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Level 2

Design and Installation Requirements for Public Announcement, Voice Alarm and Long Line Public Announcement Systems

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Network Rail

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Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 05 Dec 2009.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 4 to continue to comply with the Issue of any relevant Network Rail Standards current when GRIP Stage 4 was reached and not to comply with requirements contained herein, unless the designated Standard Owner has stipulated otherwise in the accompanying Briefing Note.

Reference documentation

NR/L2/AMG/029	Product Introduction & Change
NR/L2/TEL/30025	Standby Power Supply Requirements for Operational Telecommunications Equipment
TD GEN096	Telecoms Requirements for General and Emergency Use at Sub Surface Stations
BS EN60529:1992	Specification for degrees of protection provided by enclosures (IP code)
BS 5839-1:2002 + A2:2008	Fire detection and fire alarm systems for buildings. Code of practice for system design, installation, commissioning and maintenance
BS 5839-8:2008	Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning and maintenance of voice alarm systems
EN54-4	Fire detection and fire alarm systems. Power supply equipment
EN60849	Sound systems for emergency purposes
GI/RT7016	Interface between Station Platforms, Track and Trains
DDA	Disability Discrimination Act 1995
DfT Code of Practice	Accessible Train and Station Design for Disabled People : A Code of Practice, July 2008
BS EN50159-2	Railway Applications, Safety related communications in open transmission systems

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Contents

1 Purpose

This standard details the technical design and installation requirements for public announcement (PA), voice alarm (VA) and long line public announcement systems (LLPA) on Network Rail infrastructure.

2 Scope

This standard applies to all new PA, VA & LLPA designs and installations carried out either as a like for like renewal or as part of an enhancement project on Network Rail Infrastructure. This standard does not detail the type of station that requires a PA, VA or LLPA system or when these systems are required.

This standard applies only to new works installations and does not apply to activities undertaken as a result of maintenance.

This standard does not cover the health and safety requirements for the carrying out of the installation and reference shall be made to the appropriate standards in this respect.

This standard does not cover the CDM requirements for the design of PA, VA and LLPA systems.

3 Definitions

AFFL
Above Finished Floor Level

CIS
Customer Information System

CIF
Common Interface File

CDM
Construction (Design and Management) Regulations 2007

GRIP
Guidance to Railway Investment Projects - process used in Network Rail to manage the development and delivery of infrastructure projects

LLPA System
Long Line Public Address System

IP
Internet Protocol

NTP
Network Terminating Point

OLE
Overhead Line Equipment

PA System
Public Address System

Project Manager (PM)
Person appointed by Network Rail who is responsible for the overall project management and co-ordination of all project activities on behalf of Network Rail for a specific project

Project Manager's Remit
A formal contract from the Sponsor describing the objectives for each project stage and detailing services to be provided by the Project Manager

SFO
Station Facility Operator

Sponsor
A Network Rail person who acts as the single point of contact between the Client as defined in GRIP and the Project Manager (or Development Manager)

SPL
Sound Pressure Level

STI
Speech Transmission Index

STI-PA
Speech Transmission Index for Public Announcement Systems

TOC
Train Operating Company

VA System
Voice Alarm System

WAN
Wide Area Network

ZHLS
Zero Halogen Low Smoke

4 Sponsor Activities

Dependent on the types of stations where the PA, VA or LLPA systems will be installed, the Sponsor shall undertake a review to determine a number of options with the aim of delivering an appropriate system solution. The options are referenced to the Sponsor within the body of this standard.

The options shall to be considered by the Sponsor during both option development and detailed design development stages for the scheme.

Note, the options are summarised in Appendix A, Table A.1. Some of these options will be dependent on the level of funding available to the Sponsor for the renewal or enhancement.

5 Pre-Design Requirements

5.1 Designer Activities

The designer shall carry out the following surveys prior to the detailed design:

a) Site Survey

b) Current System Survey

c) Acoustic Survey (Where specified as required by the Sponsor)

5.1.1 Site Survey

Site surveys shall be undertaken and their scope shall be agreed between the Sponsor and PM from the following list (but not limited to):

1. Power Requirements
2. Current Power Supply Output Power Capacity
3. Accommodation
4. Cable Routes
5. Microphone Locations
6. Train Stops/Type of trains
7. Passenger Flow
8. Access/egress
9. Line Speed
10. Structures
11. External Neighbours and possible noise pollution
12. Vandalism and security
13. Physical Environment
14. Space and Power during implementation
15. Dilapidation
16. Transmission availability (where applicable)
17. Line plant availability and suitability (where applicable)
18. Listed Buildings
19. Asbestos
20. Maintainability
21. Interface to other systems
22. Confirm external clock signal
23. Identify Service Provider presence

24. DDA & DfT Code of Practice Requirements
25. Coverage Requirements
26. Likelihood of interference in proposed induction loop areas
27. Retail Outlet Considerations
28. Fire Alarm
29. Ergonomics
    a) Assessment of operators change in role
    b) Assessment of impact on passengers
30. Assessment of any simultaneous announcement requirements

5.1.2 Current System Survey

Where the PA design is changing or replacing a current system and in addition to any information requested in section 4.2.1, site surveys of current systems shall be undertaken and their scope shall be agreed between the Sponsor and PM from the following list (but not limited to):

31. Control Equipment Location
32. Loud Speaker Locations and confirmation if in suitable position
33. Amplifier Output Power Capacity
34. Existing Infrastructure Condition and Capacity
35. Dilapidation
36. Changeover strategy
37. Existing System Functionality
38. Current Zoning Arrangements
39. Interface to other systems
40. Current Estimated System Coverage
41. Interfaces to other CIS Systems
42. Current Induction Loop Coverage and Condition
    - To include an assessment of any external interference that is impacting upon the use of the induction loops including OLE
43. Components to be recovered
44. Any proposed changes to the current coverage/zoning arrangements
45. SPL readings
46. Location of any existing ambient noise sensors

5.1.3 Acoustic Survey

An acoustic survey is required at locations with recognised acoustic difficulties and any requirement to carry out an acoustic survey shall be detailed in the Project Manager's Remit or Telecoms Requirements Specification by the Sponsor.

5.1.3.1

Where an acoustic survey has been requested by the Sponsor, PM shall advise what areas of the site shall be reviewed as a part of the acoustic survey which shall as a minimum contain the following information:

1. Current Sound Pressure Levels
2. Ambient Background readings

3. Reverberation times in the following areas as a minimum:
   a) Booking Office
   b) Any fully covered areas
   c) Areas with identified problems

5.1.3.2

Acoustic surveys shall be undertaken to enable the system design meet minimum STI requirements for Voice Alarm applications.

5.1.4 Acoustic Modelling

The Sponsor shall specify within the Project Manager's Remit or Telecoms Requirements Specification if any acoustic modelling of the station public address design is required.

6 Design Requirements

6.1 Product Acceptance

Except for speakers, all PA, VA and LLPA systems shall have Network Rail product approval as detailed in the standard NR/L2/AMG/029 – Product Introduction & Change.

Only speakers installed on a sub-surface station (as defined in TD GEN096) or speaker solutions which require the attached surface to vibrate to produce sound, shall require Network Rail product approval.

6.2 Zoning

The zoning arrangements for each station shall be agreed with all stakeholders as specified by the Sponsor during the design process. Stakeholders shall as a minimum consist of the SFO that manages the station.

Where the system is being designed as a Voice Alarm system, the Network Rail Fire Engineer shall also be consulted.

6.2.1

As specified by the Sponsor, the system shall have the facility to broadcast to an individual zone or to broadcast to all zones simultaneously.

6.3 Announcements

6.3.1

Where specified as required by the Sponsor, the system shall be capable of utilising automatic, recorded announcements driven by the appropriate CIS Control System.

6.3.2

Where specified as required by the Sponsor, the system shall be able to integrate with real time information systems or train detector systems for initiating automated announcements.

6.3.3

Where specified as required by the Sponsor, the system shall be capable of allowing the user to manually select recorded announcements.

The Sponsor shall also specify the minimum and maximum number of messages to be stored together with typical message length durations.

6.3.4

Where specified as required by the Sponsor, the system shall allow the user to manually record new automated messages and update recorded announcements using the operator's panel.

6.3.5

Where specified as required by the Sponsor, the system shall allow the transmission of live messages using the operator's microphone where one is provided.

6.4 Induction Loops

6.4.1

Where a requirement for an induction loop has been identified from stakeholders, a feasibility study shall be carried out to determine the acceptability of the location and types of suitable induction loops.

6.4.2

Customer induction loops shall be installed in areas agreed between the Sponsor, PM and SFO.

6.4.3

When determining the requirements for, and the location of induction loops, consideration of any OLE and other sources of interference together with the impact they may have on the intelligibility and functionality of the induction loops, shall be considered.

6.5 Ingress Ratings

All items of equipment shall have a degree of protection, afforded by their enclosure's IP rating, suitable for their installed environment as determined in accordance with the requirements of BS EN 60529:1992 and the following requirements:

6.5.1

Internal loudspeakers shall have a minimum ingress rating of IP43.

6.5.2

External loudspeakers and other externally mounted equipment shall have a minimum ingress rating of IP55.

6.5.3

Other than for speakers, all equipment ingress ratings shall be agreed by the system designer with the PM.

6.6

It shall be possible to add additional audio inputs at any time after the installation with the system having a minimum of two additional inputs along with sufficient control inputs.

6.7

Systems providing automatic timed announcements shall be capable of accepting an external time reference.

6.8

Clearly defined NTPs and demarcation points shall be agreed with all stakeholders during the design and indicated in the detailed design drawings.

6.9

Loudspeakers shall not be driven at more than 60% of their maximum allowable input rating unless otherwise agreed with the PM and Sponsor.

6.10 Amplifier Power Budget

The rated output of the power amplifier shall be at least 1.25 times the total power drawn by the connected loudspeakers unless otherwise agreed with the PM.

6.11

Network Rail infrastructure shall be the preferred choice of communications infrastructure; TOC WANS shall not be used unless otherwise agreed by the PM and Sponsor.

6.12 Station Change

Where station amenities or services can possibly be affected by the works falling within the scope of this standard the works are subject to the requirements of station change. The GRIP module ENH03 - enhancements manual provides guidance on station change.

6.13 Statutory Consent

All works on listed buildings will require statutory consent which shall be progressed through the local planning office.

6.14

The PA system design shall inhibit spurious inputs to the power amplifiers to prevent hum and noise pickup on the system.

6.15 Audio Outputs

6.15.1

A minimum 10% additional capacity shall be left for spare audio output; this may be increased at larger stations with the agreement of the PM and the Sponsor.

6.15.2

The system shall have the ability for alarms to be automatically presented at locations agreed between the Sponsor, end user and the maintainer. Options for alarm locations shall be presented to the Sponsor from the PM.

6.15.3

Where specified as required by the Sponsor, a test point or termination shall be provided at the output of the amplifier.

6.16 Systems Inputs

6.16.1

An audio compressor or similar system shall be used to limit the maximum input level into the amplifiers and hence to minimise (as far as is practicable within environmental constraints) the differences in input level into the amplifier from the microphone between different operators of the system.

6.16.2

Priority structure for the inputs across the whole station shall be defined and included in the detailed design.

6.16.3

All analogue inputs shall be capable of receiving a balanced signal and this shall be the preferred option.

6.17 Long Line Public Address

6.17.1

With LLPA systems it shall be possible to update remote stored speech, software and configuration files from the central control system.

6.17.2

It shall be possible for the control system to adjust the volume at LLPA remote stations for pre-selected users defined in the control system. The PM shall arrange for relevant passwords to be provided to the system administrators and to maintenance at commissioning.

6.17.3

It shall be possible for the user to select and make announcements to individual stations or a group of stations.

6.17.4

Where announcements are driven from a CIF timetable or a Real Time input, the timing of announcements to groups of stations shall be configurable by the user such that they are made at least 2 minutes before a corresponding train arrives at each station. A lower time shall be achievable at busy stations to avoid the possibility of another train arriving prior to that which has been announced.

6.17.5

LLPA local systems shall indicate to the operator that the remote system has audio output.

6.17.6

The LLPA designer shall fully understand the limitations of the transmission media which will connect the control end to the outstations and design the LLPA system to operate with optimum bandwidth efficiency across the transmission media.

6.17.7

Transmission media which may introduce significant audio latency and thus cause the public announcement to be inaccurate, shall be avoided.

The maximum duration to transfer a 20 second manually recorded announcement (MRA), from the point of saving it on the control system workstation to it being available to play on the target outstations, shall not exceed 3.5 seconds per outstation.

6.17.8

LLPA systems shall be designed to operate over Network Rail's Transmission Network, commercially available public telecoms services and TOC WAN systems. LLPA systems shall also be designed to operate over an open system as defined in BS EN50159-2.

6.17.9

The transmission system chosen as part of a LLPA system shall be sufficient to allow for the transmission of all required audio and signalling data at the busiest time of day (in terms of network traffic) at each location and this shall be verified by the designer with the emphasis on the audio quality and latency at peak data traffic throughput.

6.17.10

The system shall provide the following alarm facilities which shall be made available to the operators at the control end to interrogate the system:-

a) Failure of any interface.

b) Power failure.

c) Communications link failure to any of the stations.

d) Visual and audible display.

e) Audible alarm "deactivate" (silence following user acknowledgment).

f) Status of any remote station equipment.

7 Additional Design Requirements for Voice Alarm Systems

The designer shall ensure that the Voice Alarm System is designed to support the evacuation strategy for the location it is being installed in through consultation with the SFO, PM and the Network Rail Fire Engineer.

7.1

All Voice Alarm systems shall comply with the requirements of BS5839-8 and EN60849.

7.2

The Voice Alarm system shall have an interface to the fire alarm system and any other safety systems associated with the Voice Alarm evacuation functions including, but not limited to, connection to a fire microphone and automatic evacuation announcements.

7.3

The Voice Alarm shall include connections to any tenant's music systems which shall terminate upon operation of the Voice Alarm functionality.

7.4 Zoning Priority

Voice alarm systems shall have the following hierarchy when determining the priority of announcements:

a) Fire Microphone

b) Voice Alarm

c) Local Public Address

d) Long Line Public Address

e) Automated Train Announcements

7.5 Loudspeaker Circuits

Loudspeakers shall be installed in a minimum of two interleaved circuits per platform, with a separate amplifier or automatically isolatable feed used for each of the interleaved circuits, such that the failure of any one circuit shall leave loudspeakers on every other circuit operating.

7.6

The whole public address system shall be monitored for faults from each microphone through to the end of each loudspeaker line and an indication of a generic fault shall be given at each fixed microphone location.

7.7

The system shall, as a minimum, present the following alarms to the operator:

a) Power Failure

b) Amplifier Failure

c) System Link Failures

d) Remote station equipment status

e) Loudspeaker line monitoring

7.8

For installations on sub-surface stations (as defined in TD GEN096), the system shall have power back-up with minimum durations as specified within NR/L2/TEL/30025.

8 Acoustic Requirements

8.1 Sound Pressure Requirements

When designing the acoustic coverage due consideration shall be given to environmental requirements and regulations for noise pollution.

8.1.1 Loudspeaker Coverage

8.1.1.1

Loudspeakers shall be positioned so that the minimum required sound pressure levels (SPL) can be achieved in areas specified by the Sponsor. Areas that need to be considered include:-

a) Passenger Waiting Room

b) Ticket/Booking Hall

c) At platform waiting areas (defined as the ‘first passenger-used door at front of train’ to the ‘last passenger-used door at rear of train’ of the longest train stock used at the station)

d) Concourse area

8.1.1.2

Where the system is being installed as part of a Voice Alarm system, the loudspeaker coverage shall encompass all public areas within the station premises.

8.1.1.3

Where the system is being installed as part of a Voice Alarm system, approval shall be required from the Network Rail Fire Engineer to use sounders as alternative to loudspeakers for coverage of any non-public areas such as staff mess rooms or machine rooms.

8.1.2 Sound Pressure Levels

The system shall provide the required SPL at a height of 1.5m above finished floor level (AFFL).

8.1.3 Minimum Levels

The system shall provide a minimum SPL of 10dBA above normal ambient noise levels at all times within the range of 65dBA up to the maximum SPL level unless environmental noise pollution issues prevent this figure being achieved.

8.1.4 Ambient noise Sensing

Voice Alarm systems shall have ambient noise sensors for each zone which shall automatically alter the SPL in each individual zone to meet the minimum levels. The Sponsor shall specify whether this feature is required for any specific PA and LLPA installations.

8.1.5 Maximum Levels

The system shall not exceed an average SPL over 8 hours of 85dBA and a maximum SPL of 90dBA.

8.1.6 Un-social Hours

The system shall have a fully programmable function to automatically lower the SPL to a pre-determined level during un-social hours. Voice Alarm activation shall override this.

8.2 Frequency Range

The PA system shall have a frequency response of 200Hz to 6kHz with an maximum signal amplitude variance within this range of ±3dB.

8.3 Distortion

The acoustic harmonic distortion shall not exceed 5% at normal rated output power measured using a 500Hz test signal

8.4 Speech Intelligibility

The PA system shall have a minimum STI target of 0.5 in the areas specified in section 8.1.1 and 0.45 in acoustically difficult areas with due consideration given during the design to the reverberation time in all enclosed areas.

8.5 Speaker Equalisation

Suitable signal processing shall be provided such that the loudspeaker circuits can be equalised to the space that they serve and any delay necessary between near and far sound sources can be timed out.

9 Verifying the Acoustic Requirements

Speech intelligibility shall be verified using Speech Transmission Index for Public Announcement Systems (STI-PA) methodology using a speech type test signal to determine the speech intelligibility value.

9.1

STI-PA measurements shall be taken at 1.5m AFFL at positions halfway between loudspeakers; enough measurements shall be taken to allow a representative area of the zone under test to be evaluated. For any PA applications delivered through help point systems, measurements shall be taken at 5.0m distance from the help point along the platform.

10 Installation Requirements

10.1

Headroom requirements for all loudspeaker installations suspended from platform canopies and their relative distances from platform edge, shall comply with GI/RT7016.

Beyond the distances specified in GI/RT7016 for platforms canopies, the recommended minimum headroom for loudspeakers shall be 2.5m AFFL where this is reasonably practicable to achieve.

10.2

New fixtures and fixings shall be mounted by the use of brackets. The drilling of columns or listed buildings shall only be carried out to the extent permitted by the listed buildings consent.

10.3

10.3.1

Each loudspeaker or speaker cluster shall be provided with a local junction box to facilitate ease of testing and maintenance.

10.3.2

For speakers that form a part of a Voice Alarm system, tapping of the loudspeaker shall take place in the loudspeaker housing. Tapping of the loudspeaker shall **NOT** take place in the junction box.

10.4

Loudspeakers in booking offices or located immediately outside booking offices shall be fitted with a continuously variable volume control which is accessible to members of station staff and shall include the ability to completely turn off the loudspeaker.

It shall not be possible to turn off loudspeakers that form part of a VA system.

10.5

Consideration shall be made to the effect of new loudspeakers on booking offices window voice microphones /amplifiers when determining the new loudspeaker position.

10.6

Failure of any one loudspeaker or group of loudspeakers shall not impact upon the functionality of other loudspeakers in the same zone.

10.7 System Labelling Requirements

All component parts of PA, VA and LLPA including cabling shall be appropriately labelled using the method agreed with the PM. When attaching labels to non maintenance consumable items e.g. amplifiers, control systems and inductions loops it shall be possible to remove and reattach the label when replacement components are required for maintenance and faulting purposes.

The detailed design drawings shall contain all the labelling information such that it is possible to identify an individual item both on the drawing and at the installation.

10.7.1 Loudspeakers

Loudspeakers shall have a unique loudspeaker number and zone number(s) stencilled or attached to the back of the speaker. Each speaker shall be individually identified on the design layout drawings for the station OR at the local distribution box instead of the speaker tail.

10.7.2 Cables

Cables shall have labels attached at both ends identify the amplifier to which it is connected to and the loudspeaker circuit it is on.

10.7.3 Induction loops

Induction loops shall have a label detailing the unique number of the induction loop.

10.7.4 Microphone

Each microphone shall be labelled with a unique identification number.

10.7.5 Amplifier

Each amplifier shall be labelled with a unique identification number.

10.7.6 Voice Alarm systems

All component parts that form a part of a Voice Alarm system shall be labelled in accordance with BS5839 Part 8.

10.8 Cabling requirements

Steel wire armoured cabling shall be used in all concrete cable ducts or in buried routes and non-armoured elsewhere.

10.8.1

Induction loop cables shall be segregated from all other cables.

10.8.2

Microphone cables shall be segregated from all other cables in particular induction loop, loudspeaker or power cables.

10.8.3

The design shall take into account the requirements for separate cable routes and cable segregation requirements for signal & power cables unless the cables can comply with the requirements of BS7671 by increased insulation breakdown voltage or by surrounding power conductors with suitable current carrying outer armour/screening.

10.8.4

Cables shall be installed in flexible conduits between the cable route and each loudspeaker.

10.8.5

Cabling installed as part of a PA and LLPA installation on a sub-surface stations (as defined in TD GEN096) that does not form a part of the emergency evacuation voice alarm system shall be Network Rail approved ZHLS type cables.

10.8.6

Cables that form part of VA system and which are external to equipment enclosures or fire protected cabinets, shall comply with the requirements of BS 5839-1 for fire resistant cables and shall be either Enhanced or Standard Network Rail approved fire resistant cables.

Appendix A

Dependent on the types of stations where the PA, VA or LLPA systems will be installed, the Sponsor shall undertake a review to determine a number of options with the aim of delivering an appropriate system solution.

The options shall to be considered by the Sponsor during both option development and detailed design development stages for the scheme. Some of these options will be dependent on the level of funding available to the Sponsor for the renewal or enhancement.

Table 1 below summarises the options required by the Sponsor to consider as part of the renewal or enhancement.

Item No.	Standard Section	Description	Scheme Stage
1.	5.1.1	Sponsor shall agree information required from site surveys with the PM.	Option Development
2.	5.1.2	Sponsor shall agree information required from site surveys of current systems with the PM.	Option Development
3.	5.1.3	Sponsor shall consider and specify any required acoustic surveys within the Project Manager's Remit or Telecoms Requirements Specification for locations with recognised acoustic difficulties.	Option Development
4.	5.1.4	Sponsor shall consider and specify any required acoustic modelling of the station public address design within the Project Manager's Remit or Telecoms Requirements Specification.	Detailed Design
5.	6.2	Sponsor shall consider and specify the stakeholders necessary to agree any zoning arrangements for the station.	Option Development
6.	6.2.1	Sponsor shall consider and specify whether the system shall have the facility to broadcast to an individual zone or to broadcast to all zones simultaneously.	Option Development
7.	6.3.1	Sponsor shall consider and specify whether the system shall be capable of utilising automatic, recorded announcements driven by the appropriate CIS Control System.	Option Development
8.	6.3.2	Sponsor shall consider and specify whether the system shall be able to integrate with real time information systems or train detector systems for initiating automated announcements	Option Development
9.	6.3.3	Sponsor shall consider and specify whether the system (i) shall be capable of allowing the user	Detailed Design

		to manually select recorded announcements, and (ii) the minimum and maximum number of messages to be stored together with typical message length durations.	
10.	6.3.4	Sponsor shall consider and specify whether the system shall allow the user to manually record new automated messages using the operator's panel.	Option Development
11.	6.3.5	Sponsor shall consider and specify whether the system shall allow the transmission of live messages using the operator's microphone where one is provided.	Option Development
12.	6.15.2	Sponsor shall consider and specify locations where system alarms shall be automatically presented (agreed with end-user and maintainer) from options presented by the PM.	Detailed Design
13.	6.15.3	Sponsor shall consider and specify whether a test point or termination shall be provided at the output of the amplifier.	Option Development
14.	8.1.1.1	Sponsor shall consider and specify areas that need loudspeaker coverage.	Option Development/ Detailed Design
15.	8.1.4	Sponsor shall consider and specify whether ambient noise sensors are required for specific PA and LLPA installations.	Detailed Design

Table 1: Sponsor's Options Checklist

Standards Awareness Briefing Note

Ref: NR/L2/TEL/30134	**Issue:** 2	**Publication Date:** 05/09/09	**Compliance Date:** 05/12/09
Title: Design and Installation Requirements for Public Announcement, Voice Alarm and Long Line Public Announcement Systems			
Standard Owner: Head of Telecoms Engineering			
Non-Compliance rep (NRNC): Head of Telecoms Engineering			

Purpose:

This standard details the technical design and installation requirements for public announcement (PA), voice alarm (VA) and long line public announcement systems (LLPA) on Network Rail infrastructure.

The objective of Issue 2 of this standard is to allow the business to provide an appropriate engineering solution for differing stations with varying requirements. Issue 1 of the previous standard assumed a 'one-size fits all approach' leading to potential over-engineering and unnecessary costs.

Scope:

This standard applies to all new PA, VA & LLPA designs and installations carried out either as a like for like renewal or as part of an enhancement project on Network Rail's Infrastructure. This standard does not detail the type of station that requires a PA, VA or LLPA system or when these systems are required.

This standard applies only to new works installations and does not apply to activities undertaken as a result of maintenance.

This standard does not cover the health and safety requirements for the carrying out of the installation and reference shall be made to the appropriate standards in this respect.

This standard does not cover the CDM requirements for the design of PA, VA and LLPA systems.

What's New/Changed:

Issue 2 of this standard primarily enables the Sponsor to conduct reviews in a numbers of areas as part of the development and implementation of PA projects with the aim of delivering an appropriate Engineering solution.

The options are summarised in an Appendix which the Sponsor can use as a checklist during the option development and detailed design development stages of the project.

A number of other revisions to the standard have been made in this issue reflecting increased technical understanding following implementation of recent project schemes and product approvals for new PA equipment.

Affected documents:

Reference	*Impact*

The following teams require briefing

A = Awareness, T= Technical	**A**	**T**
Executive Management Group	☐	☐
Commercial Property	☒	☐
Strategic Sourcing	☐	☐
Corporate Development	☐	☐
Finance	☐	☐
Funding	☐	☐
Govt & Corp Affairs	☐	☐
Human Resources	☐	☐
Information Management	☒	☐
Legal Services	☐	☐
National Delivery Service	☐	☐
Network Development	☐	☐
Ops & Customer Services	☒	☐
Planning & Regulation	☐	☐
Safety and Compliance	☐	☐
CTRL	☐	☐
Westwood	☐	☐
Engineering		
Civil Engineering	☐	☐
Electrical Power Engineering	☐	☐
EMC	☐	☐
Engineering Business Management	☐	☐
Enhancement Engineering	☒	☐
Ergonomics	☐	☐
FTOCS	☐	☐
Network Electrification	☐	☐
Ops Principles & Standards	☐	☐
Plant Engineering	☐	☐
Railway Systems	☐	☐
Renewal & Enhancement (C&C)	☐	☒
Renewal & Enhancement (M&E)	☐	☐
Renewal & Enhancement (Track)	☐	☐
T & RS Engineering	☐	☐
Technology Development	☐	☐
Telecoms Engineering	☐	☒
Track Engineering	☐	☐
Signal Engineering	☐	☐
Infrastructure Investment		
Crossrail	☒	☐
Track	☐	☐
Programme Controls	☐	☐
Contracts & Procurement	☐	☐
HSEA	☐	☐
Sig. Power & Comms	☐	☒
WCRM	☐	☐
Construction	☐	☐
FTN/GSM-R	☐	☐
Thameslink	☐	☒
Enhancement	☐	☒
Contractors	☐	☒
Infrastructure Maintenance		
Central Team	☐	☐
Route Teams	☐	☐
Delivery Units	☒	☐
National Programme Team	☒	☐
Operational Property	☒	☐
Overhead Condition Renewals	☐	☐
Contingent Labour Contractors	☐	☐
Plant Contractors	☐	☐
Infrastructure Support Services Contractors (Off Track)	☐	☐

Standards Awareness Briefing Note

Implementation requirements: *(The following posts have specific responsibilities within this standard and shall receive technical briefing as part of the Implementation Programme)*

Post	Team
Enhancement Project Engineer (Control & Comms), Engineering	Shall be briefed through HoT Engineering
Senior Renewal & Enhancement Engineers (Control & Comms), Engineering	Shall be briefed by Principal Technology Engineer [SISS & CCTV]
SISS Technology Team, Engineering	Shall be briefed through HoT Engineering
SISS Level 2 Maintenance Support, Engineering	Shall be briefed by Principal Technology Engineer [SISS & CCTV]
Project Engineering Manager (Telecoms), Sig, Power & Comms, II	Shall be briefed through HoT Engineering
Principal Programme Engineer (Telecoms), Thameslink, II	Shall be briefed through HoT Engineering
Senior Projects Engineer (Telecoms), Enhancements, II	Shall be briefed through HoT Engineering
Contractors delivering Telecoms schemes for NR	Shall be briefed through Project Engineers, II

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