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## 1 Purpose

- 1.1 This Standard is one of four Standards which together define the requirements for the design, construction, acceptance, use and maintenance of portable and transportable plant intended for use on the LU Infrastructure.
- 1.2 The range of plant covered by the four Standards is sub-divided into groups with similar attributes and requirements. Details of the groups and definitions used for the various categories of plant, collectively referred to as 'Plant', are shown in Attachment 1 of LU Standard S1171.
- 1.3 The purpose of this standard is to define the engineering requirements for Non-Railborne Plant designed or adapted for railway use and also for other Non-Railborne Plant intended for use in locations or circumstances where particular risks must be managed and the requirement for verification of conformity with these engineering requirements.
- 1.4 The requirements for the Acceptance, Use and Maintenance of all Plant including Non-Railborne Plant are set out in LU Standard S1171.
- 1.5 The engineering requirements and the requirements for the verification of conformity for Railborne Plant are set out in LU Standards S1172 for On-Track Machines and in S1173 for On-Track Plant.
- 1.6 The requirements set out in this Standard are intended to control the risks associated with the engineering aspects of Non-Railborne Plant. The risks to be controlled are those which have the potential to affect safety, the train service, the environment and the Company's business, finances and reputation.
- 1.7 This standard replaces standard S1174 issue A1.

## 2 Scope

### 2.1 Types of Plant

- 2.1.1 The scope of this Standard covers all portable and transportable Non-Railborne Plant including Attachments and Inspection and Measuring Equipment **but excluding**:-

- a) any static equipment which forms part of the fixed infrastructure or railway support facilities such as fixed depot plant.
- b) Basic hand tools that have not been designed or adapted for use on a railway.

GN001 - Examples of basic hand tools are spanners, hammers, and shovels. Although these tools are outside of the scope of this standard they must still be fit for purpose and used in accordance with the manufacturer's instructions and the Company's Management System.

Inspection and Measuring Equipment may be self contained, or may require to be used in conjunction with another item of Plant such as a Track Trolley or may form an integral part of another item of Plant, for example the LU Asset Inspection Train.

### 2.1.2 The types of Non-Railborne Plant covered by this Standard are:-

- Plant with no drive mechanisms
- Plant with manually driven mechanisms
- Plant with power driven mechanisms

GN002 - Examples of the various types of Non-Railborne Plant are as follows:-

- *Non-Railborne Plant with no drive mechanisms:-*  
Hand tools such as specialised spanners and measuring gauges.
- *Non-Railborne Plant incorporating manually driven mechanisms:-*  
Rail tensors and jacks
- *Non-Railborne Plant incorporation power driven mechanisms:-*  
Disc cutters and mobile generators
- Plant incorporating mechanisms that are designed to be power driven is defined as 'Machinery' (see Section 11.3 definitions).

2.1.3 This standard applies to all Non-Railborne Plant that has been designed or adapted specifically for use in a railway environment and also to certain aspects of Non-Railborne Plant that has not been designed or adapted specifically for use in a railway environment where the design of these aspects assumes an additional safety relevance when used in a railway environment.

2.1.4 The requirements defined in this Standard are separated into those applicable to particular types of Non-Railborne Plant and those applicable to Non-Railborne Plant that performs a specific function or is intended for use in a defined environment.

GN003 - In order to protect LU interests it is necessary for the LU Plant Standards to be mandated on all Plant brought onto the LU Infrastructure and having the potential to introduce risk to LU train services, staff, customers or Operational Assets.

An example would be where a road crane working on third party construction activity is to be sited on LU premises where it could foul clearances required for the safe running of trains.

## 2.2 Engineering Requirements

2.2.1 The scope of the engineering requirements for Non-Railborne Plant covered by this standard includes, design, construction and operating/maintenance instructions.

2.2.2 The scope of this standard does not include the requirements for the performance of the working function of Non-Railborne Plant in terms of output rate or quality. The expectation is that these requirements will be set out in the Technical Requirements Specifications used for the acquisition of the Plant.

## 2.3 Area of Application

2.3.1 The requirements in this standard apply to all of the LU Infrastructure as defined in Section 11.3 of this standard but **excluding** the interior of enclosed Premises that are not accessible to the Company's customers and to fully enclosed worksites and construction sites that are located away from the track and separated from The Track by a physical barrier which is clear of the Structure Profile and sufficiently extensive and robust to prevent Plant interfering with the safe operation of the railway.

### 3 Compliance with International, European and UK Railway Industry Standards

- 3.1 Where possible this Standard has been based on UK national standards for Non-Railborne machinery, tools and equipment and alternative or additional requirements only specified where these are either absent from the national standards or necessary as a result of the special operating arrangements, infrastructure and environment of the LU Railway.

GN004 - Many of the requirements set out in this Standard are based on RIS-1701-PLT 'Rail Industry Standard for Portable and Transportable Plant Used for Infrastructure Work.

- 3.2 Where compliance is required with other London Underground, National, European or International Standards or Guidance Documents the relevant document and specific requirement will be quoted or referenced in this Standard.
- 3.3 The references to other Standards and related Guidance Documents made in this Standard will normally be restricted to the primary document although compliance is required with all secondary documents referenced by the Primary document unless non-compliance is instructed or formally agreed by LU.
- 3.4 Where no specific issue or version is quoted for the Standards and Guidance Documents referenced in this Standard, the latest authorised version of each referenced Standard or Guidance Document must be used.
- 3.5 The primary Standards and Guidance Documents referenced in this Standard are listed in Section 11.1.
- 3.6 Where compliance with BS EN ISO 12100:2010 'Safety of Machinery – General Principles for Design – Risk Assessment and Risk Reduction' is specified this requirement extends to the full scope of the Plant covered by this Standard notwithstanding whether or not the Plant concerned meets the definition of 'Machinery'.

### 4 Classification & Terminology

- 4.1 This Standard uses classifications, terms and definitions for the various types of Non-Railborne Plant which are, as far as possible, based on UK National and European Standards.
- 4.2 The principal characteristic of all Non-Railborne Plant is that it is either not fitted with rail wheels or rollers or that it is fitted with rail wheels or rollers that are configured to support and guide the Plant from one rail only.
- 4.3 Non-Railborne Plant may be carried by Railborne Plant and it may draw power from them but, by definition, in order to be classified as Non-Railborne, the Plant cannot be attached to a Railborne Plant, by a means which requires qualified fitters to attach or remove it from its working position.

### 5 Acceptance

- 5.1 The requirements for the Acceptance of all Plant intended for use on the LU Infrastructure including Non-Railborne Plant are set out in LU Standard S1171.
- 5.2 The requirements for the verification of the conformity of Non-Railborne Plant with the requirements of this standard are included as Section 10 of this Standard.

## 6 Design Requirements – General

- 6.1 All Non-Railborne Plant that is designed or adapted specifically for use in a railway environment shall comply with the applicable design requirements set out in Section 7 of this standard and the *relevant* applicable design requirements set out in Section 8. The relevance of each requirement in section 8 is dependant on the nature of the design, any specific features, and the operation of the Non-Railborne Plant).

GN005 - The Lead Assessor/Reviewer will determine which design requirements are applicable to specific items of Plant when developing the acceptance plan.

- 6.2 For Non-Railborne Plant which **has not** been designed or adapted specifically for use in a railway environment, Section 9 of this standard should be applied to determine the extent to which it is required to comply with the design requirements defined in Sections 7 and 8.

GN006- Examples of non-railway specific designs include Plant such as road mobile cranes, dumper trucks and generator sets that have been designed for use in construction or manufacturing industries

- 6.3 Where Non-Railborne Plant is designed or adapted specifically for use on the LU Infrastructure the design shall minimise the risks that may arise as a result of the particular hazards present in the LU railway environment. Details of the LU specific hazards are shown in Attachment 2.

## 7 Design Requirements - Common requirements for Non-Railborne Plant specifically designed or adapted for railway use

### 7.1 Identification

- 7.1.1 Non-Railborne Plant shall, where appropriate, carry identification markings in accordance with BS EN ISO 12100:2010.

GN007 - The LU specific requirements for the marking of individual items of Non-Railborne Plant for the purpose of identification and the display of owner name and contact details are included in LU Standard S1171 – All Plant - Acceptance, Use and Maintenance.

GN008 - The marking of Non-Railborne Plant for identification and traceability of ownership may be done by LU or may be specified as a requirement for the manufacturer/supplier to undertake prior to delivery of the Plant to LU.

- 7.1.2 Where Non-Railborne Plant is required to display signage which denotes that it is owned by London Underground, the design of the signage shall comply with the LU Corporate Identity as defined in LU Standard 1-282.

## 7.2 Safety Information Displayed on Plant

- 7.2.1 Information required for the safe use and maintenance of Non-Railborne Plant shall, wherever possible be permanently displayed on the Plant in accordance with the requirements of BS EN ISO 12100:2010.
- 7.2.2 Where it is necessary to restrict the permitted use of Non-Railborne Plant the Plant shall, where practicable, be clearly labelled to inform users of the restrictions.

GN009 - Any requirement to restrict the use of Non-Railborne Plant should be identified during the hazard review/risk assessment undertaken when preparing evidence to support the application for Plant Acceptance.

A typical example of a restriction of use is the prohibition of use on or near the track during Traffic Hours

## 7.3 Tolerance of Environmental Conditions

- 7.3.1 The design of Non-Railborne Plant shall be suitable for the working environments associated with its intended use.

GN010 - Attachment 3 provides information regarding the typical environmental conditions which Non-Railborne Plant is likely to be exposed to when deployed on the LU Network.

- 7.3.2 The IP rating for electrical equipment installed on Non-Railborne Plant shall be determined as specified in paragraph 8.11.5.2.

## 7.4 Prevention of damage to infrastructure or people

### 7.4.1 General

- 7.4.1.1 Non-Railborne Plant shall be designed in accordance with the safety principles set out in BS EN ISO 12100:2010 and must be fit for its intended purpose.
- 7.4.1.2 The design of Non-Railborne Plant must ensure that LU is not exposed to unacceptable risk under any of the following circumstances:-
- Normal use.
  - Reasonably foreseeable misuse.
  - The use of degraded or poorly adjusted Plant.
  - Failure of the Plant.

### 7.4.2 Avoidance of Thermal Hazards

- 7.4.2.1 To avoid burns on any touchable parts of Non-Railborne Plant likely to reach a temperature higher than the limits as specified in EN ISO 13732-1, the following shall apply:
- either such parts shall be insulated or:-
  - access prevented by distance guards in accordance with EN ISO 13857 to avoid the touching of these parts of the Plant, or:-

- touching of these parts of the Plant shall be avoided with enclosing guards, e.g. perforated metal sheet in front of an exhaust, in accordance with EN 953 and EN ISO 13857

7.4.2.2 Where the above three options are not possible or not sufficient, warning signs in accordance with EN 61310-1 shall be provided close to the danger zone.

### **7.4.3 Avoidance of Exposure to Dangerous Parts**

7.4.3.1 The design of Non-Railborne Plant shall where possible avoid the creation of moving parts that could cause injury.

7.4.3.2 Where it is not possible to eliminate risk from the exposure of staff to moving parts or energy sources through design, the use of suitable guarding shall be considered using the risk based approach defined in ISO 12100:2010 and the guidance provided in PD 5304:2005.

7.4.3.3 Where guarding is fitted to Non-Railborne Plant it shall be designed to comply with BS EN 953 (general) and EN ISO 3457 (earth moving machinery).

7.4.3.4 Guards or casing providing the function of a guard shall be removable only with the use of a tool. Whenever possible fixed guards, or casing providing the function of a fixed guard, shall be incapable of remaining in place without their fixings. Fixed guards shall, when their removal is necessary for routine maintenance, be retained by fixings that are retained in the guard or Plant when the guard is removed.

7.4.3.5 The requirement to use guards fitted to Non-Railborne Plant and the procedure for their use must be included in the Instruction Handbook for the Plant (see Section 7.18.3.2 of this Standard).

### **7.5 Resistance to Tampering**

7.5.1 The design of Non-Railborne Plant shall, as far as is practicable, minimise the risk associated with tampering by unauthorised persons. In order of preference this should be achieved by:-

- reducing the probability of tampering
- minimising the consequence of tampering
- improving the detectability of tampering

## 7.6 Ease of operation

- 7.6.1 The design of Non-Railborne Plant shall minimise the level of skill and physical effort required for its safe and efficient use. All functions and controls shall be designed to operate in a logical manner and any incorrect use which may create a safety risk shall, as far as practicable, be prevented by the design of the Plant.

## 7.7 Ease of inspection/maintenance

- 7.7.1 Non-Railborne Plant shall be designed to minimise the requirement for inspection and maintenance and to enable inspection and maintenance to be undertaken easily and safely avoiding, as far as possible, the need to remove parts in order to gain access to perform these activities.
- 7.7.2 Non-Railborne Plant incorporating or using energy sources shall be provided with an effective means of disconnecting or isolating the energy source and neutralising any residual energy in order to permit inspection, adjustment and repair to be undertaken safely.
- 7.7.3 Components of Plant requiring periodic adjustment or replacement shall be designed to minimise the time, skill and equipment required to undertake the adjustment or component change.
- 7.7.4 As far as possible the design of the Plant shall provide clear indication to the Operator/Maintainer of the need for adjustment or component change and shall prevent the incorrect fitment or adjustment of the components.

## 7.8 Handling & transportation

### 7.8.1 Manual handling

- 7.8.1.1 Non-Railborne Plant shall be designed to comply with the requirements of BS ISO 11228-1:2003, BS EN 614-1 and BS EN 614-2, enabling safe handling during transportation and use.
- 7.8.1.2 The weight and weight distribution of the Plant must be such as to ensure that the load that any individual is required to lift remains within the statutory limits.
- 7.8.1.3 For Non-Railborne Plant that is intended for use in tube tunnels, the design of the handling facilities shall, as far as is practicable, make allowance for the limited space and the need to transfer Plant between track level and platform and to transport Plant through stations, from below ground to surface level.

GN011 - In order to maintain the lifting loads for individuals within acceptable limits it may be necessary for the Plant to be designed so that it can be readily dismantled into parts for safe handling.

### 7.8.2 Transportation by Rail Vehicle

- 7.8.2.1 Where Non-Railborne Plant is required to be transported on rail vehicles it must be provided with a suitable means of securing it from unintentional movement during transit. The securing system must be capable of withstanding the following accelerations relative to the direction of travel, without damage:-
- Longitudinal      5g
  - Lateral             1g
  - Vertical             2g

- 7.8.2.2 The design of Non-Railborne Plant which is intended to be transported on rail vehicles must enable the Plant to be positioned and secured so that no parts of the Plant infringe the relevant Load Gauge, as defined in LU Standard S1156, for the parts of the Railway over which the Plant is intended to be transported.

### **7.8.3 Site assembly**

- 7.8.3.1 Where Non-Railborne Plant requires setting up and packing away on site the design of the Plant shall ensure that this can be done safely in all of the LU working environments where the Plant is intended to operate and under all climatic/ambient conditions associated with these locations (see Attachment 1).
- 7.8.3.2 The time required for setting up and packing away of Non-Railborne Plant on site shall be kept to a minimum.
- 7.8.3.3 Setting up and packing away on site shall, as far as practicable, be achievable without the need to use loose tools and equipment.
- 7.8.3.4 The correct deployment and stowage of working equipment which is set up and packed away on site shall be readily evident by visual inspection.

### **7.9 Compatibility**

- 7.9.1 The design of Non-Railborne Plant shall, as far as is practicable, incorporate components that are compatible with those already in use by LU in order to enable safe inter-connection and inter-changeability of equipment, reduce the holding of spare parts and simplify training of operators and maintainers.
- 7.9.2 The design of Non-Railborne Plant shall minimise the risk of the use of incorrect or inappropriate inter-connections or interchanges leading to an unsafe condition.

### **7.10 Warning Equipment**

- 7.10.1 Warning devices incorporated in Non-Railborne Plant shall comply with the requirements of BS EN ISO 12100:2010 Section 6.4.3.
- 7.10.2 With the exception of Plant that is solely powered by battery, warning devices installed on Plant shall not rely on a battery for their operation other than as a back-up following failure of the normal source of power.
- 7.10.3 The design of Non-Railborne Plant shall ensure that the failure of any integral warning device shall be clearly evident to the user and shall not result in the user or others in the vicinity of the Plant being exposed to unacceptable risk.

### **7.11 Emergency recovery**

- 7.11.1 Non-Railborne Plant shall be designed to enable its safe and speedy removal from the Railway in the event of failure.
- 7.11.2 Where emergency recovery equipment or devices are provided with the Plant they must be safe and reliable in use notwithstanding their infrequent deployment and the challenging circumstances under which they may be required to operate.
- 7.11.3 Requirements for the quick release of trapped cutting tools are set out in Paragraph 8.6.

GN012 - Given the importance that LU attaches to the timely recovery of train services, emergency recovery systems should be designed with a level of redundancy that provides a high level of confidence that at least one means of recovery will be available at all times.

## 7.12 Protection from the risks of fire

### 7.12.1 General risk assessment

7.12.1.1 The manufacturer shall make an assessment of the fire-related hazards of the Non-Railborne Plant in accordance with Clause 5 of BS EN 13478:2001 + A1:2008.

7.12.1.2 The risk assessments shall adopt the principles set out in LU Standard S1521, Safety Decision Making.

GN013 - Typical sources of ignition present in some Non-Railborne Plant include:-

- Commutator brushes in electric motors
- Electrical switches and circuit breakers
- Batteries
- Internal combustion engines
- Cutting devices including abrasive wheels and discs, drills and saws

### 7.12.2 Fire Prevention

#### 7.12.2.1 Material requirements

7.12.2.1.1 Non-Railborne Plant intended for use or storage in Enclosed Locations during Traffic Hours shall be constructed from materials which comply with LU Standard 1-085 Fire Safety and Performance of Materials in order to reduce the risk of fire and the generation of toxic fumes

GN014 - The design of Non-Railborne Plant **not** intended for use or storage in Enclosed Locations during Traffic Hours should, as far as possible, incorporate materials that will minimise the risk and consequence of fire.

#### 7.12.2.2 Installation requirements

7.12.2.2.1 The positioning of hydraulic components and fluid reservoirs and the routing of hydraulic pipes and hoses shall as far as possible minimise the risk of leaking fluids and in particular atomised sprays, coming into contact with potential sources of ignition such as the hot zones of internal combustion engines.

7.12.2.2.2 Where necessary fire-resisting, impenetrable protective barriers shall be used to provide the required level of separation.

7.12.2.2.3 Fire resistant barriers used to separate combustible fluids and gases from sources of heat shall be rated to remain effective for a pre-determined time which must be agreed with LU.

GN015 - Where possible the requirement for fire resistant barriers should be avoided by appropriate design and material selection.

### 7.12.3 Fire fighting equipment

#### 7.12.3.1 General

7.12.3.1.1 Where risk assessment identifies a significant risk of fire which cannot be eliminated or reduced sufficiently through design, the manufacturer shall provide suitable extinguishing equipment on the Plant to satisfactorily extinguish all anticipated classes of fire as specified in BS EN2.

#### 7.12.3.2 Portable Extinguishers

7.12.3.2.1 Where risk assessment identifies the requirement for Non-Railborne Plant to be fitted with portable fire extinguishers the following requirements shall apply:-

- An adequate number of suitable fire extinguishers of the appropriate type and size shall be fitted in the most suitable locations.
- Where the use of portable fire extinguishing equipment is restricted for safety reasons, the restrictions shall be displayed clearly on or adjacent to the equipment concerned.
- Portable AFFF extinguishers shall be marked to show the ambient temperature range within which the extinguisher remains fully functional.

#### 7.12.3.3 Detection and Suppression Systems

7.12.3.3.1 Where risk assessment identifies the need for Non-Railborne Plant to be fitted with fire detection and suppression systems, the systems shall be designed to meet the following requirements:-

- The design and installation of the fire detection and suppression equipment must reduce the residual risks to a level that is tolerable and ALARP.
- The extinguishants used shall be suitable for the environment in which they may be released.

GN016 - Where Non-Railborne Plant fitted with fire detection and suppression equipment will be used in tunnels or other enclosed locations consideration should be given to the limited space and poor ventilation within this environment.

- The warning systems provided with fire equipment shall be suitable for the specific environments in which they are required to operate.
- Audible warning devices shall comply with BS EN ISO 7731.
- The fire systems provided to control the risk from internal combustion engines shall comply with BS ISO 6826.
- Heat sensors and flame detectors shall be installed in engine compartments and other enclosures where the risk of fire exists. Such devices shall be configured to:-
  - Initiate engine shut down and the automatic discharge of fire extinguishant on fully automatic systems plus activate visual or audible warnings or both, to announce the status of the system.

- Activate circuits that permit the remote discharge of extinguishant in the event that operators activate emergency shut down procedures on semi-automatic systems and activate visual and audible warnings to announce the status of the system
- Activate audible and visual warnings of the presence of fire in manual systems.
- The suppression system shall be effective under all operating and travelling conditions relevant to the Plant concerned.
- Where activation of the fire warning or suppression system automatically disables self propelled mobile Plant, provision shall be made for the controlled over-ride this function thereby enabling the Plant to be moved to a position of safety.

### 7.13 Storage – Design Requirements

7.13.1 Non-Railborne Plant shall be provided with a suitable means of securing it when not in use and particularly if it is to be stored on site. Where the Plant is dismantled for handling or storage, the securing facility provided must allow each part of the Plant to be secured against unintentional movement.

7.13.2 Where Non-Railborne Plant is intended to be stored in the tunnel sections of the LU Network, the securing facility must prevent movement from vibration or from air turbulence caused by passing trains.

GN017 - When trains are running air velocities within tunnels and cross passages can be very high and easily capable of moving poorly secured materials and equipment.

7.13.3 Where Non-Railborne Plant is intended to be stored on the Open Sections of the LU Network, the securing facility must minimise the risk of removal or movement by unauthorised persons.

### 7.14 Colour and Visibility

7.14.1 The use of colours and, where appropriate retro-reflective surfaces, shall be employed to improve awareness of the presence of Non-Railborne Plant. Colours shall also be used to assist users in the identification of critical components and controls.

7.14.2 Non-Railborne Plant shall be predominantly yellow in colour where:-

- It needs to be readily seen by personnel working with or near the Plant, or by the drivers/operators of trains or other Plant.
- It has the potential to be accidentally left on the track where it could be a hazard to trains or personnel.

7.14.3 The shade of yellow shall be as specified in any of the following paint colours:-

- RAL 1003, RAL 1004, RAL 1018, RAL 1021 or RAL 1023 from the RAL Classic Colour Collection.
- NCS (Natural Colour System) target value 1080Y 10R or 1475-Y 11R
- BS 4800 Item 08E51
- EC 222.69.79 in the Eurocolour table

- 7.14.4 In addition to the use of yellow to improve the visibility of Non-Railborne Plant, the use of retro-reflective materials shall be considered where improved visibility of the Plant under poor lighting conditions may achieve a reduction in safety risk.
- 7.14.5 The use of colours for the identification of critical components and controls shall include the following:-
- White to BS 4800-00E 55 or equivalent
    - Lifting/carrying handles.
    - Access steps and hand rails.
    - Brake levers and handwheels.
    - Pneumatic system isolating cocks.
  - Red to BS 381C 537 or equivalent
    - Locking devices
    - Greasing points
    - Areas around earthing points
  - Orange to BS 4800-06E51 or equivalent
    - Crane hooks

## 7.15 Air Pollution

- 7.15.1 Non-Railborne Plant shall be designed so that it minimises the emission of gases, liquids, dust, vapour and any waste products which under any circumstances produce pollution.
- 7.15.2 Where emissions are unavoidable the Instruction Handbook for the Plant shall state that its use in Enclosed Locations shall only be permitted where appropriate risk assessment has been undertaken and a safe system of work prepared. (See also Section 8.13 of this Standard)

GN018 - Enclosed locations are defined as any locations that are substantially below ground or where the presence of structures or features of the local environment may reduce the level of natural ventilation to an extent that will enable noxious gases to accumulate or oxygen to be depleted sufficiently to render the local environment unsafe. Enclosed locations include Confined Spaces, as defined in UK Health and Safety legislation and all locations within the scope of LU Standard 1-085, Fire safety performance of materials.

Open locations are defined as locations at or above ground level, open to the atmosphere and free from containment or enclosure which limits the level of natural ventilation or creates depressions or other features where heavier-than-air gases may accumulate.

## 7.16 Noise Levels

- 7.16.1 Non-Railborne Plant shall be designed to minimise noise levels during use in order to limit the noise exposure of staff and the nuisance caused to neighbours.

GN019 - Where practicable the noise levels during use should be reduced to a point where it is unnecessary for those using the Plant or working in close proximity to the Plant to wear additional personal protective equipment (PPE)

- 7.16.2 For all Non-Railborne Plant which produces noise, manufacturers are required to state the actual noise pressure level and noise power level generated under all permitted conditions of use.
- 7.16.3 Compliance with legislation relating to noise shall be achieved by application of the guidance set out in RSSB Railway Group Standard GM/GN2460.

### **7.17 Vibration Levels**

- 7.17.1 Non-Railborne Plant shall be designed to minimise users' exposure to hand-arm and whole body vibration.
- 7.17.2 For all Non-Railborne Plant which produces vibration the manufacturer shall state the actual values of whole body vibration and hand-arm vibration under all permitted conditions of use, measured in  $\text{m/s}^2$  and giving the degree of uncertainty for these values.
- 7.17.3 Compliance with legislation relating to vibration shall be achieved by application of the guidance set out in RSSB Railway Group Standard GM/GN2460.

### **7.18 Information to be provided with Non-Railborne Plant**

#### **7.18.1 General**

- 7.18.1.1 The manufacturer of Non-Railborne Plant shall provide all of the information relating to its design, use and maintenance that is required to enable:-
- Formal acceptance by LU (see Section 10 of this Standard)
  - Safe use and maintenance of the Plant in the LU environment.
  - Optimisation of the Plant's performance and service life.
- 7.18.1.2 The information provided by the manufacturer of Non Railborne Plant shall meet the requirements of BS EN ISO 12100:2010 and shall be adapted or supplemented as necessary to reflect the use and maintenance of the Plant in a railway environment, also taking into account the particular characteristics of the LU railway set out in Attachments 1 and 2 of this Standard.
- 7.18.1.3 All information provided shall be written in the English language and technical information shall use European units of measure (SI System) and shall use established European conventions for the presentation of the data.

#### **7.18.2 Information Required for Acceptance**

- 7.18.2.1 The information provided to enable assessment of Non-Railborne Plant submitted for formal acceptance by LU must be sufficient to demonstrate:-
- Compliance with relevant legislation, including information to support any award of CE marking
  - Compliance with this and other referenced standards
  - Compliance with any LU Specified Requirements
- 7.18.2.2 All supporting information relevant to claims of compliance including calculations, assumptions, uncertainties etc shall be made available for review upon request from LU.

#### **7.18.3 Information Required for Use and Maintenance**

- 7.18.3.1 The information provided on the use and maintenance of Non-Railborne Plant shall be presented in the form of Instruction Handbook(s) the content of which