

Tannoying: Tackling Tube station PA noise for local residents

Environment committee
February 2008

Environment Committee Members

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Role of the Environment Committee

The Environment Committee reviews progress on implementing the Mayor's five environmental strategies for London:

- Air quality
- Biodiversity
- Energy
- Noise
- Waste

The committee has also looked at other topical environmental issues like climate change, flooding, managing London's waste, green spaces, graffiti and nuclear waste trains.

The terms of reference for this investigation were:

- What is the current scale of the problem of nuisance noise from public address systems at selected Tube stations?
- Have recent changes made by LU to policies and guidelines, and their implementation by staff and Infracos, reduced the level and frequency of nuisance noise from Tube stations?
- What further changes are needed in policy and practice to reduce nuisance noise from Tube station public address systems to an acceptable level?

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Foreword



We all know about noisy neighbours. Raised voices and loud speakers disturbing your valuable peace and quiet, day in and day out, it can seem relentless. Polite requests to “turn the noise down” can, ironically, fall on deaf ears, or be met with excuses and denials.

Now imagine that this neighbour is a tube station, operated by a public body that has responsibilities to the community it operates in.

This describes the very real problem faced by some Londoners on a daily basis, and which this report has sought to confront. This is an issue I have grown passionate about, as I have seen how PA noise has been making life a misery for some residents.

I have pressed on this issue since 2002, when my mailbag first began to fill with complaints from residents. For example, I have experience of local station managers reducing the noise and frequency of PA announcements, in response to my requests, only for residents to later come back to me distressed that the noise has returned.

I therefore sought approval to launch a formal investigation, on behalf of the Environment Committee, to look comprehensively at this problem and to call for improvements – once and for all.

I am glad that we have been able to draw Transport for London’s attention to this problem, to have their cooperation during the investigation and that they have been broadly supportive of our recommendations. We are pleased to see that they are moving towards a better system for managing their PA systems. However, there are still problems out there locally which need to be tackled and TfL's new system for dealing with complaints needs to be put to work and communicated with residents to allay their concerns.

I would like to pay tribute to the UK Noise Association, especially Val Weedon and John Stewart, for their valuable support and insight throughout this campaign and during this investigation.

I have found this a long and at times frustrating journey, but we may now – just – be beginning to get the results we have called for.

A handwritten signature in black ink that reads "Angie Bray".

Angie Bray AM
Environment Committee

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Tannoying: Tackling Tube station PA noise for local residents

1. Background

- 1.1. There are 275 stations¹ on the London Underground network of which 150 are surface stations. These stations may operate very long hours, from 5 am until 1.30 am depending on location, getting Londoners from A to B.²
- 1.2. The daily operation of the tube is the responsibility of London Underground Limited (LUL), a subsidiary of Transport for London. Metronet and Tube Lines, the Infrastructure Companies (Infracos), are responsible for upgrading and maintenance of the stations.
- 1.3. Tube stations in London are undergoing a huge programme of refurbishment, including the replacement of public address (PA) systems. Metronet has upgraded 41 of 153 stations in its upgrade programme.³ Tube Lines has upgraded 47 of 97 stations.⁴ That means that a further 162 underground station upgrades will be completed in the coming years.⁵

2. How noisy is your neighbour?

Chiswick Park station neighbour: *"We have never complained about train noise ... these we accept came as a package with the house.... What has driven us mad is the introduction of the loudspeaker system..."*

- 2.1. 'Mind the gap'; 'Please stand behind the yellow line'; 'There are minor disruptions on the District Line'. All Londoners are familiar with the regular announcements made on the Underground system. Some provide useful information; none can be avoided while travelling. But what if these announcements were broadcast into your back garden, or even worse, if you heard them while inside your own home?
- 2.2. At open stations, sound can travel out into the surrounding neighbourhood if it is not properly contained. This sound leakage may become a nuisance, which is exacerbated at greater volumes and frequencies of announcements and is especially disruptive when the noise continues late into the night or starts very early in the morning.
- 2.3. In the future it is likely that more people will be living close to underground stations. The Mayor of London's first objective in the London Plan is to accommodate London's growth within its boundaries without encroaching on open spaces. To achieve this, a key policy is to generate an urban renaissance through higher density and intensification of housing and other development in line with public transport capacity, leading to a high quality, compact and sustainable city.
- 2.4. The number of homes that an area is deemed capable of supporting is in large part defined by its accessibility by public transport and so it is planned that those areas close to transport facilities, such as Underground stations, will see increases in residential density over time.
- 2.5. Nuisance noise from PA systems has been an issue that has been raised in Assembly Members' postbags, and is a relatively common complaint made to the London Underground

¹ Many of these are below ground and therefore the PA systems would not cause disturbance to neighbouring residents.

² 'First and last Tube', Transport for London <http://www.tfl.gov.uk/gettingaround/1129.aspx>

³ Completed Stations, Metronet <http://www.metronetrail.com/default.asp?sID=1176976867781>

⁴ 'Explorer', Tubelines <http://www.tubelines.com/explorer/>

⁵ Not all stations on the Underground network are owned by LUL, therefore not all are part of the refurbishment programme.

customer service centre. During this review neighbours of some stations with past complaints were contacted to find out what their experiences were between June and December 2007.

- 2.6. From these various sources a total of 72 stations appear to have caused PA or train whistle nuisance noise complaints over the last few years.
- 2.7. Feedback received during this review indicates that the problem is likely to only affect a relatively small number of residents at any one station. However, the noise can have a serious impact on quality of life for some.⁶ A neighbour of Wimbledon Park station questions, *“Why did they [the announcements] have to wake me up, and then be played approximately every 4 minutes. It really is like a psychological torture – anticipating the next one.”*
- 2.8. Respondents most often described the noise as loud, unnecessary, intrusive, irritating and annoying. A common complaint was disturbed sleep and interrupted conversations. A Turnham Green station neighbour describes their situation, *“This year [2006] the announcements have become ridiculously loud. My children are woken every morning by the loud volume of station announcements and we have to put up with the noise all day and into the night.”*
- 2.9. In the last two years Assembly Members have repeatedly raised the issue in questions to the Mayor of London. Following questions from Angie Bray AM, the Mayor had several meetings with Tim O’Toole, Managing Director of LUL, to discuss the nuisance being caused to some residents by PA noise. As a result, policy was changed to reduce the frequency and hours of announcements at some stations and LUL reviewed some of the standards for the installation and operation of PA systems.
- 2.10. However, while feedback indicates that some residents have experienced less noise, for others the problems remain ongoing.

⁶ Overall 14 respondents reported suffering severe stress, 19 reported stress and 18 felt irritation from hearing PA noise.

3. Stop and go - regulating public address us

LUL Customer Environment & Experience Manager: *"We will listen to people but we may have to continue to do something that they do not like."*

- 3.1. So, what rules are there to protect the neighbours of Underground stations from intrusive announcements? There are two sources of authority directing LUL to control the amount of nuisance noise created by PA systems.
- 3.2. The Mayor's Ambient Noise Strategy states: *"The Mayor will urge the rail industry and other stakeholders, and will expect Transport for London, to minimise the impact of noise at and near stations, interchanges and other rail facilities, as far as safe and practicable, having particular regard to the needs of disabled people. This includes measures related to announcements."*⁷
- 3.3. The main sanctions against excess noise, however, are contained in the Environmental Protection Act 1990. This Act regulates nuisance noise generally and creates a duty on local authorities to investigate and take action against statutory nuisance noise⁸. Environmental Health Officers often attempt to resolve the complaints informally but they may issue an abatement notice to the noisemaker. Failure to comply can lead to a fine, confiscation of equipment, such as a PA system, and criminal prosecution.⁹
- 3.4. Businesses like LUL have a defence against noise abatement orders if they have used 'best practicable means' to prevent or counteract nuisance noise.
- 3.5. There are several directives that prompt the use of announcements on the Underground including health and safety, disabilities discrimination and the need to ensure security on the Underground.
- 3.6. Regulations under the Health and Safety at Work Act 1974 place requirements on railway operators to ensure the safety of staff and passengers. PA announcements form part of LUL's health and safety risk management procedures.¹⁰ The Office of Rail Regulation (ORR) enforces and advises on health and safety legislation on London Underground. The ORR does not consider the majority of customer announcements as safety critical.¹¹ It reports that it has not asked LU to increase the number or volume of announcements made and sees no obvious need for any increases. It would expect that most safety related announcements would need to be made only when the circumstances demanded it¹² and not usually as a matter of routine.
- 3.7. The Disability Discrimination Act 1995 applies to all employers and everyone who provides a service to the public. It creates a duty for LUL to take reasonable steps to provide

⁷ Sounder City, The Mayor's Ambient Noise Strategy, Greater London Authority, March 2004, pg113

⁸ Statutory nuisance noise is noise emitted from premises that is prejudicial to health or a nuisance.

⁹ Neighbourhood Noise Policies and Practice for Local Authorities – A Management Guide, DEFRA/CIEH, September 2006 <http://www.defra.gov.uk/environment/noise/guidance/pdf/noisemanagement-localauthorities.pdf>

¹⁰ Question to the Mayor 1338/2007- Mayor replies to Angie Bray, Greater London Authority, 20 June 2007

¹¹ Where LU decides that they do need to make safety related announcements ORR would expect those announcements to be clearly audible. Safety related announcements include those about the movement of trains in the station and safety on the platform edge, as well as announcements made to control crowding.

¹² Usually during peak hours at busy stations, or at stations where there is a large platform/train gap

information to disabled travellers to enable and facilitate their use of the Underground.¹³ In the case of blind and partially sighted travellers and those with reading difficulties this is likely to include announcements giving travel related information such as the train's destination or the existence of service disruptions.¹⁴

- 3.8. Furthermore, The Director of Transport Security and Contingencies (TRANSEC) can request that LUL make certain security announcements, for example to remind customers of the need for vigilance.¹⁵ LUL currently makes one such announcement, either once an hour or twice an hour depending on the type of station.

Types of announcements

- Health and Safety related (mind the gap, stand behind the yellow line)
- Security (CCTV in operation, report suspicious behaviour)
- Travel information (delays on the northern line, this train terminates at Upminster)
- House keeping (no smoking, no photography)
- Marketing (oyster touch in and touch out)
- Emergency (fire evacuation, terrorist threat)

Pre recorded announcements may be broadcast remotely i.e. across a whole or part of a line. Other pre-recorded announcements are made locally and may be automated to occur at regular intervals or after specific events e.g. arrival of a train. The last sort of announcement are the 'live' announcements, made in response to specific circumstances and are made by station staff operating microphones.

¹³ Disability Discrimination Act 1995 (chapter 50 – part III)

http://www.opsi.gov.uk/acts/acts1995/ukpga_19950050_en_4#pt3-pb1-l1g19

¹⁴ Train and Station Services for Disabled Passengers: A Code of Practice, Strategic Rail Authority, February 2002
<http://www.dft.gov.uk/transportforyou/access/rail/railstations/codeofpractice/trainandstationservicesfordi6082>

¹⁵ Question to the Mayor 1339/2007- Mayor replies to Angie Bray, Greater London Authority, 20 June 2007

4. London Underground policies and procedures

- 3.9. It is clear from our investigation that LUL policy on PA noise has been evolving in response to customer and resident feedback. LUL has recently developed a Manual of Good Practice for PA Systems Noise Management (attached as Appendix 1). Further, at a meeting held during this review with representatives from LUL and UKNA (a record of this meeting is attached as Appendix 2), the LUL Director of Strategy & Service Development acknowledged this, *“We’ve been through a learning process in the last 3 or 4 years.”*
- 3.10. LUL believes that nuisance noise should be considered in the context of requirements to ensure safety of passengers and staff and the need to provide service information. Announcements are particularly important for passengers with learning difficulties, literacy problems, hearing or visual impairments. LUL states, *“We realise that people live close to many of our stations and we are sensitive to the potential impact our operations can have on them. We try to balance the needs of our passengers with the needs of our neighbours.”*
- 3.11. London TravelWatch echoes this call for balance between the needs of passengers and neighbours. This is demonstrated by the 174 complaints received by TravelWatch from passengers about insufficient announcements or not being able to hear announcements and 21 complaints, primarily from local residents, about announcements being too frequent or too loud.
- 3.12. This review would not support, and is not calling for, a reduction or halt in essential travel, health and safety and emergency announcements. We also would not support announcements being reduced in a way that does not take appropriate account of the requirements of disabled travellers. However, this review is concerned that the announcements made are useful and made at an appropriate frequency, and that proper attention is given to ensuring that the sound created is contained within the station.

LUL standards state that:

- announcements should not cause unreasonable disturbance to neighbours in the vicinity of stations;
- all equipment should be developed and maintained to ensure minimum noise levels;
- every attempt should be made to ensure that noise produced by new or upgraded equipment should not be noticeable to neighbours;
- the volume of announcements should be regulated in the morning and evening where the normal volume could be, or is, regarded as public nuisance.

How many announcements? Not enough or too many?

LUL Director Strategy & Service Development: *"We get no limit to the appetite people have for information about their journey."*

- 3.13. A lack of travel information used to be considered a large problem for people using the Underground in London. For example, the London Assembly report: *"Mind the Gap – between what Londoners want and what Londoners get"* published in 2003, recommended improved dissemination of real time information, including by PA, in response to low customer satisfaction. LUL agrees that it has dramatically increased the frequency of announcements, they claim, in response to customer demand.
- 3.14. However, it seems that the pendulum has swung the other way there may now be too many announcements. The UK Noise Association (UKNA) carried out a survey of announcements on the Underground in November 2007. Its report: *'Mind the Noise'* states that over 50% of people spoken to felt that there were too many announcements.¹⁶
- 3.15. In responding to this general feeling from travellers and station neighbours LUL issued new guidelines in April 2007, which are being rolled out across the system. These guidelines reduced the frequency of some types of announcements, especially where non-travel related, such as those reminding people to touch in and out if using an Oyster Card.
- 3.16. Further, in response to concerns, a curfew has been instituted for announcements at surface stations and none should now be made after 11pm or before 7am, except for those giving real time travel information. For example, giving details of unplanned disruptions. At stations with a history of complaints specific arrangements have been put in place, such as limiting announcements after 19.00 at Preston Road, or limiting the volume of announcements to 65 decibels¹⁷ at Turnham Green and Ravenscourt Park Stations.

Findings

- 3.17. The frequency of announcements was increased by LUL but, following feedback, general levels of non-travel announcements have been somewhat reduced. However, it still seems that the guidelines are not always consistently implemented. LUL is attempting to find suitable compromises at stations where residents are complaining about the number of announcements.

Recommendation 1: *London Underground Limited should regularly review traveller demand for information to ensure that announcements, especially non-travel announcements, are kept at an appropriate level. Reviews should take into consideration the specific requirements of disabled travellers and the needs of station neighbours. Opportunities to make better use of other forms of communication should also be investigated.*

¹⁶ Mind the Noise' London's Noisiest Underground Station Report, UKNA, November 2007

http://www.ukna.org.uk/index_files/page0029.htm

¹⁷ 65 decibels is approximately the volume of a raised conversation.

Two steps forward one step back - new technology and volume

The London Borough of Redbridge stated, *"We started receiving complaints immediately after the stations had finished their refurbishment. In fact one of the starting incidents is normally the commissioning session where the tannoys are tested."*

- 3.18. As part of the Public Private Partnership (PPP) agreements to upgrade Underground stations the old, basic PA systems are being replaced by more complex systems with greater electronic control of the type and quality of sound. This upgrading or replacing of PA systems has often been the trigger for nuisance noise.
- 3.19. LUL admits that there have been difficulties with the new 'high tech' systems, in particular the ambient noise sensors, meaning volumes have sometimes been higher than desirable. LUL also suggests that the greater clarity produced by new systems has increased complaints since individual words can now be heard, which is more intrusive than muffled sounds.
- 3.20. It is clear that the new systems have not always met LUL standards for minimising noise nuisance for its neighbours (see box). This indicates that there have been problems with the contracts specifying installation or refurbishment of PA equipment and that assurance of this work has not picked up systems that do not meet LUL standards.¹⁸ LUL have stated that they are 'working with their suppliers' to ensure that systems are flexible enough to be allow their engineers to adjust the PA systems to local circumstances.

LUL Assistant Telecommunications Engineer: *"We are looking at whether we can we get our suppliers to provide the technical improvements set out in the manual."*

- 3.21. Work by LUL to contain noise within stations has focused on measures to increase the number of speakers and therefore decreasing volume¹⁹ and altering the positioning or type of speakers to direct sound into the station. Individual speakers may also be turned down or off. Ambient noise sensors have also been used to adjust the volume to background noise but have proved problematic meaning increased reliance on automatic volume limiters (although in most cases LUL regards this as a temporary measure). Use of sound barriers is not favoured, LUL cite 'aesthetic' considerations. Use of sound proofing on residents homes has not been raised.
- 3.22. LUL will be undertaking some trailing of best practice and new technologies over the next few months at Putney Bridge and Boston Manor stations. One possibility being investigated is a new technology to stop announcements when no one is standing on the platform. It is hoped that the knowledge gained about how to keep travellers: "well informed in a way that is not intrusive for local residents,"²⁰ will then assist in resolving noise nuisance at other stations.

¹⁸ "London Underground checks and assures all the PA equipment being installed, and/or refurbished in stations and on trains under the PPP contracts, and where there are issues around the acoustics, volume levels or clarity of messages they work closely with the infracos to ensure that these are rectified as quickly as possible." Question to the Mayor 0641/2007- Mayor replies to Darren Johnson, Greater London Authority, 21 March 2007

¹⁹ Volume can be decreased because each speaker needs to be heard over a smaller area.

²⁰ Letter to Angie Bray, London Underground, 16 February 2008

Findings

- 3.23. LUL appears to still be coming to terms with the best configuration for the new types of PA systems. We are pleased that LU is seeking innovations in practice through some pilot research and urge LU to continue to trial different approaches to address problems as they arise.

Earls Court Station

Earls Court station was one of the stations that catalysed this review. It has caused persistent annoyance to its neighbours through noise from the public address system. Earls Court is a semi-open station that has relatively dense housing closely surrounding it. It is a very busy station; at peak times trains arrive around every three to five minutes at each of the four platforms so trains are trains arriving and departing all of the time.

Residents have been complaining to The Royal Borough of Kensington and Chelsea, the local council, about the noise from the Earls Court PA system for over six years.

London Underground had told residents that when the system was upgraded, the situation would be much better. However, commissioning of a new PA system in 2004 lead to a sharp increase in complaints to the Council.

A Council officer reports that in the early years problems could often be resolved with some small tweaking of the systems. However, it is no longer so simple with the new system.

General Manager of the District Line: *“The station staff do not have any control over the volume of the announcements that the PA system distributes. The volume level can only be adjusted by a Radio Engineer.”*

Council officers attempted to resolve residents’ noise complaints through dialogue with London Underground. Some agreements were made, such as not making announcements between 9pm and 7am except for safety announcements. However, residents were of the opinion that the problem continued.

Aside from the volume of announcements another major point of annoyance for residents is their perception that many of the announcements were unnecessary.

In April 2007 The Royal Borough of Kensington and Chelsea served an abatement order on the station. This required that London Underground carry out works to reduce the noise from the public address systems.

The process needed to apply an abatement order was not easy given the various exemptions and defences available to London Underground as a train operator. To establish statutory nuisance the Council had to obtain expert technical assessment of the PA system to determine whether “best practicable means” were being used, request noise diaries from the 10 complainants and send noise officers to measure the noise.

London Underground has appealed this abatement order on multiple grounds. A decision on the appeal is expected in mid 2008.

Keep an ear out - monitoring nuisance noise

North Harrow station neighbour: *"When we have met LU they have been sympathetic and made vague promises... [But] there is no attempt on their part to follow up the meetings and monitor the situation. It is always left up to us to contact them."*

- 3.24. Monitoring of noise escaping from stations has not been carried out in any concerted way. LUL has relied on an untargeted, but regular system wide survey of announcements (carried out by 'mystery shoppers') and complaints to monitor problems. Further, until recently, it was not required that complaints were logged centrally.
- 3.25. Anecdotal evidence suggests that many complaints were made to station managers and not recorded at the customer service centre. For example, Chiswick Park has no complaints recorded however we received letters of complaint from several neighbours of that station, with one even stating that they regularly visit the station to ask for noise to be reduced.
- 3.26. Measurement of noise outside stations was not routine but is now included in the Manual of Good Practice. Further, LUL has contracted Arup, a consulting firm, to undertake modelling of the noise environment surrounding stations. In December 2007 Peter Hendy, Transport for London Commissioner, stated, *"LU is aware of the need to monitor their systems and so has recently commissioned a review of all station and train PA systems to assess noise levels and make reductions if necessary."*²¹
- 3.27. Monitoring and follow up are especially important given the experience of some residents that noise levels may reduce after a complaint is made, and then increase again, or changes made by LUL may be regarded as inadequate. For example, a resident near Ealing Common station commented, *"the announcements were eventually turned down to an acceptable level, but in the past 3 weeks the problem has recurred."*

Recommendation 2: *Within the next year LUL should commit that, within 3 months of a noise problem being resolved, follow up monitoring will be carried out of the noise levels outside the station. This should include follow up contact with the complainant/s.*

²¹ Question to the Mayor 0641/2007- Peter Hendy replies to Jeanette Arnold, Greater London Authority, 5 December 2007

4. Relationship management

Finding the noise before it becomes a nuisance

- 4.1. LUL has no strategy for engaging with residents, themselves calling the development of relationships with neighbours 'piecemeal'. Further, when PA systems are upgraded or altered, the time when many of these issues start, LUL informs us that engagement with residents has been left to the Infracos, the firms contracted to do the work.
- 4.2. LUL says that it will now be taking the lead on relationship management when works occur. We welcome this recognition of the need for improved engagement.

Recommendation 3: *LUL should develop procedures to proactively engage with residents and local authorities when undertaking PA system works so that sound leakage into the neighbourhood can be dealt with before it becomes a problem. This should be rolled out over the next year starting with those stations being upgraded that are at the greatest risk of prompting PA noise complaints.*

So, tell me about your noise problem - complaint resolution

Ravenscourt Park station neighbour: *"I have spoken endlessly and unsuccessfully to the staff and supervisor at the station, but they say that they are unable to adjust the volume or stop the frequency of the messages. Neither the General Manager at Hammersmith and Customer Services at London Underground have been able or willing to help either."*

- 4.3. In the past some residents have felt that their complaints are not being taken seriously and that there was a lack of action to address their concerns. LUL has made improvements to complaints procedures but needs to ensure that residents are sympathetically engaged with in the process.
- 4.4. In the past residents were instructed to contact their local station managers about nuisance PA noise. However, managers have limited control over the new PA systems as most settings are determined centrally, and many announcements are played on a line wide 'loop'.
- 4.5. Letters from residents received by Angie Bray AM indicate that in the past many residents felt that their complaints had been met with a response from station staff that there is nothing they could do. This was reinforced by responses to our mail out where people frequently cited station staff saying that they had no ability to change the announcements.
- 4.6. Also, a number of residents contacted during the enquiry reported that although they suffered from PA noise they had not contacted anyone to complain.
- 4.7. Some council officers were positive about their ability to resolve complaints about noise from PA systems at stations satisfactorily. Several had done so on an informal basis with the cooperation of operators and maintenance companies.
- 4.8. However, the experience of noise officers dealing with train operators and maintenance companies was less positive in the boroughs containing two of the 'repeat offender' stations.
- 4.9. LUL has developed a new complaint resolution process whereby all complaints are reported to a central point, the customer service centre, to be dealt with (attached as Appendix 1). In ensuring that all complaints are channelled through a central point LUL is able to ensure that the relevant parts of the organisation are aware of problems and can act on them. The

customer service centre has responsibility for complaints, giving greater focus for coordinating resolution and an overview of the issue.

- 4.10. However, this process does not explicitly include engagement with residents in developing a solution, although this has occurred at some of the stations with persistent complainants.

Findings

- 4.11. We are pleased to see that LUL is now making improvements to in-house processes for resolving PA noise complaints, partly due to this investigation. This process now needs to engage with residents in a more structured fashion. This is especially important given evidence that some residents suffer from PA noise but have not made a complaint about it.

Recommendation 4: *Within six months, LUL should include in their manual of good practice the requirement that, once a complaint has been made, neighbours of the station should be engaged with to ensure that both sides have an understanding of the problem and of the constraints, especially if it is not the first complaint at that station.*

Recommendation 5: *LUL should provide residents at problem stations with a written 'promise' setting out what measures have been put in place and therefore what level of noise they should expect and when. This should be rolled out to problem stations over the next year. Should it be necessary to change these arrangements, LUL should inform residents of this as soon as possible, setting out the reasons for the changes. Residents should be given the opportunity to discuss changes with LUL, as appropriate.*

Recommendation 6: *Where a written 'promise' has been made to residents, all relevant LUL staff should be made aware of these arrangements and should regard them with the appropriate respect.*

5. Conclusion

- 5.1. We welcome the efforts of LUL to tackle the noise created for neighbours by PA system use. We support the progress that has been made with policies and processes. Fully implementing these policies and processes will be highly beneficial for the neighbours of the significant number of stations due to have upgraded PA systems installed over the coming years.
- 5.2. Our review highlights a number of issues that should help improve the situation further. We argue that LUL needs to improve engagement with local residents, and institute better monitoring and follow up once a problem has been identified.
- 5.3. Strong efforts to mitigate noise, greater public engagement and more responsive monitoring should create greater certainty and reduce the impact of PA noise on the neighbours of LUL.

Appendix 1: London Underground Manual of Good Practice

Manual of Good Practice



Number: G-148
Issue no: A1
Issue date: October 2007

London Underground

Public Address Systems - Noise Management

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A Manual of Good Practice is defined as:

A document which provides guidance on how to apply, interpret or achieve the requirements of engineering standards.

Authorised by: _____	Date: _____
Approved by: _____	Date: _____
Custodian: _____	Date: _____

1 Purpose

The purpose of this Manual of Good Practice is to provide PA (Public Address) noise management guidance to all stakeholders involved in defining PA system design, messaging strategy, environmental noise and operating guidelines.

2 Scope

- 2.1 This Manual of Good Practice applies to PA systems designed and installed for operation on LU owned or LU controlled premises and trains.
- 2.2 This manual replaces 5-01204-012. The manual has been re formatted and re-numbered. There were no technical changes.

3 Guidance

3.1 General

- 3.1.1 PA systems should be designed, installed and operated to be compatible with relevant legislation including the Disability Discrimination Act 1995 (DDA) and Environment Protection Act 1990.
- 3.1.2 All PA systems (for trains and LU Premises) in operation adjacent to residential properties should be configured to minimise noise pollution to neighbours whilst taking into account London Underground's obligation to provide necessary information to its customers whilst on the LU network.
- 3.1.3 PA systems at noise affected sites that require system reconfiguration:
 - a) Should be confirmed as being compliant to LU standards before any alteration to reduce noise pollution is made;
 - b) Non-Compliant sites should be confirmed as regularised by an appropriate concession or an approved PDNC (Physical Design Non-Compliance) assessment before any noise reducing alteration is made.
- 3.1.4 Any alteration carried out on a PA system to reduce noise pollution:
 - a) Should not affect the Sound Pressure Level (SPL) of pre-evacuation or emergency evacuation messages;
 - b) Should be assessed for overall impact on the PA system performance with any consequential risk appropriately mitigated;
 - c) Should be agreed between relevant LU departments including ED, S&SD, SQED, Service Delivery and the InfraCo's.
- 3.1.5 Noise controls should be integrated to take into account the number of train and station PA announcements, PA operating times and sound pressure levels.
- 3.1.6 Noise controls implemented at a given site should be documented and traceable to an InfraCo – LU agreement. Deviations from agreed noise controls should be subject to Safety change or similar change reviewing process.
- 3.1.7 A unified process as suggested in clause 5.4.2 should be used to co-ordinate, record and resolve PA noise complaints from LU neighbours and customers.
- 3.1.8 Conflicts between environmental noise guidance and LU standards should be managed and collectively resolved between LU and the InfraCo.



3.2 Message Strategy

- 3.2.1** Message sequences and frequencies on trains and stations should comply with S&SD standards and the latest guidance published by S&SD.
- 3.2.2** Where compliance with S&SD requirements could result in complaints or noise abatements the station GSM or Train Operations Manager should raise this concern with the relevant S&SD manager and the SQED environment manager for resolution.
- 3.2.3** At noise affected sites consideration should be given to reducing the total number of PA broadcasts made to adjacent residential properties, these comprise of:
- a)** Local Live PA (Platform or Station Control);
 - b)** Local Pre-recorded or automated (Station Digital Voice Announcer);
 - c)** Live Train PA (Train Operator);
 - d)** Automated train (Digital Voice Announcer);
 - e)** Mind the Gap (Train and or Station Digital Voice Announcer);
 - f)** Long Line PA Live (Service Control Centre);
 - g)** Long Line PA Recorded (Service Control Centre);
 - h)** Background Music (at some stations).
- 3.2.4** At noise affected sites where customers can be informed locally regarding service information, consideration should be given to inhibiting the Long Line PA.
- 3.2.5** At noise affected sites PA Pre-announcement chimes should be inhibited.
- 3.2.6** At noise affected sites all non-emergency PA messages should be inhibited as a minimum for weekdays between 2300 and 0700 and where possible reduced between 1900 and 2300 or other times as required by local conditions. Similar restrictions should be considered as required for weekends and public Bank holidays.

3.3 Operational

- 3.3.1** Station staff and train operators where practicable should be encouraged to use the DVA (Digital Voice Announcer) to make routine or repetitive announcements to customers to ensure that broadcasts are made with consistent clarity and loudness to avoid PA amplifiers being overdriven, potentially leading to noise complaints.
- 3.3.2** Group Station and Train Operation Managers (GSM's and TOM's) should consider upgrading Legacy train and station PA systems to include automated DVA's for announcement of routine messages with consistent loudness and clarity.
- 3.3.3** The Group Station Manager (GSM) should ensure station staff required to operate the PA equipment in the course of their duties have been adequately trained and are proficient in the correct operation of their station PA equipment.
- 3.3.4** PA announcements to zones fitted with Ambient Noise Sensors (ANS) should (where possible) be made when the ambient noise level has settled from the peak level i.e. not whilst the train is approaching or leaving the platforms. This is to prevent the ANS lifting the broadcast levels 10dB higher than the sampled background noise.
- 3.3.5** At noise affected sites train PA announcements should be avoided when train doors are open. ANS controlled train PA should be avoided during high ambient noise levels.
- 3.3.6** Where practicable train operators should ensure PA message duplication between train and station broadcasts are avoided.



- 3.3.7** Train Operations managers should ensure that train operators are made aware of PA operational restrictions at specific stations and that these are observed.
- 3.3.8** For noise affected sites except for emergencies, station and line control room staff should ensure all PA announcements (recorded or live) conform to the noise reduction measures documented and agreed between LU and the Local council and or residents.
- 3.3.9** Fire alarm tests should be scheduled during off-peak times on appropriate days to minimise disturbance to adjacent residential properties.

3.4. Technical

- 3.4.1** In the absence of more specific guidance it is recommended that the DETR planning and policy guide PPG24 (1994) (based on World Health Organisation (WHO) guideline for community noise) in conjunction with BS 4142 and BS 7445 be used as a baseline for assessing and setting noise levels. These should be used for achieving noise reduction and to support LU's case for demonstrating 'Best Practicable Means' (BPM).
- 3.4.2** For all station PA systems in operation adjacent to residential properties the InfraCo should carry out an acoustic survey to model the physical characteristics of PA noise emissions generated within each relevant station PA zone. This data should be supplemented with train and station PA sound pressure levels and announcement frequencies to determine the following:
- Background (Residual) noise level measured or predicted at 1 m from the façade of nearest residential property adjacent to relevant station PA zones. This should be a percentile value $LA_{90, T}$ indicating the A-weighted SPL exceeded for 90% of measurement period T;

Note: The measurement period T should be 1 hour unless specified otherwise by the local authority. Measured and predicted values should be evaluated in the free-field (where possible) with and without trains arriving, berthed or departing from platforms.

- Specific PA noise level measured at 1m from the façade of nearest residential property adjacent to relevant station PA zones. This should be an equivalent continuous A-weighted sound pressure level $L_{aeq, T}$;

Note: Measurement period T should be 1 hour unless specified otherwise by the local authority. Measured and predicted values should be evaluated in the free-field (where possible) and corrected for influence of other noise components that are present. Corrections should be applied in accordance to guidance given section 6.3 of BS 4142. This is summarised in clause 5.4.3.

- The maximum (specific) noise level LA_{max} . This is the worst case instance of the specific noise. At a station this could be emergency PA in operation or several PA announcements under high ambient noise conditions. Measured and predicted values should be evaluated at 1m from the façade of nearest residential property adjacent to relevant station PA zones;
 - The limiting speech intelligibility (as measured by RASTI or equivalent CIS (as defined in BS EN 60268-16) and audibility range achievable in each relevant station zone taking into account the tolerable environmental noise pollution limits;
 - The Noise Exposure Category (NEC) that would apply to a given site under a hypothetical planning application assessed using PPG24. NEC values given in clause 5.4.1.
- 3.4.3** Best practicable means should be demonstrated with evidence of noise controls at a given site, supported by noise measurements, calculations or other evidence by confirmation of either a) or b) as shown below:



- a) LU can show that the equivalent PPG 24 noise exposure category (NEC) that would have applied to a given noise affected site prior to the commissioning and operation of the new PA system, has not increased to the next level following the implementation of the noise reduction measures. The noise rating within the NEC band has been determined using BS4142 and the PA system has been configured to ensure so that as far as it is practicable the likelihood of noise complaints is minimal;
 - b) LU has demonstrated that all reasonable measures to control and reduce the overall level of PA noise are in place to ensure an appropriate balance between minimising noise nuisance to neighbours and providing necessary customer information. Noise reduction measures should take into account both station and train PA announcement volume levels, operating times and message frequencies.
- 3.4.4** For complex sites InfraCo's should seek expert advice and support (depending on risk) as necessary for the characterisation of the acoustic environment prior to any technical changes to the PA system that lead to reduction in system performance.
- 3.4.5** All noise measurements should be carried out to establish the level of nuisance caused by PA operation during Peak, inter-peak and off-peak periods.
- 3.4.6** The methods and metrics used to carry out the noise measurements should be in accordance to guidance provided in BS 4142, BS 7445, or later standards as they become available for use.
- 3.4.7** The InfraCo should upon being informed of a noise complaint from LU for a given station or train independently verify that the A-weighted sound pressure levels in the relevant PA zones or train comply with LU standards or otherwise do not exceed LU varied levels. This check should include all instances and combinations of train and station PA broadcasts including live, recorded, local and remote as appropriate.
- 3.4.8** The InfraCo should establish that there is no system fault (s) that could cause the PA broadcast volume to exceed design or LU varied levels. This check should include all instances of train and station broadcasts including live, recorded, local and remote as appropriate.
- 3.4.9** For noise affected sites the InfraCo should work with LU in the formulation of a noise management strategy that could be used to demonstrate LU's case for "Best Practicable Means". To this end the InfraCo should keep accurate and up to date maintenance records including all relevant PA system settings, levels, drawings as required by an investigation.
- 3.4.10** The InfraCo should inform LU prior to commissioning of new or refurbished PA systems, particularly at noise affected sites where compliance with LU standards will cause unacceptable sound spillage into residential properties from LU PA broadcasts and increase the risk of noise complaints and local authority noise abatements.
- 3.4.11** PA systems installed and maintained by the InfraCo should comply with best practice guidelines provided in the latest versions of the following standards:
- a) 1-142 LU standard (Operational Information Systems);
 - b) BS 5839 – 8;
 - c) BS 5839 – 9;
 - d) BS 6840;
 - e) BS EN 60849;
 - f) BS 6259 (Code of Practice);
 - g) BS 60268.



- 3.4.12** Guidance regarding noise measurements and noise pollution levels should be sought from the latest version of the following standards or guides:
- a) BS 8233 (Code of Practice);
 - b) BS 4142;
 - c) BS 7445;
 - d) PPG 24 (DETR Planning & Policy Guide 1994);
 - e) IPPC Guidance for Noise Parts 1 & 2 (Environment Agency).
- 3.4.13** Conformity of the PA system to the InfraCo or Supplier design specification should be thoroughly scrutinised and verified at the Factory Acceptance Test (FAT) to avoid unexpected system behaviour on site. Any caveats from the FAT should be followed up and closed at the (SATS) Site Acceptance Test.
- 3.4.14** InfraCo's should design, install station and train PA systems that allows smart operation of train carriage or station zone speaker chains including deactivation of individual or group of speakers in accordance to preset times and or commensurate with the level of train carriage or station zone occupancy.
- 3.4.15** The equivalent A-weighted sound pressure level LA max (fast response) in a train saloon should not exceed 85 dB (A) at any time in any seated position.
- 3.4.16** InfraCo's should develop flexible Integrated train and station systems that provide accurate real-time control of visual or audible customer messages such that where possible:
- a) Simultaneous broadcasts from the train with doors open and the station PA can be avoided;
 - b) Station PA levels controlled by ANS can be minimised by automatically timing or sequencing (pre-recorded) station announcements to avoid higher ambient noise levels due to train arrivals or departures.
- 3.4.17** Train PA systems should be fully programmable from the train operators cab. Programmable functions should include as a minimum PA volume, ANS sensitivity, message selection, voice selection, and PA ON or OFF controls that can be activated by a real-time clock and or other external triggers to provide operational flexibility to manage noise complaints. Functions made available to the train operator should be agreed with LU Train operations manager with the remainder available to the engineer.
- 3.4.18** InfraCo's should design and install PA systems that prevent predefined inputs (local or remote) from selecting noise affected zones permanently or at preset times for non-emergencies.
- 3.4.19** InfraCo's should design and install station and train PA systems that incorporate automatic sound volume control to allow for differing PA (live or pre-recorded) PA announcement input levels. This feature should not introduce any perceptible distortion.
- 3.4.20** InfraCo's should design and install station PA systems that enable sound levels of PA messages to be varied depending on message priority.
- 3.4.21** Ambient Noise Sensors (ANS) used to regulate broadcast volume on trains or station PA systems should have the following characteristics or conditions:
- a) Complete or partial failure of the ANS should be alarmed and cause the ANS controlled zone to default to an acceptable (preset) volume level;
 - b) The ANS sensitivity should be calibrated to allow fine adjustment for operation down to the background noise level as measured using $L_{A90, T}$;

- c) The ANS tracking characteristic should correspond to A-Weighted sound;
- d) Out of band sound frequencies within the input range of the ANS but capable of causing incorrect A-weighted noise reference levels should be filtered or prevented from interfering with PA system volume levels.

3.4.22 For noise affected sites and for non-emergency broadcasts where automatic noise sensors are used, the PA broadcast volume should not exceed 10dB above ambient noise levels or lower limit if clause 3.4.23 applies.

3.4.23 Where setting the PA system to broadcast 10dB above ambient noise levels causes unacceptable noise spillage into neighbouring properties, the following measures should be considered after consultation with and approval from LU ED:

- a) Reduce differential between broadcast and ambient noise levels down to a minimum level of 6 dB;
- b) For a given noise affected zone deactivate the ANS controlling the volume for that zone and manually preset the sound pressure levels to an acceptable value;
- c) For noise affected zones deactivate or time-limit the operation for the whole or part of the speaker chain(s) operating adjacent to residential properties;
- d) Review of sound system design including speaker type, speaker height, speaker position, number of speakers, speaker directivity, system equalisation and sound attenuation with a view to reduce noise spillage;
- e) Consider use of Noise barriers, sound absorbent material to increase attenuation of PA noise where practicable and justified by Cost-benefit analysis.

3.4.24 Manually Fixed PA system SPL levels should be a temporary arrangement (agreed with LU ED) and should be set to not less than 65 dB (A) for surface sites and 75dB (A) for sub-surface sites. A tolerance of +/- 3 dB (A) to these settings is permissible. NB. These values are based on audibility criteria recommended in BS 5839-8 (15.4.1) and BS EN 60849 (Annex C.2).

3.4.25 PA Performance degradation that occurs for manually set systems should be assessed and appropriately risk mitigated as required.

3.4.26 Where due to noise constraints one or more of the measures in 3.4.23 are considered for implementation any consequential deterioration in PA intelligibility and or audibility that may occur should be assessed. The InfraCo should carry out this assessment and present it to LU for review. If approved LU should regularise any non-conformance through appropriate risk mitigations and inform the InfraCo to proceed with the agreed noise reduction measures.

4 Responsibilities

The Standards Manager shall be responsible for directing the production and control of manuals of good practice in accordance with 5-001.

Systems Engineers shall be responsible for ensuring that the texts of manuals of good practice are technically correct, clearly stated and comply with engineering standards.

The Environment Manager shall be responsible for maintaining a list of noise related issues including complaints and formal notices E.g. Section 60, 61, 80. The Environmental manager shall advise on environmental noise guidelines.

The Telecommunications Engineer shall provide guidance on technical issues with the PA system.



5 Supporting information

5.1 Background

Public address systems provided on trains and on LU surface stations are provided primarily to deliver customer and service related information. Some customer related information is considered safety information and LU is obliged to provide this at certain intervals. Further information in this regard is published by LU S&SD.

5.2 Safety considerations

Noise reduction measures identified as a result of guidance provided in this document should be fully assessed for impact to customer safety and be implemented only if the risk(s) as result of these measures is confirmed as being fully mitigated and ALARP.

5.3 Environmental considerations

All PA systems should be operated with the objective of remaining compatible with BS standards DEFRA environmental noise guidelines.

5.4 Other supporting information

5.4.1 PPG 24 – Noise Exposure Categories (NEC)

LA eq, T dB(A)	A	B	C	D
Rail 0700 – 2300	<55	55 – 66	66 – 74	>74
2300 – 0700	<45	45 – 59	59 – 66	>66
(Mixed Source) 0700 – 2300	<55	55 – 63	63 – 72	>72
2300 – 0700	<45	45 – 57	57 – 66	>66

PPG 24 NEC (Planning approval) Explanations

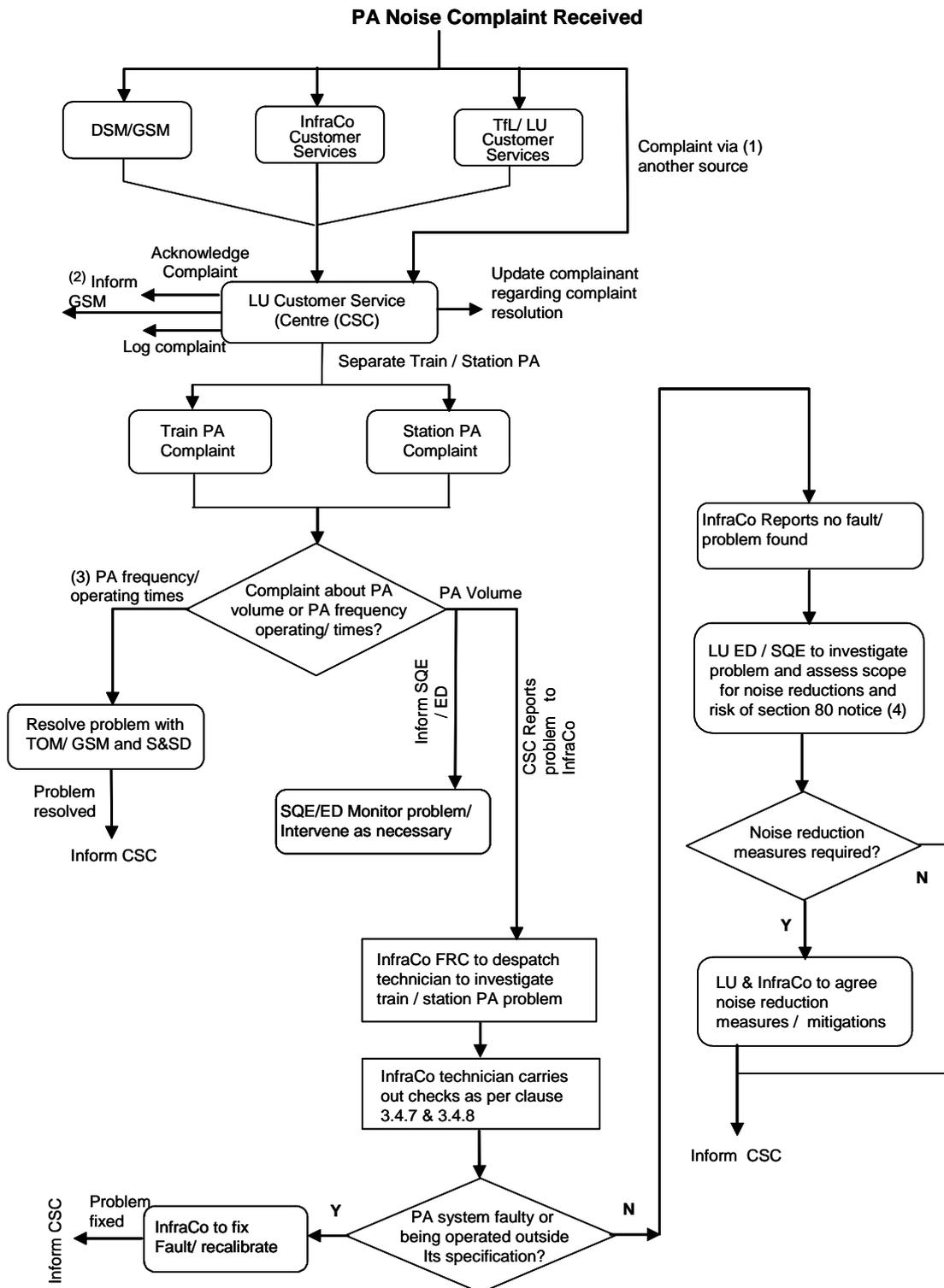
A – Noise not normally a factor for planning approval

B – Noise taken into account – conditions may be required to protect against noise

C – Normally refused, unless no alternatives exist, conditions required

D – Normally refused

5.4.2 Noise Complaint Procedure (Flow Chart)



Note:

1. All complaints to be centrally logged at the LU customer service centre.
2. Unless GSM / DSM advised CSC of the complaint.
3. Also includes mind the gap complaints.
4. ED & SQED risk assessment panel to be assisted by S&SD and LU Operational staff for changes in operational requirements.



Noise Complaint Procedure (Flow Chart) – Description

1. Noise complaints may be received from a number of sources. To ensure integrated coordination, progress tracking and resolution of these, each complaint should be centrally logged by the LU Customer Services Centre (CSC).
2. To assist LU and InfraCo Engineering and safety teams, CSC should filter the complaints separating where possible the train PA complaints from the station PA and also whether the complaint is about PA (sound) volume or whether it is an operational issue such as PA frequency and operating times.
3. CSC should pass complaints regarding PA volume to the relevant InfraCo Fault Report Centre (FRC) and the relevant GSM / TOM unless they have reported the problem to CSC.
4. SQED and ED should be informed if the PA noise complaints have been received before from this site / train. First time complaints should not be initially reported to SQED or ED.
5. The InfraCo should carry out the checks suggested in clauses 3.4.7 and 3.4.8 and confirm whether the PA system is being operated within its specification or not. Faulty systems should be fixed and returned to normal operation.
6. Compliant systems will be reported by the InfraCo as not faulty. ED & SQED should carry out a site investigation taking noise measurements and decide using an appropriate risk assessment, whether there is scope for introducing noise controls. These may be temporary or permanent depending on local requirements and LU's and InfraCo's ability to implement.
7. Complaints regarding PA message frequency, operating times etc. should be reviewed from an operational perspective by S&SD, trains and station service managers. S&SD standards provide the requirements regarding what messages and how often these should be broadcast. The frequency of PA announcements will contribute to the Laeq, T continuous equivalent noise level metric. Given this SQED & ED should be consulted in determining how often messages should be broadcast at sensitive (noise affected) sites.
8. Complaints regarding "mind the gap" announcements will involve a safety review and should involve SQED and ED. It is therefore recommended decisions to silence or alter operation of mind the gap announcements LU has previously requested should additionally be referred to ED and SQED for technical and safety review.
9. All decisions involving changing technical, operational requirements to resolve noise complaints and that impact PA system performance and or customer safety should be carried out using an agreed and consistent process. All decisions should be recorded and traceable.



5.4.3 Noise Level Corrections

BS 4142 provides a method of determining specific noise levels from noise readings comprising of several noises adding together. Correction to the measured noise depends upon the difference in the readings with and without the specific noise present. Table 1 (based on BS 4142 section 6) can be used.

Noise Level Correction	
Difference between noise level readings with and without specific noise being present	Quantity to be subtracted from reading with specific noise present
> 9	0
6 – 9	1
4 – 5	2
3	3
< 3	0

Table - 1

Ex. 1 determine specific (PA) noise from following readings (assume no other noise present)

Measured noise with PA announcement = 73 dB (A)

Measured background noise with no PA = 68 dB (A)

From table 1 above, PA noise (L_{aeq,T}) = 73 – 2 = 71 dB (A)

5.4.4 Adding Noise Levels

The overall A-weighted equivalent continuous noise level due to several sources can be calculated. The relationship between sound pressure levels is logarithmic and not arithmetic.

We can use:

$$LA_{eq,T} = 10 \text{ Log } (10^{a/10} + 10^{b/10} + 10^{c/10} + \dots)$$

If we consider two noises a, b

a = 80 dB (A)

b = 85 dB (A)

$$a + b = 10 \text{ Log } (10^{80/10} + 10^{85/10}) = 10 \text{ Log } (416227766) = 86.2 \text{ dB (A)}$$

6 Informative References

6.1 References

References in the text are made to latest editions unless specific editions are cited. Where references are made to other corporate engineering documents which are not yet published, existing documents shall be followed until new documents have been authorised for use.

Note: References to particular EC Directives and Regulations, Acts of Parliament, Statutory Instruments or Common Law are made only if the subject demands them. Users of engineering standards are bound by all the relevant requirements of the law, regardless of whether or not there is any reference to them in the standards.

Statutory documents

Document no.	Title
EPA Section 80	Environmental Protection Act 1990 part 3
SI 2006 No.2238	The Environmental Noise (England) Regulations 2006
2002or49orEC	EC Environmental Noise Directive (2002)

British Standards

Document no.	Title
BS 4142	Method for rating industrial noise affecting mixed residential and industrial areas,
BS 5839 – 8	Fire Detection and Fire Alarm Systems for Buildings – Code of practice for the design, installation, and servicing voice alarm systems.
BS 5839 – 9	Fire Detection and Fire Alarm Systems for Buildings – Code of practice for the design installation, commissioning and maintenance of emergency voice communication systems
BS 6084	Sound System Equipment
BS 6259	Code of Practice for Design, planning, installation, testing and maintenance of sound systems
BS 60849	Sound Systems for Emergency Systems
BS 7445	Description and Measurement of Environmental Noise
BS EN 60268-16	Sound System Equipment Part 16: Objective rating of speech intelligibility by speech transmission index
BS 8233	Sound insulation and noise reduction for buildings – Code of practice

LU company documents

Document no.	Title
1-142	Operational Information Systems
5-353	Station Ambience
1-352	Station Ambience
1-312	Automated audio and visual information in public areas of stations and trains
1-315	Audio and electronic visual information in public areas of stations and trains



Other

Document no.	Title
PPG 24	Department of Environment Planning Policy Guide (1994)
IPCC H3 Part 1	Integrated Pollution Prevention and Control – Horizontal Guidance for Noise Part 1 – Regulation and Permitting
IPCC H3 Part 2	Integrated Pollution Prevention and Control – Horizontal Guidance for Noise Part 2 – Noise Assessment and Control
	World Health Organisation – Community Noise Guidelines 2000

6.2 Abbreviations

The following abbreviations are created:

- a) within London Underground's Glossary of Terms 1-622;
- b) from published sources.

Abbreviation	Definition	Source
ANS	Ambient Noise Sensor	a
BS	British Standard	a
BS EN	British Standard European Norm	a
CIS	Common Intelligibility Scale (Speech Intelligibility metric)	B Standard
dB	Decibel (Logarithmic unit of signal measurement)	a
dB(A)	dB measurement normalised to the A-Weighting curve	a
DETR	Department of Environment, Transport and Regions	a
DVA	Digital Voice Announcer	a
ED	Engineering Directorate	a
FAT	Factory Acceptance test	a
IPPC	Integrated Pollution Prevention and Control	IPCC H3
LA 90, T	A-Weighted equivalent SPL exceeded for 90% of the time	B Standard
LA eq, T	A-Weighted equivalent SPL averaged over time T	B Standard
NEC	Noise Exposure Category	B Standard
PDNC	Physical Design Non-Compliance	a
PPG (2)	Planning Policy Guide	a
RASTI	Room Acoustics Speech Transmission Index	a
S&SD	Strategy and Service Directorate	a
SATS	Site Acceptance Test	a
SQED	Safety, Quality and Environment Directorate	a
SPL	Sound Pressure Level	B Standard
WHO	World Health Organisation	a



6.3 Document owner

Paragraph number	Owner
All	Communications Engineer

6.4 Document history

Edition	Date	Changes
R1	August 2007	Incorporating comments from PA Noise Workshop to draft version 1.2 issued (June 2007)
R2	September 2007	Incorporating further comments from ED / SQED
A1	September 2007	Authorised for use
R3	September 2007	Manual 5-01204-012 re formatted and re-numbered to G-148, no technical changes have been made to the content other than changing references to other Standards where their numbers have changed.
A1	October 2007	Authorised for use. Previous authorisation is valid

Appendix 2: Transcription of Environment Committee Meeting on Tannoy Noise, January 16, 2008

Committee Members:

Angie Bray, Rapporteur on public address nuisance noise

GLA Officers

Inga Staples-Moon, Assistant Scrutiny Manager, GLA

Stephen Greek, Researcher for Conservative Group, GLA

Katy Shaw, Committee Team Leader, GLA

Witnesses:

Naran Gorasia, Assistant Telecommunications Engineer, LU

Peter Tollington, General Manager Central Line LU

Richard Parry, Director Strategy & Service Development

Chris Upfold, Customer Environment & Experience Manager, LU

Matt Ball, Stakeholder Communication, LU

Val Weedon, Coordinator, UK Noise Association

Martin Bishop, Putney Bridge Resident

Angie Bray: The first complaint I received about tannoys was in 2002 when Martin Bishop rang me about the noise from tannoys at Putney Bridge Station. I was able to speak to the Mayor who in turn spoke to London Underground and the matter was dealt with. In the last couple of years Martin [Bishop] and residents close other stations have complained about the disturbance from tannoys. A letter was sent to local newspapers across London and there was a smattering of responses about the disturbance caused.

When Martin first complained I had a conversation with the Mayor and it was agreed that guidelines had been broken and something was done about it. But 3-4 years later the matter is harder to resolve. There has been a refurbishment of stations and new sound systems. It seems that the problem is arbitrary. There are time when there are no problems and then blips when the announcements cause disturbance. It seems that Tim O' Toole [Managing Director, London Underground] cannot enforce a standard across the network. There are an increasing number of announcements; some are necessary such as security information but some are about how to live your life, such as reminding people to carry a bottle of water, and these can start as early as 5am.

From what Martin has understood from staff at Putney Bridge is that they might decide not to switch on looped announcements early in the morning but that they are then contacted by a regional manager and told to play the announcements.

The issue is about the volume and number of announcements. There is a concern that sometimes the station gets it right and sometimes they get it wrong.

Val Wheedon: I think you've said most of it admirably. The UK Noise Association has produced a report. It really is just a snapshot in response to concerns. We went round and just did a quick measurement and made notes of what sort of announcements at different times of the day to get an

essence of what people were complaining about. Now we just need to find a solution for people living close to the stations.

Angie Bray: I hope we've got past the stage we had in the past where one station manager said, "my job is to run a railway". My view is that the responsibility of station managers does go beyond that. London Underground has a duty to the community. Tim O' Toole has been responsive and I do think he is trying to get some improvements. The question is not now is there a problem but more how can we get an enforced standard.

Richard Parry: Generally speaking we would accept that we've been through a learning process in the last 3 or 4 years. We accept that there have been some problems during station refurbishment. We've been trying to find the right balance by dealing case by case on a local level. We have made progress and we have taken some serious steps to change things. We do believe that we have attempted whenever there have been complaints to do something about it. For example at some stations we won't make routine announcements between the hours of 21.00 to 07.00.

Yes there are more announcements due to customer requests, for example visually impaired people would have difficulty in reading notices but there maybe too many announcements. There have been instructions to station staff that non-service based announcements should be made less frequently. The number of complaints is small and diminishing. We value the challenge presented but we believe we are taking the steps that we can. For example at Earl's Court station it is hard to find the right balance; it's a complex station to manage and it is overlooked by houses.

Angie Bray: I think that's true. Can I just ask you then, I accept that we're moving towards the situation, but how is that we can have a good day and a bad day? That seems to put it down to the individual station. I have been told that the amplification is on a suppressor so that even live announcements with a handheld mike would go through the suppressor.

Naran Gorasia: If I can elaborate on the technical problems. There is an automatic level control that should in most cases suppress the announcements. We also have ambient noise sensors installed in all our upgraded PA systems, to control PA announcement levels relative to the background noise. Unfortunately we are having problems in getting this technology to work reliably. We are trying to resolve issues with the system with our supplier. In addition, for the majority of the stations the actual volume levels are lower than previous but intelligibility has improved. The side effect of messages being clearer is that they travel further.

Inga Staples Moon: Would you consider sound barriers at the stations?

Naran Gorasia: We are going to do a trial at two sites: Putney Bridge and Boston Manor on improving the sound systems.

Chris Upfold: That's around a whole host of things around how do we control the noise leaking.

Angie Bray: So sound barriers would be a last resort.

Naran Gorasia: Yes – we have to consider the aesthetics of the stations. We will be looking at system equalisation to reduce high frequency content of sound leaving the station. People at the station should be able to understand the PA announcements but to the local residents some distance away the messages would be less distinct.

Angie Bray: What is the time frame?

Naran Gorasia: We will be starting at Putney Bridge within 2 months. We are talking to the suppliers of the system.

Angie Bray: How long would you run the trials for?

Naran Gorasia: A couple of months.

Angie Bray: So come the summer you would be in a position to roll this out?

Naran Gorasia: I can't say – that is under discussion in London Underground. We've engaged an external consultant and will be base-lining the performance of the public address systems and capturing data of sound pressure levels from those stations.

Chris Upfold: So it's not to say that we're not aware of issues at all stations or managing the situations there. We want to isolate a couple of spots to do some specific research.

Angie Bray: It is good that it is being done. However when you get someone saying, "it was awful again this weekend" what is happening that sometimes its good and sometimes its bad?

Naran Gorasia: It's really the operation of the ambient noise sensor that we're examining. If the sensor takes a sample when the ambient noise is high then the volume of the announcements based on that sample would also be high.

Angie Bray AM: Why does it go on and off?

Matt Bell: We would need specific examples of dates and times

Richard Parry: It is sometimes a matter of perception ie during good weather. If we know the specific problem we would look at the circumstances - w could also analyse our own correspondence. There might be more announcements if there were engineering works or service interruption.

Angie Bray: Yes, we'll dig through and find some specific examples. So basically you are going to be testing out at these two stations in the next couple of months.

Richard Parry: We should get back to you on this. Feedback from residents would be useful.

Val Weedon: The monitoring aspect is important. We need to match the complainant and their perception with the circumstances. Going back - I'm interested in the introduction of more announcements which you say were as a result of public feedback. How were their views gathered? Were people questioned and did they say what sort of announcements they would like to hear? Who came up with the idea how many times these announcements should play?

Chris Upfold: There are 2 aspects. We've done copious research on the type of announcement, the importance people put on them and the timing of them. There is a lot of research on safety and real time information. We probably have less research on service announcements such as carrying water on hot days. We do announcements based on our experience and the customer research that we do.

There are different requirements for the frequency of announcements. Trains at District Line stations run to different destinations so one customer may wait for a train for several minutes and hear several announcements whereas another customer may wait a couple of minutes and hear one.

Angie Bray: Is it part of the fact there's been a new approach to customer service?

Richard Parry: We get no limit to the appetite people have for information about their journey. They want realtime information and information about engineering works. There is only so much we can do with posters and leaflets.

Angie Bray: We've spoken to the Office of the Rail Regulator who says that if you over repeat a message it defeats the purpose.

Richard Parry: Our manual of good practice does recommend scaling back announcements. We learnt the lesson with Oyster, we gave people information about how to use it but it could be argued that the announcements were promotional. Once people had brought the cars they stopped listening to the announcements. The information was therefore scaled back. We do need to repeat information such as line closures as people take different journeys at different times.

Val Weedon: I think repeated information about engineering works are fine but sometimes there is a message that on this line there are no problems at all.

Angie Bray: Yes, do you need to keep telling people that there is a good service?

Richard Parry: We have evidence that people like reassurance.

Val Weedon: Who are these people?

Angie Bray: Can we see the figures?

Richard Parry: Let's take an action to demonstrate what we say. In general I don't think it's that surprising that people like to be reassured when they're making a journey. If we say nothing people may worry that we are not bothering to tell them bad news.

Angie Bray: They like to hear there is a good service as opposed to a bad service? It is overdoing it? Did you ask people about the frequency of the announcements?

Richard Parry: I think our manual of good practice is trying to keep the frequency of announcements down. Frequency of important information does have to accord with train frequencies. If there is a train every two minutes the announcement will be made every two minutes. It's not just about the line you're on, it's about the line you might want to interchange with.

Angie Bray: But in general what we are talking about is do people really want to have their silence filled with announcements. They are pummelled with information.

Richard Parry: For the record I would say we do not support pummelling with information at all times. Places like Putney Bridge have fewer trains, it is a surface station and so a lot has been done to reduce the number of announcements.

Angie Bray: Can we talk about how you carve up the various announcements? Some are statutory. Some are at your whim really. Can we talk about how we could possibly agree on the lowest number of those that are less essential? A change of service due to engineering works is important, one advising customers to take a bottle of water is not.

Chris Upfold: We do divide our announcements into general categories: safety critical, update and other. We do have guidance as to the frequency of announcements based on trains frequency. I guess there's a question of whether or not our guidance is correct. Are we saying it too often or not often enough? But I think it comes back to that tension we have between our customers that are riding on the trains and the customers who live around the stations. There is also a tension between people who use the underground frequently and those who do not and therefore need the information more often.

Richard Parry: The guidance was re-issued nine months ago and we are currently revising it.

Inga Staples Moon: You're talking a lot about giving information. Can you talk about other methods of giving information - displays and those kinds of things? Would there be any possibility of pushing that.

Richard Parry: We are doing a lot. There are rainbow service boards at all stations. We use electronic screen and all stations will have platform dot matrix signs. We do recognise you have to provide information across a range of channels for people with different needs such as hearing or visual impairment.

Angie Bray: If the boards help then could you cut back on announcements.

Richard Parry: Passengers have different needs.

Peter Tollington: I can demonstrate on my blackberry that within a couple of months users will be able to get a visual display of the good service board.

Angie Bray: But it's not going to cut back on the announcements. You don't want an announcements when you drive onto a motorway - you want to know that it is clear We'd like to see some figures on passenger perception of announcements.

Peter Tollington: We are now copying the French and giving information about how long it will take to get to the next motorway junction.

Chris Upfold: I guess you do expect when you go into a station to see that information but not everyone see it. If we are providing information in one format we need to provide it in another.

Angie Bray: Let me just welcome Martin.

Martin Bishop: There are still a lot of announcements although there has been a reduction. The live announcements are the problem as it seems that the volume of the announcements vary according to how close the person is to the microphone.

Richard Parry: We have tried to educate people about the way to make announcements.

Peter Tollington: They are trained not to make announcements while trains are approaching as the temptation would be to raise their voice.

Angie Bray: Are the live announcements controlled through the main circuit?

Naran Gorasia: PA is controlled via the station management system. We are experiencing problems with these systems and are now trying to control volume levels so even if people shout down the microphone it would not make a great difference to the noise levels.

Martin Bishop: They've put more speakers in on Putney Bridge which I was pleased about as I thought it would provide a quieter local system. However the speakers face across the railway line towards the houses not over the platforms.

Naran Gorasia: We can address that very quickly.

Angie Bray: Can we make a note of that.

Naran Gorasia: Just going on your point about an increased number of speakers. We are making volumes lower at local level with reduced the sound pressure levels by tapping each speaker to its lower setting.

Martin Bishop: If you couldn't hear it 10 feet from the speaker that would be great.

Naran Gorasia: I don't know if we can do that.

Richard Parry: We take the point but I can't guarantee that you won't hear anything - sound travels.

Angie Bray: You've talked about training people in how to speak and when certain announcements should be done. How are you enforcing these guidelines? Not everyone can be using they manual microphone correctly - how is it being enforced?

Secondly once you have the suppressors it seems to me that the training isn't adequate if it's not being followed. Are stations making more or less announcements than they are supposed to. How are you enforcing uniformity?

Chris Upfold: We have standards that enforced by local station managers. We also put staff through a lot of training. We find out about problems if we get complaints from customers, residents or staff. It is our fallback because we don't live near the station. In the last six months we've become better at making sure complaints that are made locally get fed back to me and get fed back to engineering so that we know now much better whether complaints are made.

Angie Bray: You don't think it would be a good thing for your customer relations to have someone to go around stations to monitor announcements.

Richard Parry: We do have mystery shopper surveys that do measure the effective use of PAs. They measure clarity and timing. The surveys are ad-hoc so they don't asses every station every month it's a sample exercise - they do produce a certain amount of information for the operational managers to respond to.

The survey has been going on for 10 years so aspects of it have changed. The survey is system wide - it captures the whole journey experience.

Inga Staples Moon: So information is system wide, not just problem areas.

Angie Bray: What's your experience, Martin?

Martin Bishop: Every station is different. At Putney Bridge is hard to contain noise; it's 30 feet up in the air, a great place to broadcast and has no baffle board. If you make noise it's going to get out of the station. Having lots of local speakers doesn't seem to have dealt with the problem.

Angie Bray: Is the local station responsible – Martin you have had a meeting with the staff from Putney Bridge.

Martin Bishop: I had two – the last one was Christmas 2006 and I took notes. Basically I had the impression that the station manager was saying that it was out of his hands and that the volume levels were set.

Inga Staples Moon: Which seems to conflict with your advice to contact station managers.

Martin Bishop: If the announcements are too loud, they're too loud. His only advice was to go to customer services. We had a meeting at my house and I opened the door so they could hear the announcements.

Richard Parry: Giving staff the power to regulate volume is double-edged sword. We want the system we're paying for to work the way it should. By not giving the staff responsibility, it should take care of itself and therefore you get consistency. It removes the risk.

Angie Bray: The point being that you are saying you are encouraging station managers to take control but then they can't make any changes.

Martin Bishop: Real time announcements on the state of the line do cause disturbance.

Chris Upfold: Part of that comes back to mystery shopper. They get credit for timings of important announcements but note those that are less so.

Martin Bishop: But mystery shoppers are not standing in the local streets.

Chris Upfold: But that's why there are fewer, because of mystery shoppers.

Angie Bray: Is there a guideline? They are on a loop, aren't they?

Chris Upfold: They can be.

Angie Bray: What is the earliest that looped announcements would start playing?

Richard Parry: Depends on where the station is. If it's a deep-line station there is no reason not to play them throughout the day. Where we know there is a greater sensitivity we have now got a different regime. For example, at Putney Bridge the routine announcements are only made from 0700 to 1900. Announcements would be made about service disruptions but not planned engineering works.

Martin Bishop: Even on days of rest?

Richard Parry: I would presume that at 7:30 on a Sunday

Martin Bishop: You would still hear a service disruption announcement every 10 minutes which is annoying. If you really think you should make those announcements you need to reduce the sound so it doesn't get out of the station.

Naran Gorasia: The manual of good practice on noise management is finished and has been released to suppliers, staff and will be sent to the GLA. The manual provides guidance on technical improvements. For example if the platform is empty it might be sensible for no announcements to be made. We are looking at whether we can get our suppliers to provide the technical improvements set out in the manual. We're also exploring different technologies.

Angie Bray: I think it's a matter of what category these announcements sit in. For example, "poor service on the Jubilee Line". Is it limited between 7am to 7pm in a residential area or will it start at 5 am?

Chris Upfold: It would be specific to Putney Bridge. It would depend upon the station and what local arrangements are in place.

Richard Parry: My guess would be that we don't make that sort of announcement outside of station curfew.

Angie Bray: Who takes that decision?

Richard Parry: There is a generic manual with specific guidelines for each station.

Angie Bray: Has that been done in consultation with the local councils?

Richard Parry: Our policy is based on local needs and responses we get from local people; there is not a systematic way of gathering information. The curfew hours are arrived at in response to specific local concerns. We will generally work with a local organised group that has made representations - it could be local council or an active residents association - we would not go out to seek views.

Angie Bray: When this manual has gone out we should expect presumably this is going to give an understanding of what should be done when. If they are still getting it wrong, what happens? Should people get in touch with you?

Chris Upfold: They should be able to get in touch with anyone. All complaints are now logged with the customer service centre - reports are made to the relevant manager and the matter is dealt with.

Angie Bray: What is the procedure? Does the irate resident have a number to ring?

Chris Upfold: There would be details at the station of the customer service centre. If you speak to staff locally they should log it as a complaint.

Inga Staples Moon: You have established a process for complaints?

Matt Ball: Yes.

Stephen Greek: Are these complaints passed to middle or regional managers? There seems to have been an issue with local managers turning down the volume and then regional manager telling them not to change it.

Chris Upfold: It would be my job to let all the layers of management know what's going on.

Peter Tollington: I don't expect that sort of complaint to reach my level as there are lots of other problems to deal with. .

Angie Bray: I'd like to move on finally to building relationships with local communities. I just wanted to see if Val and Martin had anything else to say?

Val Weedon: I'm feeling comfortable things are falling into place. People were making complaints to London Underground and nothing was happening so people turned to the UKNA but now that policy has changed. We want assurance that London Underground will look at complaints.

There are some other noise issues that have been starting to come out. There are rumours of piped in music. I don't know whether that's true.

Richard Parry: To clarify there are already 50 stations where classical music is playing. Not on platforms but at very low levels in ticket halls at certain times. There have been no complaints. It has been played for up to a year in some places – it is low key.

Val Weedon: Just at isolated stations?

Richard Parry: 50 stations is a fifth of the network. It would not be used on open platforms or at none of the major stations in the central area as there is too much going on. Vauxhall is the closest station to central London.

Val Weedon: Is it used for crowd control?

Richard Parry: We did it as a trial. People say that it makes they system feel more pleasant and their journey calmer.

Martin Bishop: I suppose if you could solve the technical problem then all of the other problems would disappear. I have been told that the platform speaker level is capped at 65 decibels. If I can still hear it there is a problem whatever the frequency.

Naran Gorasia: 65 decibels on the platform is about the level of a raised conversation.

Martin Bishop: Well it's too loud as I can still hear it

Naran Gorasia: I don't know if they've actually done that at Putney Bridge.

Matt Ball: I'm not aware it's been turned down.

Angie Bray: We need to achieve clarity at the lowest level possible.

Martin Bishop: Putney Bridge is unique as its high up and the problems is exacerbated by the high buildings around high platform.

Naran Gorasia: We are working with our contractor, Arup, to map each station.

Chris Upfold: We need to do something at Putney Bridge.

Martin Bishop: There is a balance to be struck.

Angie Bray: Let's move on to finally talk about what you're doing to improve relationships with local residents. Are there any forums for open platform stations?

Richard Parry: In general, not just for public announcements or noise, we're happy to have whatever relationship residents want to have. We're always available. If people want us to meet with them then we will. On public announcements it is very piecemeal. We have attempted to deal with concerns – but it may take longer. It is very different. There isn't one size fits all. We've taken a local view.

Angie Bray: Will you publicise the trial to local residents at Putney Bridge and Boston Manor to enable them to get involved.

Richard Parry: Yes it's a good idea; we should invite feedback from local residents.

Chris Upfold: Our customers and local residents do need to be happy otherwise there's no point in conducting a trial.

Inga Staples Moon: If you are updating the system will you let then know.

Richard Parry: It's a good idea. It is the Infracos that are dealing with this. We will work with Tube Lines.

Angie Bray: What about stations where there has been a history of having some sort of agreement. Should there be a memorandum of understanding.

Richard Parry: I would hesitate – it's not a mutual agreement we have to assert our duty of care. We should explore, particularly as we have the manual of good practice, to give a promise. This would set out our policy so that customers and residents can contact us if we get it wrong.

Peter Tollington: The disturbance caused by announcements we can deal with but there are other issues such as engineering, wheel screech if the weather changes and vibration which we can't.

Martin Bishop: We all live with that as its railway noise.

Peter Tollington: They can go up they can go down.

Martin Bishop: You measure volumes inside. You need to measure outside.

Chris Upfold: You are right that we haven't done that.

Naran Gorasia: The study will look at modelling noise in the vicinity.

Richard Parry: Noise is an absolute or relative level. Ambient noise volume of announcements are supposed to be at a delta above baseline so it will vary if there is more noise on the station.

Angie Bray: Can we get to where we want to be with technology, a manual and local agreements.

Val Weedon: Just from our point of view, from commuters and other people that use the system. If people come to us that if we forward them to you that there is a system in place where they will be listened to? If people come to us we will ask them to pin down the details of their complaint to help you investigate.

Chris Upfold: I guess the caveat there is "address it". We will listen to people but we may have to continue to do something that they do not like.

Angie Bray: What is the problem with Lambeth North?

Matt Ball: There are reports of a hut on the roof. It sounds very odd and is being investigated.

Richard Parry: We will follow up with specifics of the research we've done. We will give you a contact name for someone in London Underground Customer Services?

Val Weedon: Oh yes please.

Angie Bray: Thank you very much everybody for a positive meeting.

Appendix 3 - List of evidence

Justine Greening MP
Linda Pawson
London Borough of Bexley
London Borough of Camden
London Borough of Croydon
London Borough of Hammersmith & Fulham
London Borough of Haringey
London Borough of Hillingdon
London Borough of Islington
London Borough of Merton
London Borough of Newham
London Borough of Redbridge
London Borough of Richmond upon Thames
London Borough of Southwark
London Borough of Westminster
London Forum of Amenity & Civic Societies
London TravelWatch
Mr G Roberts
Mr Wadhvani
Network Rail
Northwick Park Residents' Association
Royal Borough of Kensington & Chelsea
Tom Brake MP
Transport for London
Transport for London

73 responses from residents at Finsbury Park, Putney Bridge, South Woodford and Turnham Green.stations

Appendix 4 – Principles of London Assembly scrutiny

An aim for action

An Assembly scrutiny is not an end in itself. It aims for action to achieve improvement.

Independence

An Assembly scrutiny is conducted with objectivity; nothing should be done that could impair the independence of the process.

Holding the Mayor to account

The Assembly rigorously examines all aspects of the Mayor's strategies.

Inclusiveness

An Assembly scrutiny consults widely, having regard to issues of timeliness and cost.

Constructiveness

The Assembly conducts its scrutinies and investigations in a positive manner, recognising the need to work with stakeholders and the Mayor to achieve improvement.

Value for money

When conducting a scrutiny the Assembly is conscious of the need to spend public money effectively.

Appendix 5 – Orders and translations

How to Order

For further information on this report or to order a copy, please contact Inga Staples-Moon, Assistant Scrutiny Manager, on 020 7983 6540 or email: inga.staples-moon@london.gov.uk

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