

## Noise Reduction by Design Guidance

	<b>Name</b>	<b>Job Title</b>	<b>Signature</b>	<b>Date</b>
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Issue No	Date Issued	Purpose of Issue and Description of Amendment
1	April 2014	This document supersedes individual business documents relating to the subject matter. Initial release for the new Group SMS.
2	April 2016	Reviewed against legislation.
3	May 2018	Routine review – minor changes made.

## 1. PURPOSE

The purpose of this guidance document is to set out the factors to be considered when specifying the supply or modification of plant and equipment.

## 2. SCOPE

This guidance document outlines the roles and responsibilities within ScottishPower for compliance with the Control of Noise at Work Regulations 2005, specifically related to positive purchasing as a form of controlling noise.

The document shall be adopted by all areas of ScottishPower and will help to ensure that the identification of noise hazards and their risks are managed effectively.

## 3. RESPONSIBILITY

**Business Managers** shall be responsible for implementing the requirements of this document in premises and business operations.

**Business Engineers** shall be responsible for ensuring that when new plant is designed noise reduction is a requisite consideration within the process. Engineers shall also provide the necessary technical advice and back up to enable Procurement to fulfil their responsibilities.

**The Procurement Department** shall work with engineers to follow a 'positive purchasing' process to ensure low noise plant and equipment is purchased.

Additional guidance by the HSE (Buy Quiet) is available on their website.

**The Group Occupational Hygienist** shall provide technical advice as required to support the decisions made on any new plant, machinery or equipment.

## 4. APPROVALS

The Health & Safety Policy & Standards Committee will approve this document.

## 5. REVIEW FREQUENCY

This document shall be reviewed as dictated by business change but at a period of no greater than three years from the last issue date.

## 6. RELATED DOCUMENTS

Control of Noise at Work Regulations 2005  
Management of Noise Procedure (UKHS-GSP-SMS3016)

## 7. DEFINITIONS/ACRONYMS

Lep,d: daily noise dose:	This is the maximum daily noise dose a person can be exposed to per day.
UEAV	Upper Exposure Action Value
SNR	Single Noise Rating

## 8. INTRODUCTION

It is a requirement under the Control of Noise at Work Regulations 2005 that: *“The employer shall ensure that risk from the exposure of his employees to noise is either eliminated at source or, where this is not reasonably practicable, reduced to as low a level as is reasonably practicable.” (Section 6 (1)) and “... shall include consideration of ... choice of appropriate work equipment emitting the least possible noise, taking account of the work to be done ... the design and layout of workplaces, work stations and rest facilities - ... reduction of noise by technical means” (Section 6 (3)).*

ScottishPower shall adopt measures to ensure that all employees (and others) working at its sites are protected from the risk of hearing damage arising from exposure to noise, from ScottishPower plant, machinery or equipment, including equipment used for maintenance practices whether operated by ScottishPower or its contractors.

In determining the extent of design criteria required to reduce noise levels, an initial assessment will be undertaken to determine whether or not personnel will be in sufficient proximity to plant (or equipment) capable of generating significant noise, ie above the UEAV and the likely effectiveness of such criteria.

When selecting a new, additional or replacement item of plant, the implications for the overall noise level **at its point of installation** and **the limit imposed by any local site regulation/planning consent** must be taken into account.

## 9. PROCESS/PROCEDURE

### Selection of Plant and Equipment

The selection of new items of plant or equipment must involve compliance with the Control of Noise at Work Regulations 2005 in accordance with (among others) regulation 5 *Assessment of the Risk to Health and Safety created by exposure to noise at the workplace* and regulation 6 *Elimination or Control of exposure to noise at the workplace*.

The need to control noise through engineering means should not impede the performance and/or reliability of proposed new plant. Manufacturers are legally required to ensure that machinery is designed and constructed to reduce risks from noise to the lowest level practicable, using the best

available technology. Where this will still create an unacceptable level of noise, additional control measures (not including the provision of hearing protection) must be considered, eg a review of the location noise transmission path, etc. The provision of hearing protection **must** be a last resort or interim measure only.

To disregard the application of noise reduction measures through cost alone is not acceptable. However, the most important factor in any design is the resulting individual **daily noise dose, Lep,d**. Should the envisaged exposure to the plant be for only a few minutes per week, the need for expensive engineering controls can be questioned and control through other measures could be discussed and implemented. Equally, regular exposure for a prolonged period of time per day may require a more imaginative approach to be taken to control noise exposure:

- Work in a different way
- Modification of machine/process to reduce noise emission
- Positive purchasing of low noise tools and equipment
- Transmission path
- Administrative controls

Any discussions/findings from trials should be recorded as part of the decision making process.

### **Design Considerations**

Where practicable, the following noise-related design options for equipment should be considered when replacing or installing new plant including:

- Mounting equipment on resilient supports to reduce the transmission and possible amplification of noise through the structure to which it is attached.
- Selecting gearboxes incorporating skew-cut or helical instead of straight-cut gears.
- Utilising belt drives instead of gear drives.
- Utilising V-belt drives instead of toothed-belt drives.
- Selecting cooling fans with low noise profile blades.
- Selecting screw compressors and pumps instead of reciprocating types.
- Selecting air tools with effective exhaust silencing arrangements.

ScottishPower engineers should work closely with manufacturers and suppliers to ensure that the most effective forms of reduction are achieved. This is particularly important for all new construction projects where the full benefits of noise reduction can be built in at the design stage, saving expensive retrospective amendments.

Where new equipment is being installed in and around existing plant it must not generate noise levels in excess of the pre-existing levels.

### **Noise Isolation**

In a number of applications (operating at the current time) retrospective alterations to the design of the plant is deemed unlikely to offer significant noise reduction, for example, steam turbines (and associated pipework) and alternators, large pumps (and associated motors). Therefore, until technology provides a suitable alternative, current control measures, including the use of hearing protection, will remain. Despite this, when replacement parts are required the manufacturers should be asked to provide a low noise alternative that utilises changes in technology where possible.

In the meantime, where noise surveys have been conducted and provided practical recommendations for the retrofitting of a low noise emission cowling and/or enclosures, then a feasibility study should be undertaken into its overall suitability for purpose. However, it must be recognised that enclosures may:

- Lead to overheating of enclosed plant, particularly under seasonal high ambient temperatures.
- Hide the emergence of steam leaks which, if left to develop unobserved, could eventually present a danger.
- Hide the emergence of oil leaks which could eventually cause fire.
- Dependent on materials of construction, introduce flammable structures to areas with the potential to ignite them.
- Hinder access and/or create more dangerous conditions for assessment and dealing with leakages and fire, particularly where artificial lighting is required for the interior.

### **Additional Considerations**

It will be an additional requirement to ensure that all those involved in design are given training in completing detailed hearing protection assessments against a review of available hearing protection. At this time, it is deemed necessary for all hearing protection to have a minimum SNR of 30.

This document acknowledges the changing legislation with regard to the engineering out of high noise levels. It will be reviewed every three years to allow for any revisions in legislation and advances in technology to be taken into consideration.

## 10. UNCONTROLLED DOCUMENTATION

Printed documents are uncontrolled. The latest version can be accessed through the employee portal.