinery (Safety) Regulations 2008;

h. Merchant Shipping and Fishing Vessels (Personal Protective Equipment) Regulations 1999;

i. The Personal Protective Equipment (Enforcement) Regulations 2018;

j. The Personal Protective Equipment at Work Regulations 1992; and

k. The Personal Protective Equipment at Work (Amendment) Regulations 2022

Note: Legislation may change, therefore always make sure that the version of the legislation that you are looking for is the current one.

8. The CNAWR applies to all Defence activities carried out in any location within Great Britain (GB) and additionally **must** apply to and in relation to any Defence activity outside GB where sections 1 to 59 and 80 to 82 of the Health and Safety at Work Act 1974 (Application Outside Great Britain) Order 2001 apply.

9. The HSE regulates only in GB, not the entire United Kingdom. In Northern Ireland workplace health and safety is regulated by HSENI (www.hseni.gov.uk).

10. This legislation provides statutory limits to noise exposure in the workplace with a view to protecting personnel against risk to their Health and Safety (H&S), for example their hearing capability.

Defence exemption

11. Where the interests of National Security conflict with key aspects of the legislation, the SofS for Defence may grant an exemption for any person or class of persons, from the provisions of specific legislation (CNAWR) by a certificate in writing.

12. A commander, manager or accountable person **must** exhaust alternative options that would reasonably both control the risk due to the noise exposure, and protect the interests of national security, before seeking such an exemption certificate. The exemption certificate process is explained in more detail at Annex I to this chapter.

Noise at work policy statements

13. The following noise at work policy statements have been established and **must** be followed. All noise risk assessments **must** be carried out in line with the five-step risk assessment process using the methodology set out in Chapter 8 of JSP 375, Volume 1 and set out in policy statements 1 to 5 below.

Note: Noise exposure terminology is set out in the 'terms and definitions' table above and details of the 'exposure action and limit values' are set out in Annex A to this chapter.

a. **Policy Statement 1 (step 1 - Identifying the noise hazards)**
The commander, manager or accountable person **must** identify the activities that may put personnel at risk from exposure to harmful noise levels in the workplace. Where this is the case the commander, manager or accountable person **must** make sure that the risk is either eliminated or reduced to a level that is as low as reasonably practicable (ALARP) and tolerable.

b. **Policy Statement 2 (step 2 - Decide who may be harmed by the noise hazards)**
The commander, manager or accountable person **must** identify who may be at risk from exposure to harmful noise levels or where people are exposed to noise levels above the Lower Exposure Action Values.

c. **Policy Statement 3 (step 3 - Evaluate the noise risks and identify suitable and sufficient control measures)**
The commander, manager or accountable person **must** make sure that suitable and sufficient noise risk assessments are carried out for activities where it could reasonably be expected that noise levels will be at or above the Lower Exposure Action Values and to identify suitable and sufficient control measures.

Where an Exposure Limit Value (ELV) has been exceeded the commander, manager or accountable person **must**;

(1) reduce the exposure levels to below the relevant ELV;

(2) identify the reasons why the ELV was exceeded and decide what actions are necessary; and

(3) make such changes to prevent the ELV being exceeded again.

d. **Policy Statement 4 (step 4 - Record your findings and implement them)**
The commander, manager or accountable person **must** record the findings of the noise risk assessment and communicate them, along with details of the associated control measures, to those people who may be exposed to harmful noise levels.

e. **Policy Statement 5 (step 5 - Review the noise risk assessment and update if necessary)**
The commander, manager or accountable person **must** make sure that all noise risk assessments are regularly reviewed and further control measures put in place if there are any changes to the activity or where the risk of exposure to harmful noise levels increases.

f. **Policy Statement 6 (High noise areas)**
The commander, manager or accountable person must make sure that for areas where the Upper Exposure Action Values (UEAV) are likely to be exceeded after the noise levels have been reduced to as low as reasonably practicable (ALARP), that those areas are designated as a Hearing Protection Zone (HPZ). The HPZ must be suitably signposted and access restricted.

g. **Policy Statement 7 (Consideration of personnel particularly at risk)**
Personnel **must** inform the commander, manager or accountable person of any physical or medical condition where their health is likely to be particularly at risk from exposure to noise. The commander, manager or accountable person **must** get medical advice relating to those considered at particular risk, **must** put in place the necessary control measures and **must** make sure that those personnel are placed under suitable audiometric health surveillance.

Policy Statement 1 (step 1 - Identifying the noise hazards)
The commander, manager or accountable person **must** identify the activities that may put personnel at risk from exposure to harmful noise levels in the workplace. Where this is the case the commander, manager or accountable person **must** make sure that the risk is either eliminated or reduced to a level that is as low as reasonably practicable (ALARP) and tolerable.

14. The commander, manager or accountable person who has control of the workplace, is responsible for planning an activity, or has control of those taking part in an activity, **must** make sure that all reasonably foreseeable hazards associated with activities they have responsibility for are identified (for example exposure to harmful noise levels).

15. Note that noise exposure levels can be below the upper or Lower Exposure Action Values (LEAV) and still pose a risk, for instance due to communication difficulty. Specifically, where the noise exposure levels are likely to reach or exceed the Upper Exposure Action Value (UAEV) then the same underlying principle applies: to reduce exposure to ALARP. This would include a programme of organisational and technical measures.

16. The actions taken **must** be based on the general principles of prevention set out in Schedule 1 to The Management of Health and Safety at Work Regulations 1999 incorporating consideration of the relevant factors defined in the legislation. This includes:

a. avoiding risks;

b. evaluating the risks which cannot be avoided;

c. combating the risks at source;

d. adapting the work to the individual, especially as regards the design of workplaces, the choice of work equipment and the choice of working and production methods, with a view, in particular, to alleviating monotonous work and work at a predetermined work-rate and to reducing their effect on health;

e. adapting to technical progress;

f. replacing the dangerous by the non-dangerous or the less dangerous;

g. developing a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors relating to the working environment;

h. giving collective protective measures priority over individual protective measures; and

i. giving appropriate instructions to employees.

Policy Statement 2 (step 2 – Decide who may be harmed by the noise hazards)
The commander, manager or accountable person **must** identify who may be at risk from exposure to harmful noise levels or where people are exposed to noise levels above the relevant Lower Exposure Action Values**.**

17. The commander, manager or accountable person **must** identify who might be at risk from exposure to harmful noise levels associated with the activity and decide whether it is just those taking part in the activity that are at risk or could it be other workers, visitors or members of the public.

18. It is recognised that the noise exposure to personnel during military activities may be substantially different and more difficult to manage compared to the noise exposure of civilians undertaking non-military activities. It is recognised that national security may require exceptional cases to be made. This is addressed in more detail in the Defence exemption section of this chapter.

19. The commander, manager or accountable person **must** assess the levels of noise to which personnel are exposed, in line with the noise exposure levels in the legislation. These are reproduced in table A-1 in Annex A to this chapter.

Policy Statement 3 (step 3 - Evaluate the noise risks and identify suitable and sufficient control measures)
The commander, manager or accountable person **must** make sure that suitable and sufficient noise risk assessments are carried out for activities where it could reasonably be expected that noise levels will be at or above the Lower Exposure Action Values and to identify suitable and sufficient control measures.

Where an Exposure Limit Value (ELV) has been exceeded the commander, manager or accountable person **must**;

(1) reduce the exposure levels to below the relevant ELV;

(2) identify the reasons why the ELV was exceeded and decide what actions are necessary; and

(3) make such changes to prevent the ELV being exceeded again.

20. The commander, manager or accountable person **must** make sure that suitable and sufficient noise risk assessments are carried out, they may delegate this responsibility to a competent person. Noise assessment competency is set out in Annex D to this chapter.

21. A noise risk assessment is considered suitable and sufficient if it includes:

a. an identification of where the risk of noise may be present for a work activity;

b. an estimate of the representative noise exposure to personnel with a comparison to the LEAVs, UEAVs and the ELVs;

c. the risk controls available to reduce exposure;

d. an identification of individuals who may be at particular risk of noise induced harm;

e. an identification of other factors that may exacerbate the impact of noise exposure, for example ototoxic substances (chemicals or drugs that are toxic to the ear); and

f. provisions already taken and planned to monitor and control the risks of noise related injuries.

22. Assessment of noise exposure **should** ideally be based on measured values (as set out in Annex A to this chapter) or, where this is not available; manufacturer's values can be used.

23. This requirement applies to personnel responsible for equipment procurement programmes and maintenance / update programmes, as much as those managing operational sites, equipment, and activities. This includes training exercises and operations.

24. Equipment procurement or modification activities **must** include appropriate assessments of the likely noise exposure arising from use of the equipment to the end user and other personnel, and the risks associated with that noise exposure.

25. Where a noise risk assessment is carried out, the following hierarchy of control measures **must** be considered where there is a risk of noise exposure. The identified hazards **must** be managed in the following order of priority (for example; always try to eliminate the hazard first).

a. Eliminated.

b. Substituted.

c. Managed via engineering controls.

d. Managed by procedural controls.

e. Managed by Personal Protective Equipment (PPE).

26. The commander, manager or accountable person **must** consider applying the hierarchy of controls singularly or collectively for example; engineering and procedural control measures may both be implemented to reduce noise exposure to levels that are ALARP and tolerable. All control measures implemented, **must** be correctly used or followed by personnel and those personnel **must** be appropriately trained where required.

27. If all control measures have been evaluated and personnel are still exposed to noise above the LEAV, but lower than the UEAV they **must** be offered/issued the appropriate PPE, for example hearing protection (further guidance on UKCA and CE Markings for PPE are detailed in Annex H of this chapter). This offer **must** extend to any 'Limb' (b) workers (those who have a more casual relationship with their employer and operate under a contract for service) who **must** be treated equally. Personnel exposed to noise at or above the UEAV **must** wear the appropriate PPE.

28. The commander, manager or accountable person **must** make sure that personnel are trained on how to correctly use the appropriate PPE for example; ear muffs **must** be worn correctly, and 'in-ear' hearing protection **must** be inserted correctly to make sure they are effective. This **must** include training on appropriate hygiene practices to limit the risk of causing ear infections or toxicity effects from substances that may be on the hands of personnel handling in-ear protection.

29. Any PPE used as a control measure to reduce noise exposure **must** remain effective when interfaced with any other PPE or equipment required for the work activity to be carried out safely. Conflicting items may lead to new hazards. For example, the use of hearing protection **must** not hinder an individual's ability to correctly use the sights of firearms, use of ballistic helmets, use of personal or vehicle communications systems, and so on.

30. Where equipment is the source of the noise hazard appropriate maintenance, repairs or modifications may be required to ensure that acceptable noise levels are achieved for the operation of that equipment.

31. It is an additional requirement that all personnel are individually responsible for reporting defects and for appropriately using any or all noise exposure reduction measures provided, in line with this policy. The commander, manager or accountable person **must** make sure that all such personnel are aware of their obligations and that they comply with these obligations.

Policy Statement 4 (step 4 - Record your findings and implement them)
The commander, manager or accountable person **must** record the findings of the noise risk assessment and communicate them, along with details of the associated control measures, to those people who may be exposed to harmful noise levels.

32. The commander, manager or accountable person **must** make sure that the control measures and the findings from the risk assessment are recorded, to enable the evaluation of exposure levels and demonstration of compliance with the legislation and so that informed decisions can be made about incorporating further control measures if necessary.

33. The commander, manager or accountable person **must** make sure that suitable and sufficient training is provided to all personnel where necessary to ensure the effective implementation of the noise control measures.

34. Recording of the risk assessment can also identify where good practice has resulted in a better outcome than would otherwise have been expected and may identify opportunities to share good practice wider in order to improve organisational performance.

35. Where a noise risk assessment is required, the commander, manager or accountable person **must:**

a. record the significant findings of the noise risk assessment as soon as is reasonably practicable after the noise risk assessment has been created or is changed;

b. record the control measures which have been taken and which are intended to be taken to meet the requirements of this Policy; and

c. review control measures and improve them if reasonably practicable to do so, whilst also considering alternative ways of working. Consider informing command chains of any changes and requesting additional resource / levers / authority to apply additional controls that may reduce the residual risk further.

36. The commander, manager or accountable person **must** communicate findings from the risk assessment, along with details of the associated control measures, to those people who may be exposed to harmful noise levels.

37. Suitable control measures **should** be developed in consultation with the Defence personnel concerned and where appropriate Trade Unions appointed and / or employee safety representatives.

38. Consultation is a mandatory requirement in the legislation. The consultation **must** cover:

a. the findings of the noise risk assessment;

b. measures taken to eliminate or control exposure to noise; and

c. the selection and provision of personal hearing protection.

39. Consultation is also an effective tool to promote a safety culture which is cost-effective in the management of the risks associated with noise exposure and to obtain the understanding and ‘buy-in’ required from all personnel.

40. Note that where risks are identified and / or improvements or other actions are defined as a part of the noise risk assessment, it is imperative to define an immediate action plan to implement actions and to review the results. It is not acceptable to leave such actions unaddressed until subsequent periodic assessments or audits.

41. Where personnel are exposed to noise which is likely to be at or above a Lower Exposure Action Value, the commander, manager or accountable person **must** provide those personnel with suitable and sufficient information, instruction and training.

42. Appropriate information, instruction and training is essential to enable personnel to fulfil their own obligations under the legislation to protect both their own health and safety as well as that of others. Appropriate information, instruction and training can include:

a. information explaining the risks to the health and safety of personnel from exposure to noise;

b. information explaining the obligations of everyone involved in protecting their own health and safety and that of those around them;

c. instruction and training on the proper use of equipment that makes noise and equipment that protects personnel from noise. For example, this instruction and training can cover the necessary checks to confirm the equipment is working properly and is not making undue levels of noise, maintenance required to keep the equipment in such good working order and training on how to best use the equipment provided in a way that reduces the risks to health and safety from noise to a level that is ALARP; and

d. instruction on the proper use and care of PPE.

43. The information, instruction and training **must** be updated to consider significant changes in the type of work carried out or working methods used by the personnel. For example, if a metal workshop introduces a new machine, then the existing information, instruction and training will need to be assessed to consider whether it needs revising. Similar considerations would apply if the existing machines and processes were used to work significantly different components, such as larger panels, thinner or thicker metal, and so on.

Policy Statement 5 (step 5 - Review the noise risk assessment and update if necessary)
The commander, manager or accountable person **must** make sure that all noise risk assessments are regularly reviewed and further control measures put in place if there are any changes to the activity or where the risk of exposure to harmful noise levels increases.

44. The commander, manager or accountable person is responsible for reviewing the noise risk assessment and for reviewing the effectiveness of the control measures that have been put in place and to identify any further control measures that may be required as a result of the review.

45. The commander, manager or accountable person **must** carry out an initial review of the noise risk assessment. It is recommended that this takes place no longer than 3 months after the detailed noise risk assessment was carried out. There **must** be periodic reviews thereafter at a frequency based on the change of risk but normally not exceeding every two years. Additionally, the control measures **must** also be reviewed if there are any changes to the work activity or to the control measures that have been put in place. For example:

a. new noise emitting equipment has been introduced;

b. there are reports of hearing loss;

c. after an accident or near-miss where noise could have been a contributory factor to the accident;

d. a change in location or duration of exposure; and

e. if there is any reason to suspect that current detailed noise risk assessment is no longer valid.

46. If any review indicates that a noise exposure issue remains which is impacting those taking part in the activity, other workers, visitors or members of the public, then the commander, manager or accountable person **must** re-assess the risk and then consider the following actions.

a. Pausing or stopping the activity.

b. Adding further control measures.

c. Elevating the risk.

Policy Statement 6 (High noise areas)
The commander, manager or accountable person **must** make sure that for areas where the Upper Exposure Action Values (UEAV) are likely to be exceeded after the noise levels have been reduced to as low as reasonably practicable (ALARP), that those areas are designated as a Hearing Protection Zone (HPZ). The HPZ **must** be suitably signposted and access restricted.

47. Following the completion of the noise risk assessment the commander, manager or accountable person is responsible for designating a HPZ in the workplace where the hierarchy of controls have been considered (for example; elimination is not possible) and the UEAV's are likely to be exceeded.

48. Where a HPZ has been designated procedural controls **must** be put in place, for example; restricting access and reducing the time personnel are exposed to the noise hazard. The HPZ **must** be clearly marked with suitable warning signage, as set out in Chapter 6 of JSP 375, Volume 1, and The Health and Safety (Safety Signs and Signals) Regulations 1996 as per the legislation.

49. The commander, manager or accountable person **must** make sure that personnel wear the appropriate PPE when they enter an HPZ. This includes, for example, the proactive enforcement of the wearing of mandated hearing protection. Note that it ultimately remains the responsibility of personnel to use PPE.

50. Where personnel would be exposed to a greater risk by wearing hearing protection than by not wearing it, under carefully considered circumstances allowed in the legislation, an exemption certificate may be requested against the requirement to wear hearing protection in limited cases. This is addressed in more detail in the Defence exemption and process sections in this chapter.

Rest and refuge areas.

51. The commander, manager or accountable person **must** make sure that rest and refuge areas are made available to personnel as appropriate, and that exposure to noise in these areas is reduced to a level suitable for their purpose and conditions of use.

52. This requirement applies particularly to military personnel, who are often constrained to a military establishment or platform for 24 hours per day, over many days. Even when off-duty, these personnel are still 'employed' and in a 'workplace', and thus care **must** be taken to make sure that such off-duty periods do not contribute significantly to noise exposure risks.

53. In general, it is unlikely that noise in a rest or refuge area would significantly add towards a noise exposure that exceeds the LEAV. However, it is commonplace to find rest and refuge areas where noise may significantly impact on the rest or recreational utility of the space. More significantly, elevated noise levels in sleeping quarters can impact sleep and lead to fatigue, with associated consequences for task performance and concentration when on-duty.

Policy Statement 7 (Consideration of personnel particularly at risk)
Personnel **must** inform the commander, manager or accountable person of any physical or medical condition where their health is likely to be particularly at risk from exposure to noise. The commander, manager or accountable person **must** get medical advice relating to those considered at particular risk, **must** put in place the necessary control measures and **must** make sure that those personnel are placed under suitable audiometric health surveillance.

54. Personnel **must** inform the commander, manager or accountable person of any physical or medical condition where their health is likely to be particularly at risk from exposure to noise. People vary in their susceptibility to noise exposure, as a small proportion of people suffer Noise Induced Hearing Loss (NIHL) at relatively low levels of noise exposure. Likewise, anyone who has already suffered NIHL may be more susceptible to further damage and in some case more stringent control measures may be required.

55. The commander, manager or accountable person **must** get medical advice relating to those considered at risk and put in place the necessary control measures. Personnel have a responsibility to inform the commander, manager or accountable person where the control measures that have been put in place to reduce their exposure levels are ineffective.

56. Ototoxic substances (chemicals or drugs that are toxic to the ear) can directly affect hearing ability, some ototoxic substances in combination with noise exposure can enhance the damaging effect of the noise on the human ear. Personnel have a responsibility to inform the commander, manager or accountable person where they may have taken or be taking ototoxic substances, so that this can be risk assessed.

57. The commander, manager or accountable person **must** identify who might be at risk of NIHL and decide whether it is just those personnel taking part in the activity or whether other workers, visitors or members of the public could also be at risk.

Audiometric health surveillance of personnel at elevated risk and medical intervention.

58. If a noise risk assessment indicates a health risk to personnel, the commander, manager or accountable person **must**:

a. make sure those personnel are placed under suitable audiometric health surveillance;

b. keep available, and maintain in a suitable form, the health records of personnel who undergo audiometric health surveillance;

c. on reasonable notice being given, allow personnel access to their personal health record and provide copies to the enforcing authority such as it may require; and

d. refer personnel who are suspected of suffering from hearing damage, for example as identified by audiometric health surveillance, to a doctor or appropriate medical specialist.

59. Defence personnel identified as being at risk from exposure to noise **must** be placed on a suitable audiometric health surveillance programme as set out in Chapter 14 of JSP 375, Volume 1. This includes a baseline audiogram (the reference audiogram against which all future audiograms are compared to assess any change in hearing acuity) carried out before they start work in an area, on an activity or a process that exposes them to high noise levels (for example, working in an HPZ). This also includes regular, repeat audiometry checks, as appropriate.

60. If the doctor or hearing specialist considers the damage to be likely as a result of exposure to noise, the commander, manager or accountable person **must**:

a. make sure that a suitably qualified person informs the personnel;

b. review the noise risk assessment;

c. review any noise exposure control measures;

d. consider any advice given by a doctor or occupational health professional or enforcing authority;

e. consider assigning personnel to alternative work where there is a reduced risk of further exposure to noise; and

f. make sure that personnel who are subject to audiometric health surveillance are assessed at least annually

g. provide for a review of the health of any other personnel who have been similarly exposed.

61. All personnel so affected and requested by the commander, manager or accountable person, **must** attend such audiometric health surveillance appointments as deemed appropriate by the doctor or referring specialist.

62. The commander, manager or accountable person **must** provide suitable advice and support to the affected person and make sure they attend audiometric health surveillance appointments as required. Further guidance on the management of audiometric health surveillance is set out in Annex E to this chapter.

63. Where commanders, managers or accountable persons suspect personnel as having hearing loss, ear injury (e.g. earache, discharge or bleeding from the ear) or balance related symptoms having been in close proximity to excessive noise or blast, **must** assume that the affected personnel have sustained Acute Acoustic Trauma (AAT). These personnel **must** be urgently directed to medical support to undergo rapid identification and referral as there are treatment options available for AAT that are best undertaken early (see JSP 950 Leaflet 2-17-2).

Part 2 Guidance

This part provides the guidance and best practice that **should** be followed to help you to keep to this policy.

Measures of noise exposure and threshold values

1. The terminology and definitions used to describe noise exposure can be complex to someone who has not been trained in the basics of acoustics. Therefore, prior to setting out specific guidance, a basic outline of key terminology used for defining noise exposure is provided below.

a. **Noise exposure** is calculated from a time-average sound pressure level and the time that a person is exposed to that average sound pressure level. The concept of the time-average noise exposure level is explained in more detail in Annex A to this chapter.

b. **Sound pressure levels** are measured in decibels and are denoted by the letters ‘dB’ which follow the numbers that give the level of the sound pressure, for example “80 dB”. Peak sound pressure refers to a measure of the ‘maximum’ sound pressure level that exists in a given period, even if only for a brief moment of time.

c. **Sound of a defined level**, for example 80 dB, but at different frequencies will have different effects when heard by people. This includes both how loud that sound appears to be and also the damage it can cause to hearing. Different ‘frequency weightings’ are applied to correct for these effects. The ‘A’ weighting, denoted by ‘dB(A)’ or sometimes ‘dBA’, indicates sound levels which have been corrected for the different subjective ‘loudness’ at different frequencies. The ‘C’ weighting, denoted by ‘dB(C)’, is used when assessing peak noise levels for example from percussive tools, gunfire and so on.

2. There are thresholds of noise exposure, above which key obligations or actions become necessary. These thresholds at the Lower Exposure Action Values (LEAV), Upper Exposure Action Values (UEAV) and Exposure Limit Values (ELV) for daily or weekly personal noise exposure and peak sound pressure are detailed in Annex A to this chapter.

3. The main responsibility for making sure the above obligations are met will likely rest with the commander, manager or accountable person. However, there will inevitably be multiple people with overlapping and interdependent roles and responsibilities who will need to cooperate to make sure the risks are appropriately reduced.

Roles and responsibilities

Defence organisations

4. This section sets out the responsibilities for key roles in Defence organisations. It is clear that there is no singular set of boundaries for responsibility that can be succinctly defined that will apply for any situation that can be found within Defence organisations. It is therefore necessary for the Accountable Person to make sure that the roles and responsibilities outlined here are addressed by people suitably identified within their organisation.

5. Defence organisations **must** make sure that sufficient resources are made available to comply with the legislation by those responsible for implementing the requirements of the legislation. Defence organisations can help those responsible for discharging their duties in line with the legislation by:

a. planning and providing sufficient budgets to support essential tasking and activities;

b. promoting and sustaining a culture of noise exposure control by making sure of the effective implementation of control measures at all levels throughout the organisation;

c. providing or making sure of access to competent advice;

d. providing Personnel with sufficient instruction and training;

e. commissioning noise risk assessments;

f. commissioning audiometric health surveillances; and

g. providing sufficient information to Defence personnel to make sure they understand Defence obligations under the legislation, and their own role in complying with these.

6. Legacy equipment (outdated, obsolete or no longer in production) that remain in current use and emit noise are the responsibility of the Defence organisation's senior leader if, the equipment had been purchased before the implementation of purchasing systems with through-life asset management capability (within which asset management roles and responsibilities are defined).

7. The Defence organisation **should** make sure that all legacy equipment is identified, and resources and procedures are in place for its maintenance. In line with the legislation, this **must** be with a view to eliminating or reducing noise exposure to personnel to a level that is ALARP when operated or where personnel are in the proximity of the noise from the equipment. This is to minimise the risk of damage to hearing and other risks, for example loss of SA, when the equipment is operated.

Acquisition teams and local procurement teams

8. Acquisition teams and local procurement teams are those responsible for activities which relate to the ordering and receiving of goods, materials, supplies, equipment, and services. This may include sourcing, negotiation, contracting, the monitoring of supplier's performance and making sure of compliance with operational protocols.

9. Defence acquisitions teams **must** make sure that **all** equipment, machinery, and platforms that are purchased or supplied comply with the relevant statutory requirements or allow for compliance in the context of the planned or foreseeable use of the equipment.

10. Risk control measures **must** be identified in order that the equipment, machinery or platform is designed and constructed so that the noise emissions produced by its operation are ALARP to personnel in acoustic proximity to that equipment or platform (for example, operators, passengers, maintainers, nearby personnel, and so on). Note that even personnel who are not involved in the use of the equipment but may be affected by the noise generated by it when in operation, **must** also be considered.

11. All new equipment, machinery, and platforms risk control measures **must** be technically engineered to eliminate or minimise noise exposure to the users and others to a level that is ALARP and therefore lower the risk of damage to hearing and other risks, for example loss of SA, when operated. This may, as a last resort, include the use of PPE.

12. The responsibility of acquisition teams is to make sure appropriate design of equipment and platforms or establishments also extends to making sure that rest and recreational spaces are fit for purpose. A range of suitable noise limits are available covering sleeping quarters; medical facilities; teaching or briefing environments; office environments; command, communication and control centres; recreation facilities and so on. Specific technical expertise will likely be required to assess possible requirements and define appropriate noise limits and approaches for achieving these.

13. Additionally, it is imperative that such technical measures and risk control measures **should** be addressed throughout the procurement stage, particularly at the early stages. This is to avoid the associated costs and technical limitations of system redesign if the equipment, machinery, or platform exceeds the EAVs in the legislation when used. Specialist noise expertise, for example by a competent person (CP) as defined in Annex D of this chapter or a professional acoustic engineer, may be required to help define requirements or plan a programme of work. Technical measures **should** include progressive risk mitigation through the:

a. identification of the key noise requirements of the equipment, machinery, or platform;

b. assessment of potential noise exposure to personnel in the foreseeable intended use of the system; and

c. demonstration and assessment of actual noise emissions from a representative sample of the equipment, machinery, or platform in representative usage.

14. The determination of appropriate control measures against high amplitude and / or impulsive noise is complex and challenging, and it will require particularly specialist experience and expertise. Effective protective or control measures against such high amplitude noise are likely to require **fundamental** engineering of the platform or equipment and **should** be considered at the earliest opportunity in the equipment procurement and acquisition process. Failure to do this is likely to result in serious impacts on the acquisition program and the resulting capability.

15. The Supply of Machinery (Safety) Regulations 2008 require manufacturers and suppliers of machinery to make sure that the design and construction of equipment eliminates or reduces noise emissions to a minimum, while taking into account technical limitations. Note, however, that this does not apply to machinery that is designed and constructed exclusively for military or police purposes (not available on the civilian market).

16. Defence acquisition teams **must** make sure that where noise exposures are likely to be greater than the EAVs in the legislation that:

a. the noise sources are identified;

b. the information is recorded in the safety case[1]; and

c. appropriate information on noise levels and any equipment provided to reduce noise exposure is supplied to the end user to ensure correct installation, use and maintenance.

17. This is applicable to both work and rest activities where personnel are likely to be in the acoustic proximity of the equipment undergoing procurement, once in service.

18. Following risk control measures through engineering solutions, where the noise emissions of equipment or platforms still require the use of PPE to be worn by the end user, for example hearing protection, the acquisition team or local procurement team **must** provide sufficient information on the type of hearing protection required to enable appropriate measures to reduce the noise exposure to the end users and others.

19. When procuring PPE, for example hearing protection, including that which is incorporated as a part of other equipment, for example protective helmets with or without communication systems, acquisition teams **must** make sure that any such equipment complies with the PPE at Work Regulations.

20. Defence personnel with local purchase responsibility and / or hiring equipment or machinery locally **must** make sure that the equipment is suitable for the activity being undertaken, and that it is supplied with sufficient information to assure its safe use in line with manufacturer's instructions and that this information is passed on to the end user.

Commanders, managers and accountable persons.

21. The key responsibilities for commanders, managers or accountable persons may include but are not limited to the following:

a. management responsibilities, for example unit commanders at all levels in a military context or personnel line managers in a civilian context;

b. responsibility for equipment or premises for example running workshops, training facilities, stores, and so on;

c. responsibility for planning or managing activities, such as training activities or deployments;

d. assisting with the development of internal standards policies and procedures;

e. assisting senior leaders with establishing and meeting strategic and financial goals; and

f. responsibility for procurement, design, selection, modification and so on, of equipment which may lead to noise exposure of Defence personnel.

[1] Safety cases should be produced for equipment and platforms (ships, boats, vehicles and aircraft) and identify the location of the noise hazards produced by the equipment and / or platform.

22. Therefore, this chapter defines the responsibility of a commander, manager or accountable person as someone who has a delegated managerial or supervisory responsibility for activities or equipment that may result in the exposure of Defence personnel to excessive noise whilst at work. The noise levels **must** be managed through the use of control measures to reduce exposure to a level that is ALARP and tolerable. This includes design of equipment at the procurement stage to prevent or minimise noise exposure to levels that are ALARP and tolerable.

23. The above definitions imply that there will likely be several individuals who together share responsibility for reducing noise exposure. **All** personnel have a duty to work together to assess the risks and to make sure Defence is compliant with the policy statements in this chapter and therefore the legislation.

24. Whilst the primary responsibility for the welfare and H&S of personnel rests immediately with the commanders, managers or accountable persons of those personnel, this duty usually cannot be discharged without the proactive actions of other managers or responsible people. This can take the form of procuring equipment that is inherently of low noise design, directly supporting implementation of suitable measures, review and audit of an action plan, enforcing culture, standards of behaviour and adherence to policy, and so on.

25. The commander, manager or accountable person **should** first look at the site hazard assessment or safety case report, which **should** have identified the areas where work activities could produce excessive noise.

26. In each of these areas an initial assessment **must** be carried out to identify whether there is a potential noise hazard and whether a more detailed noise assessment may be required. A ‘Noise Hazard Check Questionnaire’ (NHCQ) is designed for this purpose and is presented in Annex C to this chapter.

27. The commander, manager or accountable person **should** make sure that an NHCQ is carried out by or in conjunction with a person familiar with the work environment and processes. The person does not need to have had noise assessor training to undertake this task.

28. If the NHCQ identifies a noise hazard, the commander, manager or accountable person **must** arrange for a detailed noise assessment to be carried out following the guidance in Annex B of this chapter.

29. A CP can assist the commander, manager or accountable person with the development of the action plan to limit the findings of the noise risk assessment.

30. Suitable control measures **must** be developed in consultation with personnel and where appropriate Trade Union appointed and / or employee safety representatives.

31. When used, the MOD Form 5017 **should** be referenced on the activity noise risk assessment in line with Chapter 8 of JSP 375, Volume 1.

32. Specialist support may be required for the assessment of peak sound pressure levels. These noise sources are typically brief and very loud, for example impulse noise due to firearms discharge, explosive events or percussive machine working and so on.

33. Where it has been identified that there is a workplace with unacceptably high noise levels present, a series of actions **must** take place. The commander, manager or accountable person **must**:

a. first check if the noise levels can be reduced by engineering or management control measures and apply such control measures; and

b. if the noise exposure levels have been reduced to ALARP but they are still above the UEAV, then that area **must** be designated as a Hearing Protection Zone (HPZ)[2].

34. The requirement to attempt all reasonable technical and managerial measures to reduce noise exposure is paramount and **must** be exhausted prior to resorting to use of PPE. Expert support is likely to be required to achieve this.

35. Any HPZ **must** be clearly marked with suitable warning signage, as set out in Chapter 6 of JSP 375, Volume 1, and The Health and Safety (Safety Signs and Signals) Regulations 1996 as per the legislation. An example of a suitable sign is presented in figure 2-1.

Figure 2-1 Example of a sign to indicate a HPZ

36. PPE hearing protection **must** be provided to all personnel who require access to a HPZ and they **must** be worn unless doing so would cause a greater hazard. In the exceptional cases where this occurs, the commander, manager or accountable person **must** apply for the appropriate exemption certificate. This is set out in the exemption certificate process in Annex I to this chapter.

37. All personnel required to work in an HPZ **must** be placed in an audiometric health surveillance programme to make sure that their hearing is not being affected. The management of audiometric health surveillances is set out in Annex E to this chapter.

38. The selection of hearing protection where required **must** be made in consultation with a CP, as defined in Annex D to this chapter. This is to make sure the identification of the correct type of protection for the noise source is made and its characteristics are compatible with the personnel who are to use it, the activity being undertaken and the equipment being used. The determination of appropriate hearing protection against high amplitude impulsive noise is particularly complex and will require appropriate experience and expertise. This is particularly the case if such hearing protection also requires the user to maintain a high degree of SA or good communications capabilities.

[2] Any area where the daily or weekly average exposure is likely to exceed the UEAV of 85 dB(A).

39. The commander, manager or accountable person **must** make sure that hearing protection is maintained. This means keeping it in an efficient state and in good working order and repair. This **should** be in line with manufacturers instruction. The item **must** be properly stored and cleaned as per Chapter 15 of JSP 375, Volume 1. The CNAWR and the CNAW(NI)R explicitly require this. The MSFV(CNAR)R refers to The Merchant Shipping and Fishing Vessels (Personal Protective Equipment) Regulations 1999 for the storage issue and maintenance of PPE.

40. Hearing protection **must** be a last resort solution where other methods of removing the risks from noise have been introduced and a significant risk due to exposure to noise remains. The HSE advise that depending on the conditions of use, hearing protection will likely provide lower protection than predicted by manufacturers' data which is obtained from standardised, controlled testing environments. The assumed protection offered by hearing protection **should** use these 'real world' protection values.

41. Therefore, when selecting hearing protection in the face of uncertain performance, the HSE's precautionary principal (Reducing risks, protecting people, HSE's Decision-making Process) **should** be adopted. This is a philosophy defined as follows: 'where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent degradation'. In the context of high noise levels, the risk of damage is NIHL.

42. Personnel can order hearing protection via the NATO Stock Number (NSN) catalogue.

43. Once procured, the commander, manager or accountable person or the end user **should** verify that the performance of the hearing protection matches that required. This is to avoid instances of the end user being under or over protected, for example if the product defined by the NSN has been changed, or there are multiple options provided, with differing hearing protection performance (it **should** be noted that a single NSN may cover different variants of the same product).

44. Where personnel are exposed to noise which is likely to be at or above the LEAV, commander, manager or accountable person **must** provide suitable information, instruction, and training to such personnel. The training, where appropriate, **should** include:

a. an understanding of the noise hazard personnel may be exposed to and knowledge of the potential risks that the work activity may have on themselves and other personnel;

b. the equipment and operating conditions that generate the noise;

c. the required control measures (advice can be provided by the competent noise assessor);

d. where and how people can obtain Personal Protective Equipment (PPE) (for example ear defenders / earplugs) and its correct fitting and use;

e. how PPE **should** be used, cleaned and stored;

f. the reporting requirements for defects in noise control equipment and PPE;

g. the need for audiometric health surveillance as a help for early detection of hearing damage and enabling early action to be taken to prevent any further deterioration;

h. identification of hearing damage symptoms (for example difficulty in understanding speech in conversation, or a permanent ringing in the ears);

i. reporting of hearing problems;

j. awareness of the effect that the work activity may have on themselves and other people in the acoustic proximity when using portable equipment and the control measures required. This might include, for example, taking care not to start very high noise generating activities, such as metal working, firearms discharge, and so on, when unprotected people are in close proximity; and

k. use of prescribed medicines, drugs, and so on that may have ototoxic reactions. Certain antibiotics, chemotherapy and anti-inflammatory drugs are known to be ototoxic - some of which are over the counter products.

45. Defence personnel identified as being at risk from exposure to noise **must** be placed on a suitable audiometric health surveillance programme, this is covered more in Annex E to this chapter.

46. Occupations and activities for which audiometric health surveillance **must** be undertaken due to high levels of noise exposure include, but is not limited to:

a. personnel in and in close (acoustic) proximity to armoured fighting vehicles;

b. personnel in engine rooms or machinery spaces;

c. personnel operating or in close (acoustic) proximity to weaponry, for example small / medium arms or artillery;

d. personnel driving heavy transportation;

e. engineering units who regularly use machinery;

f. aircrew;

g. aircraft ground crew;

h. military band personnel; and

i. instructors at training establishments who frequently use equipment and platforms which emit noise.

47. The commander, manager or accountable person **must** make sure that personnel who are subject to audiometric health surveillance are assessed at least annually, or as directed by Occupational Health or Service Health units, to check for a reduction in their hearing acuity.

48. Special consideration **must** be given to those who already suffer from a hearing condition or are particularly sensitive to damage, for example young persons as per Chapter 19 of JSP 375, Volume 1.

49. Advice on setting up audiometric health surveillance programmes can be obtained through the local Services Medical Officer or Regional Occupational Health consultant (for Service personnel) and the relevant Defence safety organisation for civilian staff. Audiograms and advice for civilian staff can be requested from the civilian occupational health contract via DBS (CHR).

50. If it is reported (either by the individual or by Occupational Health) that any Defence personnel have experienced a loss in hearing acuity, the commander, manager or accountable person **must** take action to remove them from the noise source SFAIRP, or where this is not possible, to introduce additional control measures to reduce their noise exposure, for example by limiting time exposure and / or improving their PPE performance to allow their hearing to recover.

51. The commander, manager or accountable person **must** discuss with Occupational Health or Service Health units to assess whether to permanently remove the individual from the work activity and place them on alternative duties to prevent repeated exposure to noise causing hearing damage. Repeated exposure to such noise may lead to permanent damage or make such permanent damage worse.

52. If a commander, manager or accountable person has been informed that personnel have likely suffered harm as a result of noise exposure, the commander, manager or accountable person **must** take action to review the noise risk assessment to determine if it has adequately captured the risks and identified suitable risk controls and additionally they **must**:

a. review the exposure of all other personnel exposed to similar noise doses and determine if they require referring to Occupational Health or Service Health units;

b. make sure that Defence personnel working practises are monitored, for example that equipment is being used properly and that PPE (if required) is being worn correctly;

c. make sure that all equipment / platforms are regularly maintained / repaired as appropriate and in line with manufactures' instructions, to minimise the noise produced and / or maximise the effect of control measures.

d. keep records of such maintenance and repair which **must** be kept up to date. All noise control measures (for example acoustic insulation) on equipment and platforms **must** be regularly inspected, and for any deficiencies to be promptly rectified and recorded as per Chapter 23 of JSP 375, Volume 1;

e. carefully assess the potential non-personal exposure risks and impacts associated with noise in an appropriate Hazard Assessment or Safety Case; and

f. carefully assess the potential risks and impacts in an environment where noise may interfere with communications in an appropriate hazard assessment or safety case. Consider alternative means of communicating instructions and / or warnings to personnel, for example the use of a flashing light where a horn or siren may not be heard.

Retention of records

53. All records including the establishment / unit / platform register, risk assessments, safety case and so on **should** be kept, as set out in Chapter 39 of JSP 375, Volume 1.

54. All detailed noise risk assessments, audiometric health surveillance, training, and maintenance records **must** be kept for a period of no less than 60 years and in line with Chapter 39 of JSP 375, Volume 1.

Related documents and guidance

55. The following documents are related to this chapter.

a. JSP 375 Volume 1
   (1) Chapter 2 - Office & General Workplace Safety
   (2) Chapter 6 - Safety Signs
   (3) Chapter 8 - Safety risk assessment and safe systems of work
   (4) Chapter 19 - The Health and Safety of Young Persons
   (5) Chapter 23 - Electrical Safety
   (5) Chapter 39 - Retention of Records

b. JSP 418 - Management of Environmental Protection in Defence

c. JSP 950 - Medical Policy (various Leaflets)

d. HSE guidance

   (1) INDG163 - Risk assessment: a brief guide to controlling risks in the workplace.

   (2) HSG268 - The Health and Safety Toolbox: How to Control Risks at Work.

   (3) HSE - INDG363 (rev2) 2012 - “Noise, Don't lose your hearing!’.

   (4) HSE - “Reducing Risks, Protecting People. HSE's Decision-Making Process,” HSE, 2001.

   (5) HSE - INDG362 (rev2) Noise at work: A brief guide to controlling the risks.

References

56. The following references are related to this chapter.

a. The Ministry of Defence, “Ajax Noise and Vibration Review,” 15 December 2021. [Online]. Available: https://www.gov.uk/government/publications/ajax-noise-and-vibration-review/ajax-noise-and-vibration-review. [Accessed 2022 April 8].

b. The National Audit Office, “A Short Guide to the Ministry of Defence,” 2017.

c. L. Kitty, “Operation of Trading Funds,” Research and Library Services Division Legislative Council Secretariat, Hong Kong, 2003.

Noise exposure terminology and explanation

1. The Lower Exposure Action Values (LEAV), Upper Exposure Action Values (UEAV) and Exposure Limit Values (ELV) for daily or weekly personal noise exposure and peak sound pressure are presented in the table below[1].

	Lower Exposure Action Values (LEAV)	**Upper Exposure Action Values (UEAV)**	**Exposure Limit Values (ELV)**
Daily or weekly personal noise exposure	80 dB(A-weighted)	85 dB(A-weighted)	87 dB(A-weighted)
Peak sound pressure	135 dB(C-weighted)	137 dB(C-weighted)	140 dB(C-weighted)

Table A-1 Noise exposure action and limit values

2. The daily or weekly personal noise LEAVs, UEAVs and ELVs presented above are time weighted average noise exposure levels. This means they are calculated from the average sound pressure level, for example 80 dB(A), and the time over which personnel are exposed to that average sound pressure level, for example 8 hours per working day.

3. As per the legislation, the values presented in the table above are shown for a nominal 8 hour working day or a nominal 40 hour working week[2] [3]. This means that if an individual were exposed to an average of 80 dB(A) for 8 hours in a day, or for 40 hours in a week, then their personal exposure has reached the LEAV. Similarly, if an individual was exposed to an average of 85 dB(A), or 87 dB(A) for those same times, their personal exposure has reached the UEAV and ELV respectively.

4. The peak sound pressure values refer to any maximum sound pressure received which is typically from loud, impact type noises, for example explosions or percussive tools. The concept of the time weighted average noise exposure level is explained in the sections below.

[1] The thresholds are presented in the logarithmic decibel (dB) scale. Decibels are typically rounded to the nearest whole number or presented to no more than 1 decimal place. The levels are 'A-weighted' (dB(A)) or 'C-weighted' (dB(C)). These weightings are outlined in 'BS EN 6167201:2013 Electroacoustics. Sound level meters. Specifications' 'BSI,2013'.

[2] The Legislation is based on a worker being exposed to workplace noise for 8 hours a day or for 40 hours per week. This definition has significant implications for Defence personnel who may be in a 'workplace' for 24 hours per day for 7 days per week, requiring a significant reduction in the average noise level to which they can be exposed before reaching the Action Values or Limit Values.

[3] If the noise level to which an individual is exposed varies significantly over a working week, then the average over the week can be used, rather than the average over a single working day.

5. The LEAV refers to the lower of the two levels of daily (or weekly) personal noise exposure or of peak sound pressure which, if reached or exceeded, require specified action to be taken to reduce risk. If the LEAV is exceeded then the commander, manager or accountable person **must**:

a. make a suitable and sufficient documented noise risk assessment to ascertain the risk to H&S from the noise. Personnel at particular risk, for example due to health reasons, **must** be considered;

b. make sure that the risk from exposure to the noise is eliminated at source. If this is deemed not reasonably practicable, the level **must** be reduced to a level that is ALARP and tolerable;

c. place individuals under a suitable audiometric health surveillance where the noise risk assessment indicates a risk to the H&S of those personnel;

d. offer personnel suitable hearing protection and ensure that those personnel are made aware of their responsibilities as custodians of such PPE; and

e. provide personnel and their representatives with suitable and sufficient information, instruction, and training.

6. The UEAV refers to the higher of the two levels of daily (or weekly) personal noise exposure or of peak sound pressure which, if reached or exceeded, require specified action to be taken to reduce risk. These actions are in addition to the actions taken if the LEAV is exceeded. If, after all efforts to reduce noise exposure, the UEAV is reached or exceeded the commander, manager or accountable person **must**:

a. enforce the use of hearing protection; and

b. designate the area of high noise as a Hearing Protection Zone (HPZ).

7. The ELV refers to the level of daily, or weekly, personal noise exposure or of peak sound pressure which **must** not be exceeded.

Average noise levels

8. Noise levels can be any combination of steady, cyclic, random, or impulsive over time. This is illustrated below.

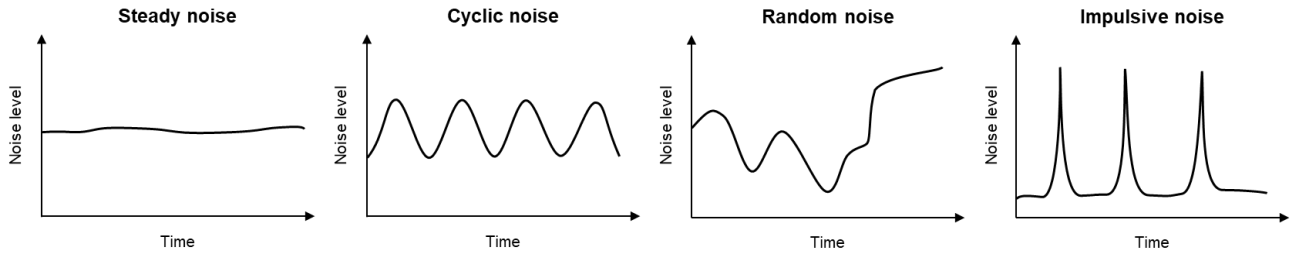

Figure A-1 Examples of different types of noise levels

9. As a simple example, during an 8-hour working day, assume a steady noise level exposure to an individual of 35 dB(A) for 4 hours, 40 dB(A) for 3 hours and 85 dB(A) for the remaining 1 hour. In this example, the time-weighted average noise level is calculated by taking the (logarithmic) average of the different average noise levels over the full 8 hour working day and accounting for the time of each exposure. This indicates an average daily exposure (termed LEP,d) of approximately 76 dB(A) for the day. Whilst the last hour of the day was greater than the LEAV and even on the threshold of the UEAV, the overall exposure for the whole day was less than both action values.

(Note the logarithmic average differs to the linear, arithmetic average. This can be calculated using the HSE's Exposure Calculator or from the assistance of a competent person (CP)).

10. This provides an example of the cumulative effect of exposure time at different average noise levels for non-expert readers. An understanding of exposure calculations is not required by the commander or manager. These calculations are best undertaken by a competent person as defined in Annex D to this chapter.

11. A relationship exists between noise level and allowable exposure time based on receiving an 'equal energy noise dose'. An increase or decrease of 3 dB(A) in (average) sound pressure level equates to a doubling or halving respectively of acoustic energy exposure in any given period of time. This means the same dose values can be achieved by trading off average noise level with total exposure time. An example of this is presented in the table below.

Average Noise Level	**Time Taken to Receive UEAV of 85 dB(A)**
85 dB(A)	8 hours
95 dB(A)	45 minutes
100 dB(A)	15 minutes
105 dB(A)	5 minutes
110 dB(A)	Under 2 minutes
115 dB(A)	Under 30 seconds

Table A-2 Exposure times to receive UEAV (sourced from HSG260)

12. Note that the above trade-off of average noise level and exposure time is only applicable where the peak sound pressure LEAV, UEAV or ELV is not being exceeded.

Noise exposure time

13. In some instances, personnel may be exposed to noise beyond the nominal 8 hour working day or 40 hour working week in the discharge of their duties. For example, personnel on board a ship for extended periods may be exposed to noise 24 hours a day, 7 days a week. This **must** be considered during a noise risk assessment by factoring the exposure values by the appropriate time spent in different noise environments over the entirety of a 24-hour day and over a 7-day week. Exposure over 24 hours, for 7 days, would equate to a reduction in the allowable average noise level by more than 6 dB(A) compared to individuals spending 40 hours per week in the workplace.

14. In other instances, the noise exposure to personnel may vary markedly from day to day. In those instances where observations over a single (nominal 8-hour) working day would be insufficient to assess noise exposure risk, observations over a (nominal 40-hour) working week **should** be used.

15. Instances where noise exposure varies markedly over time periods longer than one week **must** be identified as part of the detailed noise risk assessment. Examples may include operational deployments, battlefield training exercises or live-fire training. In such instances, these high-noise activities **must** all be assessed for risk from noise. Whilst averaging noise exposure over a working week is allowed in the legislation, averaging over longer time periods is not, and therefore the impact of infrequent high-noise activities **must** be assessed and risk managed individually.

The HSE's noise exposure ready-reckoner is reproduced in Table A-3.

Sound Pressure Level, L_{Aeq} (dB(A))	Duration of Exposure									
	2 min	5 min	15 min	30 min	1 h	2h	4h	8 h	10h	12 h
120	1300									
110	130	330	1000	2000						
105	42	105	315	625	1250					
100	13	34	100	200	395	790	1600			
98	8	22	60	125	250	500	1000	2000		
97	7	17	50	100	200	395	790	1600	2000	
95	4	10	32	65	125	250	500	1000	1250	1500
94		8	26	50	100	200	395	790	1000	1200
93		7	20	40	80	160	315	630	790	950
92		5	16	32	65	125	250	500	625	750
91		4	12	26	50	100	200	400	500	595
90			10	20	40	80	160	315	395	475
89			8	16	32	65	125	250	315	375
88			6	12	26	50	100	200	250	300
87			5	10	20	40	80	160	200	240
86			4	8	16	32	65	125	155	190
85				6	13	26	50	100	125	150
84				5	10	20	40	80	100	120
83				4	8	16	32	65	80	95
82					6	13	26	50	65	75
81					5	10	20	40	50	60
80					4	8	16	32	40	48
79						6	13	26	32	38
78						5	10	20	26	30
75							5	10	13	15

Above Upper Exposure Action Value ($L_{EP,d}$ 85 dB(A))
Above Lower Exposure Action Value ($L_{EP,d}$ 80 dB(A))
Below Lower Exposure Action Value ($L_{EP,d}$ 80 dB(A))

Table A-3 Noise exposure ready-reckoner (sourced from HSE Exposure Calculators and Ready Reckoners)

Noise risk assessment process

1. The following sections present a process for undertaking an initial noise risk assessment and a detailed assessment if it is found to be required. The acoustic source-path-receiver model is used in the detailed assessment to make sure it is suitable and sufficient.

Initial noise risk assessment

2. The first step is to ascertain whether a noise problem is present. This is determined by completing the Noise Hazard Check Questionnaire (NHCQ) in Annex C of this chapter. The results of the NHCQ will determine whether a detailed noise risk assessment is required. The NHCQ can be carried out by a commander, manager or accountable person and/or personnel familiar with the work environments and processes that generate noise.

3. If the NHCQ indicates that there is a noise exposure problem a detailed noise risk assessment is required. Where a noise risk assessment is required, the commander, manager or accountable person **must** make sure that it is carried out in line with the five-step risk assessment process set out in Chapter 8 of JSP 375, Volume 1 and covered by policy statements 1 to 5 in Part 1 of this chapter. The detailed noise risk assessment **should** be recorded on MOD Form 5017.

Detailed noise risk assessment

4. The detailed noise risk assessment **must** be carried out by a competent person (CP). Expertise can be sought from specialist advisors, for example engineers, building surveyors and plant maintainers as necessary.

5. If a suitable ‘in-house’ CP is not immediately available, then urgent action is required to source an external CP. It is suggested that no more than 3 months is allowed between the determination of a need for the detailed noise risk assessment and its use.

6. Anecdotal evidence suggests that within Defence, the evaluation of noise exposure risks is sometimes delayed for a year or more due to CP availability. Such delays are both harming individuals and damaging the capabilities of Defence and **must** be limited SFAIRP.

7. The detailed noise risk assessment **must** be developed in consultation with the Defence personnel concerned and where appropriate Trade Union appointed and / or employee safety representatives.

8. The detailed noise risk assessment **must**:

   a. fully identify the work activity and identify all the noise sources to which personnel are exposed;

   b. identify where the risk is, for example noise from a single unit of machinery and / or an activity;

   c. identify which personnel are likely to be affected;

d. identify what engineering and management control measures to be taken to control the immediate risk;

e. identify, detail, and prioritise the long-term engineering and management controls;

f. contain a reliable estimate of the noise levels and personal noise exposures;

g. record the time exposed to such noise levels;

h. include an assessment of the predicted or measured noise levels against the EAVs and ELVs in the legislation set out in Annex A to this chapter; and

i. recommend the type of instruction, information, and training, needed to educate personnel on the dangers of noise exposure.

9. The detailed noise risk assessment **must** be based on:

a. reliable relevant information, for example measurements from equipment or activity used in the workplace;

b. if such information is not available, information from similar workplaces, or data from suppliers of the equipment;

c. consideration that differences may exist due to the particulars of equipment installation and usage; and

d. estimations of personal exposures from the noise sources.

10. A timetable **should** be established for the completion of the assessment and the implementation of the subsequent engineering and management control measures.

11. Where a noise risk assessment is carried out, the hierarchy of risk control measures[1] **must** be used. The hierarchy of risk controls is illustrated in Figure B-1 below and **must** guide the development of the detailed noise risk assessment and it may be that action is necessary in more than one area to create a safe working environment.

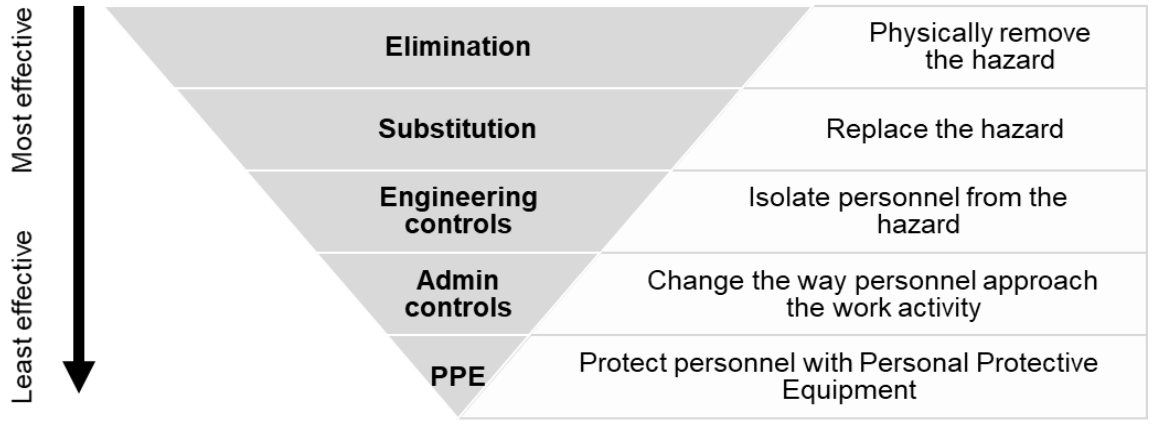

Figure B-1 The hierarchy of risk controls

[1] The Management of Health and Safety at Work Regulations 1999, Schedule 1.

12. Plan a thorough walk-around to observe and note all areas and work activities where personnel are exposed to the noise emissions. During the walk-around, list all possible proportionate engineering and management control measures which could minimise the exposure of noise. Consider whether such control measures are compatible with the working methods of the work activity.

The noise source

13. When planning the assessment, consider whether the noise can be reduced 'at source'. For example:

a. can the source be eliminated?

b. can the number of sources be reduced?

c. can the sources be segregated?

d. can the sources be moved away from personnel or vice versa?

e. can the sources be enclosed?

14. When planning the assessment, consider the acoustic characteristics of the noise sources. For example:

a. are the noise levels steady?

b. are the noise levels cyclic?

c. are the noise levels random?

d. is the noise high pitched?

e. is the noise low pitched?

f. is the noise tonal?

g. Is the noise impulsive?

The noise path

15. When planning the assessment, consider all relevant routes of exposure. For example:

a. what path does the noise take to get from its source to the effected personnel?

b. is there a direct line-of-sight from the source to the receiver?

c. is a reverberant environment exacerbating the noise?

The noise receiver

16. When planning the assessment, consider the receivers who are exposed to the noise. For example, by:

a. identifying **all** exposed groups. This can include, for example:

(1) cleaners;

(2) maintenance personnel;

(3) commanders, managers or accountable persons; and

(4) workshop assistants.

b. identifying all personnel whose health may be at particular risk from the noise. This can include:

(1) pregnant women;

(2) personnel with a family history of hearing loss;

(3) young persons;

(4) personnel at risk from the interaction of noise and ototoxic substances;

(5) personnel working with certain substances or gases which may have a synergistic effect on hearing impairment; and

(6) personnel working with or on vibrating equipment where there is a synergistic effect between noise and vibration.

17. When planning the assessment, consider whether the work activity can be modified. For example:

a. can fewer personnel be involved with the work activity?

b. can personnel be rotated on the activity throughout the working day?

18. When planning the assessment, consider exposure resulting from accidents, incidents and emergencies.

19. When planning the assessment, consider whether the personnel require audiometric health surveillance.

20. If adequate control of exposure cannot be put in place by other means, during the assessment, consider if PPE is required, in combination with other control measures. Consider:

a. whether the PPE is compatible with the work activity;

b. the performance specifications and where its required;

c. the impact of the work environment on the choice of PPE;

d. how to train personnel on correctly fitting, maintaining and storing such PPE;

e. where the PPE will be safely stored; and

f. personnel who will be responsible for checking and maintaining the PPE.

21. Implement the planned most effective and reliable engineering and management control measures required to control both the immediate risk to personnel and in the long-term. These may be controlled at the noise source, path and / or receiver.

The noise source

22. Implement an appropriate selection of engineering and management control measures at the noise source. This includes, but is not limited to:

a. elimination. For example, remove the equipment or activity entirely or switching off equipment when not in use;

b. activity substitution. For example, replace the activity with a quieter one, for example welding instead riveting. Note that substitution can introduce different risks into the workplace and these risks **must** also be considered; and

c. equipment replacement. For example, replace noisy equipment / components with quieter alternatives.

The noise path

23. Implement an appropriate selection of engineering and management controls at the noise path. This includes, but is not limited to:

a. insulation. For example, erect a barrier for example a brick wall, erect an enclosure, or provide a quiet control / rest room for Defence personnel;

b. absorption. For example, fix sound deadening material to appropriate surfaces to minimise the reflected noise;

c. isolation. For example, install equipment, or even internal components of equipment, on vibration isolating mounts to minimise the transfer of vibration from a source to a structure where it can radiate as noise; and

d. rearrangement. For example, avoid placing equipment where noise levels may be increased by reflected sound, such as in corners. Consider the summation of noise from multiple noise sources at work locations. Consider spacing noise sources out.

The noise receiver

24. Implement an appropriate selection of the following engineering and management control measures:

a. elimination. For example, remove the person from the activity entirely. For example, use cameras or sensors to monitor equipment or spaces with high noise levels;

b. distance. For example, move personnel away from noise source by rest breaks or alternative work in quiet zones to spend time away from the noise source whenever possible. This can also provide breaks for personnel to limit the continuous wearing of hearing protection which may lead to incorrect use of the equipment;

c. time. For example, design the process to limit personal exposure or implement job rotation;

d. PPE. For example, if required provide suitable hearing protection;

e. discipline. For example, provide appropriate training and make sure that all control measures are complied with including wearing of PPE. All PPE equipment **must** be maintained correctly; and

f. surveillance. For example, make sure that the audiometric health surveillance results of Defence personnel are monitored, and appropriate follow-up action is taken.

25. Plans, policy documents and risk assessments **must** be revisited in an endeavour to achieve continual improvement in the reduction of risk to personnel.

26. The implementation of the engineering and management control measures determined by the detailed noise risk assessment **must** be reviewed by the CP. This is to determine whether the control measures have been adequately implemented. Each review **should** include the commanders, managers or accountable persons assessment of the effectiveness of the control measures, and any further control measures that may be required, in conjunction with the CP.

27. A review **must** be carried out initially after the detailed noise risk assessment is carried out, periodically thereafter and when there is a change in work activity.

28. If **any** review indicates that a noise exposure issue remains which is impacting Defence personnel, then this is indicative of a failure to implement the findings of the detailed noise risk assessment in a timely manner, or an incorrect selection of the engineering and management control measures. This will cause further harm to personnel and damage to Defence capabilities.

29. The following guidance can be used to determine that noise exposure control measures have been both implemented, and that they are proving effective.

Initial review

30. An initial review **must** take place shortly after the detailed noise risk assessment is carried out. This is to assess the immediate effectiveness of the implemented controls. It is recommended the initial review takes place no longer than 3 months after the detailed noise risk assessment is carried out.

Periodic review

31. The control measures **must** be reviewed periodically by the CP. This **should** be at a frequency based on the change of risk but normally not exceeding every two years. The periodic review **should** assess the effectiveness of the control measures and whether a safe working environment is being achieved. In some circumstances formal audits may be useful.

Change in work activity review

32. Additionally, the control measures **must** also be reviewed by the CP where there is a change or event in the work activity. For example:

a. new noise emitting equipment has been introduced;

b. there are reports of hearing loss;

c. after an accident or near-miss where noise could have been a contributory factor to the accident;

d. a change in location or duration of exposure; and

e. if there is **any** reason to suspect that current detailed noise risk assessment is no longer valid.

33. It is imperative that personnel at **all** levels of Defence learn from any accidents or incidents, ill health data, errors or relevant experience gained in the discharge of their duties. Such incidents **must** be documented in the relevant risk assessment and mitigated through the adoption of engineering and management control measures.

Managing noise risks

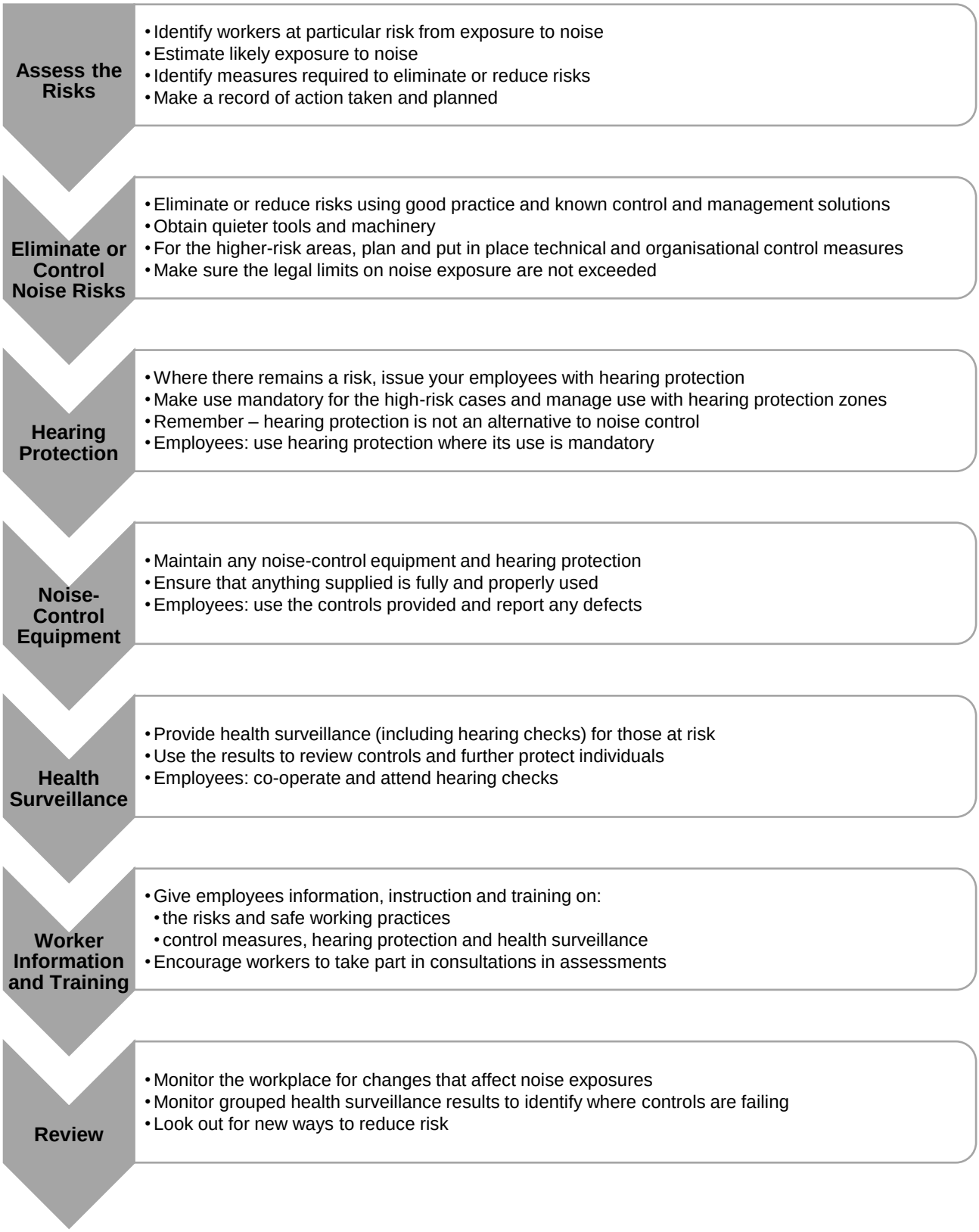

Figure B-2 Flow chart to manage noise risks (sourced from HSE L108 - Controlling Noise at Work)

Noise Hazard Check Questionnaire

1. The Noise Hazard Check Questionnaire (NHCQ) is an initial assessment to ascertain the presence of a potential noise hazard. If the answer is 'yes' to any of the checks then a detailed noise risk assessment is required.

Question	Y	N
Do personnel work in a noisy environment, for example an engine room, an armoured fighting vehicle, a construction site, engineering workshop, artillery range, airfield, or large open plan office?	☐	☐
Are personnel using or working near noisy power tools or equipment for more than half an hour each day in total?	☐	☐
Are there any impacts such as hammering, pneumatic impact tools and so on explosive sources such as cartridge operated tools, detonators, or guns?	☐	☐
Are there areas of the workplace where noise levels could interfere with warning or danger signals?	☐	☐

Table C-1 Questions to ask personnel to check if there is a potential noise problem

Question	Y	N
Are personnel exposed to noise which makes it necessary to shout to talk to someone 1 metre away, for more than half an hour per day in total? The noise levels here are comparable with that of a pneumatic road drill.	☐	☐
Are personnel exposed to noise which makes it necessary to shout to talk to someone 2 metres away, for more than two hours per day in total? The noise levels here are comparable with that of a hand-held power drill.	☐	☐
Is conversation at 2 metres possible, but noise is intrusive for more than six hours per day in total? The noise levels here are comparable to a busy street or a crowded restaurant.	☐	☐

Table C-2 Questions to ask personnel to check for a noise problem by listening checks

Test	Probable Approximate noise level	A noise risk assessment will be required if the noise remains at this level for more than:
The noise is intrusive but normal conversation is possible.	80 dB(A)	6 hours
You have to shout to talk to someone 2 metres away.	85 dB(A)	2 hours
You have to shout to talk to someone 1 metre away.	90 dB(A)	45 minutes

Table C-3 Simple tests to see if a noise risk assessment is required

(Sourced from The Health and Safety Executive, "HSE L108 - Controlling Noise at Work: The Control of Noise at Work Regulations").

2. In addition to the risks to hearing damage, the risk assessment **should** also consider associated impacts such as loss of situational awareness and so on. A detailed risk assessment, by a suitably qualified person, **should** be conducted if any of the following are considered essential for health and safety:

a. for situational awareness purposes; for example, around moving vehicles, in tactical situations, at replenishment-at-sea (and similar) working stations on ships and so on. Note that prolonged noise exposure prior to a situation requirement situational awareness may cause TTS that significantly impairs the required level of awareness.

b. for command, control and communications purposes; for example, radio rooms, ship's control centres, command posts and so on.

c. for sleeping accommodation in proximity to noise sources; for example, on board ships.

Noise assessor competency

1. Noise assessors **must** be competent. This means they have adequate skills, knowledge, experience and behaviours (SKEB) to undertake a noise risk assessment. Essentially, they **should** have:

a. knowledge of The Control of Noise at Work Regulations 2005 or where applicable either The Control of Noise at Work (Northern Ireland) Regulations 2006 and / or The Merchant Shipping and Fishing Vessels (Control of Noise at Work) Regulations 2007;

b. knowledge of MOD policy, for example SofS Policy Statement JSP 375;

c. the ability to assess and / or measure noise;

d. knowledge on how to record results and analyse results;

e. the ability to explain the results to others in simple to understand language;

f. the ability to interpret information provided by others, for example noise data by equipment manufacturers;

g. the ability to identify appropriate control measures;

h. know the limits of their own knowledge and know when and where to seek further advice; and

i. up to date competency and knowledge to address skill fade.

2. To assist in gaining the appropriate competence in noise risk assessment, the Institute of Naval Medicine (INM) provide a Noise Assessor Training Course (NATC). This course is for those individuals, service or civilian, who have been nominated by their Commanding Officer/Head of Establishment for training to undertake basic assessments in accordance with the Control of Noise at Work Regulations 2005.

3. The course is externally examined by the Institute of Sound and Vibration Research, University of Southampton. Successful candidates will be awarded a certificate of competence by the INM that is valid for three years. Course applications and enquiries to be directed to AO(T) via NAVYINM-TRAINING@mod.gov.uk or 9380 68091/02392768091. Course duration: 2.5 days.

4. Noise risk assessment training courses are also provided by the RAF Centre of Aviation Medicine (CAM) at RAF Henlow. This comprises of a full 1 week course at RAF CAM and a subsequent shorter re-certification course. Course applications and enquiries to be directed to CESO (RAF) via Air-SafetyCtre-CESOMailbox@mod.gov.uk.

5. On successful completion of the training courses, personnel are requested to notify their local health and safety advisor and update their MyHR/JPA accordingly.

6. A competent person (CP) noise assessor may be available from several sources. These include:

a. the local H&S adviser within the unit / establishment;

b. an appropriate engineering adviser;

c. Defence organisation's environmental or health personnel;

d. civilian occupational hygienists;

e. Defence organisation Safety Centre (SC) or equivalent; and

f. the Chief Environment and Safety Officer (CESO) or equivalent.

7. If competent advice is not available from the above-mentioned sources, specialist in-house advice and expertise is available from the organisations listed in Table 1 below. However, these resources are limited and enquiries from staff within these TLBs will be given priority.

Managing audiometric health surveillances

1. There are various ways in which exposure to noise can cause health and / or safety hazards and impacts. The causes and associated risks of the hazards are explained further in the following paragraphs, in summary these hazards include:

   a. the risk of permanent Noise Induced Hearing Loss (NIHL);

   b. temporary loss of hearing acuity, termed Temporary Threshold Shift (TTS);

   c. tinnitus (a sensation of ringing, whistling, buzzing, or humming experienced by an individual when there is no external noise source present) loss of Situational Awareness (SA), for instance due to TTS or disorientation;

   d. communication impairment;

   e. workplace stress;

   f. sleep disturbance; and

   g. ototoxic (drugs or chemicals (prescribed or over the counter) which can cause damage to the inner ear and / or interact with noise to exacerbate hearing damage) effects.

2. Personnel who are likely to be regularly exposed to noise above the Upper Exposure Action Values, or are at risk for any reason, **must** be placed under audiometric health surveillance to monitor any symptoms of NIHL. The health record from the audiometry surveillance **must** be passed to the employer. Guidance for Noise at Work Health Surveillance is set out in JPS 950 Leaflet 6-4-4 and HSE L108 - Controlling Noise at Work . Other procedures for health surveillance provision may be used by Defence organisations who have contractual arrangements that may not be detailed in JSP 950.

3. JSP 950 Medical Policy Leaflet 6-7-7 'Joint Service Manual of Medical Fitness', Section 3, describes the requirements and processes of audiometry as a standard audiometric health surveillance tool for personnel. This includes the hearing acuity grades as per the audiometric standard thresholds. Annex D of this JSP 950 leaflet, 'Assessment of Hearing Acuity', **should** be referenced if an audiometric health surveillance is required.

4. Guidance for Medical Staff - Assessing Audiograms is set out in JSP 950 Leaflet 6-4-2.

5. Guidance for Noise at Work Health Surveillance is set out in JPS 950 Leaflet 6-4-4.

6. For general guidance, an audiometric health surveillance programme makes sure the hearing sensitivity of personnel is monitored using periodic hearing tests. Such surveillance programmes **should** be managed by:

   a. firstly, completing an initial assessment using an adult case history form to ascertain the individuals medical and hearing history; and

   b. secondly, repeat the steps presented in Figure E-1 until cessation of the requirements for surveillance.

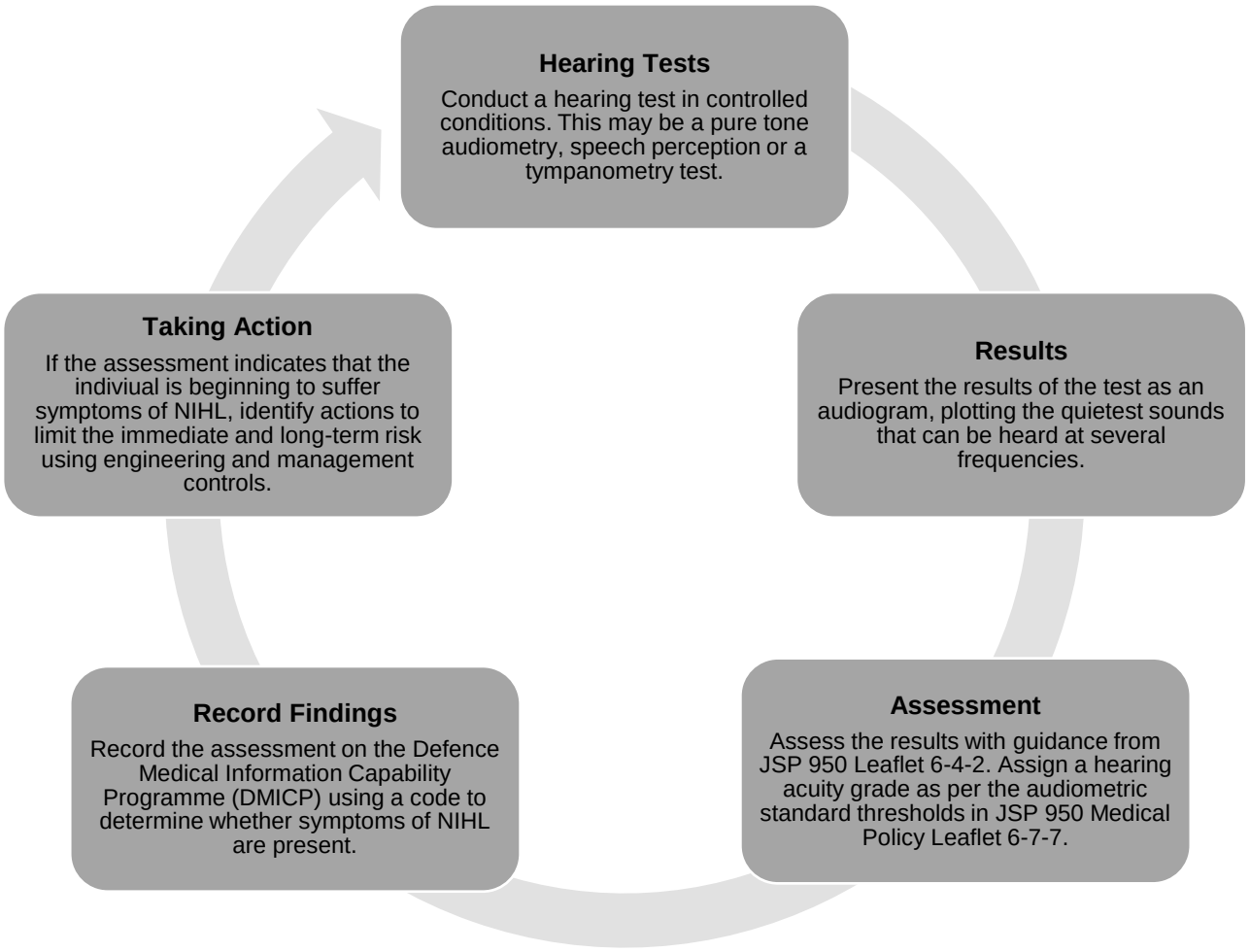

Figure E-1 Cycle of audiometric health surveillance

Directors of music and Bandmasters

Noise exposure to musicians

1. For Directors of music (DOMs) and Bandmaster (BMs), the management of the risk of damage to musicians' hearing from noise poses a dilemma because the noise (music sound) produced is required for the performance. Guidance can be found in the Health and Safety Executive, HSG260 - 'Sound advice: Control of noise at work in music and entertainment'.

2. Most of the noise that musicians are exposed to is generated by their own and other band members' instruments and is therefore unavoidable. Musicians' hearing is susceptible to damage due to their proximity to the instruments and the sound levels produced and from the duration of the performances or practice sessions.

3. Brass instruments may pose a particular risk due to their ability to generate relatively higher sound levels when compared to other instruments in a typical orchestra.

4. Instruments where the sound emanates from a part of the instrument particularly close to the ear, for example violins, can also produce higher noise exposure levels.

5. Percussion instruments may pose a risk of exposure to peak sounds at or above the LEAV or UEAV set out in the legislation due to the striking action required to play them.

6. A noise risk assessment **should** be carried out on the acoustic properties of each venue because no two venues are acoustically the same.

7. DOMs and BMs **must** reduce musicians' exposure to noise which is at or above the LEAV or UEAV SFAIRP. The most feasible measure is the reduction in the general volume at which music is performed: during technical rehearsals, loud dynamics and high levels may not be necessary and **should** be avoided. Other reductions in musicians' exposure **should** include:

a. the use of practice mutes for brass instruments;

b. the use of portable acoustic screens and head shields for exposed vulnerable players;

c. the consideration of stage layout;

d. the identification and marking or control of loud passages in the piece being performed and the score marked accordingly, especially percussion or brass;

e. cycling through players;

f. make sure multiple adequate rest periods for musicians before, in-between and after performances and rehearsals;

g. limiting exposure of musicians during performance and rehearsal by influencing programme selection;

h. reducing the number of brass players to the minimum required for the performance;

i. the use of live sound monitoring systems throughout the performance so that levels can be adjusted in real-time; and

j. where possible, replacing an acoustic instrument with an electronic equivalent so its output level can be electronically adjusted.

8. DOMs and BMs **must** make sure that PPE, for example personally moulded in-ear protection, is always worn by all band members whilst rehearsing or performing if the peak or average Exposure Action Values in the legislation are reached or exceeded.

9. Risers (raised platforms) **should** be used to raise the second and subsequent ranks of players in concert band situations whenever it is practical for both rehearsal and performances. The use of risers will reduce the muffling effect of playing into the body of musicians sited in front and enable the player to reduce their volume and consequent noise exposure. The risers can also enable greater distance between an instrument and the ear of the person directly in front. To be effective, risers **must** be of sufficient height for the musician's instrument to be directed above the head of the musician positioned in front of them. Acoustic screens **should** also be considered and as appropriate positioned and used in line with the manufacturer's instructions. The impact of reflections from acoustic screens need to be taken into account, as this has the potential to cause local noise levels to increase above the levels without the screens.

10. Band leaders or ensemble leaders **should** notify all personnel not required for rehearsal of the risks and instruct them to vacate the performance area.

11. DOMs and BMs **should** make sure that the musicians performing in a marching band are directed to produce the same controlled dynamic range. If excessive volume is required from a particular instrument for the benefit of marching troops, for example the bass drum, they **should** be positioned outside the formation of the band to reduce the muffling effect provided by the surrounding musicians on parade and to reduce exposure of other musicians. Where this is not possible effort **should** be made to create space around them.

12. Musicians **should** be advised of the noise levels to which they are likely to be exposed whilst rehearsing and performing and that they are more vulnerable to hearing damage from participation in leisure activities which add to their overall sound exposure (for example use of personal audio / media players at high volume, attending music concerts and so on).

13. If musicians are exposed to noise above the LEAV, an audiometric health surveillance **must** be provided and all musicians **should** attend regular hearing tests.

Headset users and personal audio systems

Headset users - acoustic shock via telecommunication

1. Acoustic shock may pose a risk to personnel who use headsets or other such telecommunication systems which require a speaker to be in close proximity to the user's ear. Such events have only more recently been recorded due to the advent and wider use of such technology.

2. The International Telecommunication Union (ITU) refers to acoustic shock as an event which causes 'any temporary or permanent disturbance of the functioning of the ear, or of the nervous system, which may be caused to the user of a telephone earphone by a sudden sharp rise in the acoustic pressure produced by it ('Vocabulary of Terms on Telephone Transmission Quality and Telephone Sets," The International Telecommunication Union, 1998').

3. The event may trigger an 'acoustic startle' effect, which the ITU define as 'a psychological effect caused by acoustic stimulation that may cause disturbance' ('Vocabulary for Performance, Quality of Service and Quality of Experience," The International Telecommunication Union, 2017'). The exposure is unexpected by the individual and may cause a reflex reaction which is largely considered to be a physical, unconscious defensive response to such stimuli. It may trigger the fight, flight, or freeze response.

4. The acoustical characteristics of the source are a sudden onset transient (that is a brief, sudden change in noise level) and a high intensity. The level of risk may vary depending on the type of headset being used.

5. A research project into acoustic shock was carried out by the International Association of Conference Interpreters (the AIIC) 'The International Associate of Conference Interpreters, "Acoustic Shocks Research Project, Final Report', 2019. The AIIC surveyed 1035 of their interpreters, who frequently use such telecommunication hardware.

6. The AIIC's survey found that a significant proportion (approximately 67%) of the respondents had been exposed to such acoustic incidents. The survey had a 95.2% completion rate.

7. Almost half of the respondents reported one or more symptoms following exposure. In order of prevalence, these included tinnitus, hearing hypersensitivity, headaches, hearing impairments (although it is not clear whether this was temporary or permanent) and a 'stabbing type pain the ear'.

8. However, research on acoustic shock is not conclusive on whether the reported symptoms are caused directly by exposure to these unexpected sounds or are associated with a range of reported physiological and psychological symptoms, for example stress-related pressure.

9. Notably, an article from the British Broadcasting Corporation (BBC) in 2001 showed that 84 employees were taking legal action against British Telecom (BT) claiming to suffer from health problems because of acoustic shock at work (‘British Broadcasting Company, “Legal Action Over 'Acoustic Shock',” BBC, 12 February 2001. [Online]. Available: http://news.bbc.co.uk/1/hi/uk/1165366.stm’). BT has paid approximately £90,000 in compensation to one worker.

10. Defence personnel at particular risk of acoustic shock and startle are those performing tasks requiring high levels of concentration whilst operating such telecommunication hardware, for example radar operators, sonar operators, call operators, radio operators and interpreters. The potential risk from use of tactical hearing protection with in-built communications capability, is unclear, but **should** be assumed as a possible risk.

11. Measures to limit the risk of acoustic shock from occurring, or the subsequent acoustic startle, **should** include:

a. make sure headsets have acoustic limiting capabilities, either built-in or as an add-on;

b. make sure work pace and demands are not causing physical or mental stress;

c. rotating personnel on activities which use earphone hardware;

d. encouraging frequent rest breaks; and

e. mental and physical stress management and reduction techniques.

12. Personnel using such earphone hardware **should** be informed of the potential risk. Further, these personnel **should** be encouraged to report any acoustic shock events and / or symptoms.

13. All incidents of acoustic shock and acoustic startle **should** be recorded in line with accident and incident reporting procedures as per JSP 375, Volume 1, Chapter 16 - ‘Accident / Incident Reporting and Investigation’.

14. If symptoms are noticed staff **should** request referral to their Occupational Health provider (Service Medical Officer / or Defence Business Services (DBS) Civilian Human Resources (CHR) for civilians)**.** The commander, manager or accountable person who is responsible for that person **must** action such requests and if more than one person in a team is reporting similar incidents, the commander, manager or accountable person **should** request further advice from their Occupational Health provider.

Use of personal audio systems

15. The use of personal audio systems (for example MP3 players and personal stereos) may pose a risk to effective communications or may prevent the correct wearing of PPE. This may contribute to exposure above the EAVs in the legislation. It is therefore suggested that personal audio systems at work **should not** be allowed by default, except where personnel are off-duty / not at work.

16. Where the use of personal audio systems could give rise to safety issues, for example mis-heard or missed instructions or provide a distraction which could result in injury to the user or another person, the activity / area risk assessment and local policy **must** prohibit their use. This includes in off-duty periods, for example personnel exercising in areas where vehicle operations, weapon or machinery cycling and so on, may cause immediate hazards if audible cues and warnings are missed.

17. As set out in JSP 800, Volume 5 – 'Road Transport' 2014, drivers of military vehicles are prohibited from using personal audio systems whilst driving.

18. Should the use of personal audio systems be permitted for on duty / at work Defence personnel and used on the Defence estate, the commander, manager or accountable person **must** specify their conditions of use which **must** be determined by the activity risk assessment and local policy. This **must** include limiting their volume to:

a. make sure that any announcements, alarms, or other audible warnings can be heard;

b. help preserve the users hearing; and

c. be considerate of colleagues.

Guidance on UKCA and CE markings for PPE

1. New PPE items, for example hearing protection, which are placed on the GB market **must** be UKCA marked (by the supplier). Guidance on the required markings is presented in Table H-1.

		Accepted Marking or Combination of Markings	
Placing goods on the market in Northern Ireland (NI)	Manufactured goods being placed on the market in NI using an EU conformity assessment body	CE	
	Manufactured goods being placed on the market in NI using a UK-based body	CE & UKNI	
Placing goods on the market in Great Britain	Manufactured goods being placed on the GB market until the end of 2021	UKCA or CE	
	Manufactured goods placed on the GB market from 1 January 2023	UKCA	
Placing qualifying Northern Ireland goods on the market in Great Britain (unfettered access)	Qualifying Northern Ireland goods being placed on the GB market under unfettered access	CE or CE & UKNI	
Placing goods on the EU market	Manufactured goods being placed on the EU market	CE	

Table H-1 Accepted conformity markings for different markets (sourced from "Placing manufactured goods on the market in Great Britain," 31 December 2020).

2. Further guidance can be found in 'The British Standards Institution (BSI), "BSI PPE UKCA Marking Update - For Personal Protective Equipment (PPE),".

Exemption certificate process

1. Certain provisions in the legislation allow the SofS to exempt a person or class of persons from parts of its requirements by issuing an exemption certificate.

2. An exemption certificate from the legislation will only be granted where the SofS is satisfied that the person or class of persons involved in activities detailed in an Exemption Case Submission (ECS) are carried out in the interests of national security. Any exemption certificate granted will be time limited to a maximum of five years and be subject to conditions.

3. Where the provisions of the legislation cannot be complied with and an exemption certificate is granted, control measures **should** be put in place to limit the noise exposure to a level that is ALARP and minimises the risk to the H&S of the person or class of persons concerned.

4. The ECS **must** demonstrate that in order to protect operational capability in the interest of national security, Defence is reliant on the exemption being granted, and the conditions stipulated in the exemption have been satisfied. The ECS **must** include:

a. the name and purpose of the equipment / operation giving rise to the problem;

b. the time period for which an exemption is required and the rationale for it;

c. an outline of the problem and its magnitude. For example, if there is not an exemption certificate in place, how the proposed activity will be adversely affected; for example:

(1) the numbers of personnel placed at potential risk;

(2) the impact on front line operational capability[1]; and

(3) a quantitative extent of non-compliance[2].

d. actions undertaken and / or considered to comply with the regulations;

e. cost data where compliance is being ruled out on the grounds of cost;

f. an action plan containing the mitigation options available, likely costs and timescales for compliance in the short and medium to long term;

g. the plan for health monitoring and assessment by the users; and

h. where renewal of an existing exemption certificate is being sought, details on the success or otherwise of the previous action plan, including the results of health monitoring.

[1] For example, a military task that will become impossible to undertake or otherwise be severely hampered.

[2] For example, by how much over the EAVs or ELVs defined in the Legislation the noise from the activity will exceed.

5. The preparation of the ECS **must** include input from operating authorities, acquisition teams and medical personnel as appropriate. The draft ECS **must** be passed for scrutiny to the DSA and other relevant subject matter experts for a recommendation on approval.

6. If the ECS passes scrutiny, the sponsor forwards the completed ECS and draft exemption certificate to the SofS for signature granting the exemption.

7. If the SofS deems the case successful, a signed and completed exemption certificate will be issued by the SofS. A copy **must** be provided to the Defence Safety Authority by the sponsor.

8. If not successful, the activity **must** be discontinued until such time as it can comply with the legislation.