

City of London

Noise Strategy

2016 to 2026



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FOREWORD

Noise is part of the everyday experience for residents, workers and visitors to the City of London. It is an inevitable consequence of modern society, the density of development, the intensity of activity and sometimes conflicting needs of different communities in such a small area.

The sound of the City for many is iconic, vibrant, invigorating and forms part of the ‘buzz’ of City life. However for others unwanted sound (noise) can detract from enjoyment, be an annoyance, or be detrimental to health and well-being.

Noise is an issue of concern for City residents, workers and visitors and most want action to reduce it. However noise management is a challenge as business activity intensifies, the night time economy expands and the number of City residents grows and their expectations change.

Successful noise management is complex, often requiring the balancing of competing economic, social and other environmental issues. Sustainable noise management requires a long term strategic approach entailing action from a wide range of City Corporation departments, businesses and other organizations.

This strategy brings together and refreshes the different strands required to bring about noise avoidance, mitigation and hopefully reduction. Similarly, it contains new proposals to protect and enhance the acoustic environment when opportunities arise. It sets the strategic direction for noise policy within the City of London until 2026 and outlines steps that the City Corporation will take, and has taken, to maintain or improve the City’s acoustic environment.

The document aims to achieve balanced, relevant and integrated noise management across the City Corporation and its partners through implementation of the policies and actions. In so doing it should contribute to health and well-being for the City’s communities and support businesses by minimising or reducing noise and noise impacts. It also aims to take account of the sometimes differing needs of those communities and of the need to provide a built environment to meet City business growth and maintain its infrastructure.

I hope that we can all work together to protect and enhance the acoustic environment, to mitigate and minimise noise pollution and to achieve a better “soundscape” for residents, workers and visitors across the Square Mile.

Wendy Mead CC

Chairman of the Port Health and Environmental Services Committee

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Acknowledgement

The City of London Corporation would like to thank Colin Grimwood (CJGEM) for collaborating with the Pollution Control Team in the production of this strategy.

EXECUTIVE SUMMARY

Being located at the heart of London, the City of London inevitably experiences relatively high levels of noise. Managing noise in the City is a considerable challenge due to density of development and the vast transport network that caters to the large daytime worker population and the increasing numbers of visitors who come to enjoy our many attractions. At the same time the sounds of the City are also regarded by many as a vibrant and exciting reflection of a thriving urban centre.

The main noise sources of concern in the City are from building works, street works, road traffic, leisure activities, and other commercial activities such as deliveries, plant and equipment. High levels of noise not only cause disturbance to residents in their homes, but can also disrupt business activity in the City and spoil the visitor experience. The City Corporation has a statutory responsibility to manage and minimise exposure to excessive and sometimes unnecessary noise, whilst ensuring that the City can continue to function as a modern world-class business centre.

The City of London Noise Strategy brings together and updates policies and programmes that are already in place to manage and mitigate noise. It is essentially an update and a continuation of the innovative approach that we began with our first Noise Strategy published back in 2012. It will run for a period of ten years from 2016 – 2026, with an interim progress review envisaged in mid-term. The Noise Strategy includes new measures which will work alongside our existing approaches to improve the management of the acoustic environment in the City. In striving to enhance the quality of the acoustic environment of the City we will help to deliver the vision and policies for shaping the future of the City as contained in the Local Plan (City of London Local Plan, 2015). In particular, the Noise Strategy helps deliver one of the key themes of the Local Plan to “protect, promote and enhance our environment” whilst contributing to the wider policy context of maintaining a world class city that supports our diverse communities and remains vibrant and culturally rich. Our Noise Strategy supports policies included by the Mayor of London in the London Plan and in the Mayor’s Ambient Noise Strategy (Mayor of London, Sounder City, March 2004 - due to be updated during 2016/17).

The following specific areas are addressed in this Noise Strategy:

- Noise associated with new developments
- Noise associated with transport and street works
- Noise complaints from residents, visitors and businesses
- Protecting and enhancing the acoustic environment and soundscape

Managing noise from new developments is primarily through early engagement with developers and the implementation of appropriate planning and licensing policies. The main aim is to avoid any significant noise impacts and to ensure that activities associated with new developments mitigate and minimise noise impacts and do not result in complaints of noise nuisance. Similarly, we will also seek to mitigate the impact of existing noise on new noise sensitive developments such as housing, hotels, offices and any new public open spaces. Our approach is to engage both at the strategic planning stage as well as through the planning consent process. We will seek to incorporate noise

issues into City planning policies and work more closely with developers before planning applications are submitted to influence building design and layout.

Transport noise, particularly from road traffic is the dominant noise source in many parts of the City. Tackling the environmental impact of road traffic, including excessive levels of noise, requires a co-ordinated and long term approach. The gradual introduction of quieter low emission vehicles offers a number of opportunities for environmental improvement. We will seek to co-ordinate any noise management measures with policies in other relevant strategies such as the upcoming Freight Strategy and the City Air Quality Strategy.

Street works can be a source of disturbance in noise sensitive areas and as a consequence need to be carefully managed. This Strategy proposes measures to minimise the noise impacts of street works, whilst ensuring that the duration of the works is minimised to reduce disruption to traffic.

The City Corporation has a statutory obligation to investigate and take action on complaints of noise nuisance. Despite the numerous proactive measures to deal with the potential for excessive noise, the City Corporation now receives around 1,100 noise complaints per year (up from around 750 per year in 2011). The Strategy outlines a range of actions aimed at improving the way noise complaints are addressed. These include improved liaison with the City Police and the Safer City Partnership, and implementing current and emerging guidance on good practice for managing noise contained in relevant codes of practice.

There are requirements in the NPPF and the London Plan for local planning policies to improve and enhance the acoustic environment and to promote appropriate soundscapes (including protecting areas of relative tranquillity). Such measures are particularly relevant in the City in order to promote health and well-being and to provide areas of respite from the noisy urban environment. Careful management of the acoustic environment will also help to deliver wider aims of the Local Plan. This Strategy therefore encourages a new and logical approach to the management of soundscape in outdoor spaces and hybrid indoor-outdoor places in the City. The Strategy outlines our support for measures to promote iconic sounds, lost and disappearing sounds, wanted sounds, added sounds, sound walks, and to support sound art installations. We will also continue our ongoing initiative regarding the identification of relatively tranquil areas in the City and the development of policies to protect and enhance these spaces. We will seek opportunities to encourage major new developments to support such measures.

The Strategy reflects the concerns of residents, workers and visitors to the City who have previously been interviewed and consulted about the City's acoustic environment. We will continue to seek feedback and hope to undertake a further survey to monitor the success of the measures we are taking. It is our intention that the policies and actions proposed will help to ensure that the City Corporation fulfils its statutory obligations for noise management, as well as seeking to improve the health and well-being of the City's residential and business communities.

TEN KEY AIMS FOR THE NEXT TEN YEARS

The City of London Noise Strategy supports local, regional and national policy and aims to take into account the guiding principles of sustainable development and to:

- Avoid noise, and noise impacts, which could significantly adversely affect the health and well-being of City residents, workers and visitors
- Mitigate and minimise noise, and noise impacts, which could otherwise adversely affect the health and well-being of City residents, workers and visitors
- Support the City Corporation to fulfil statutory obligations for local noise management and assist others in fulfilling theirs
- Commit the City Corporation to provide joined-up regulation on environmental, neighbourhood and neighbour noise issues and to take account of this Strategy in policy development and delivery of its various activities within the City
- Balance the mitigation and minimisation of noise and noise impacts with the need to improve and update City infrastructure
- Encourage measures which will reduce noise emissions in the Square Mile
- Build corporate, business and public awareness, understanding of noise issues and noise management good practice
- Recognise, reward and disseminate good practice
- Work in partnership with other organisations, and to take a lead where appropriate, in order to help shape local and regional policy
- Protect, and where possible enhance, the acoustic environment and soundscape in suitable parts of the City in such a way that any measures will contribute to an improvement in health and quality of life/well-being of City residents, workers and visitors. (This will include seeking opportunities for the enhancement of the acoustic environment, for the promotion of soundscape initiatives, and for the protection of relatively quiet and tranquil places when and where such measures are supported by the local community)

1. BACKGROUND (Evidence Base)

1.1 WHY NOISE IS A CONCERN AND WHAT ARE THE SOURCES?

1.1.1 How noisy is the City?

As London's principal business location, the 'Square Mile' inevitably experiences relatively high levels of noise. Noise levels tend to be higher during the working week than at weekends. Traffic noise dominates the City during the day, while at night and at weekends building service noise (e.g. air handling plant) is more prevalent. Noise from construction sites and street works can also be dominant in the City, though this tends to be more transient.

In 2009, 24-hour noise monitoring was carried out at various locations across the City. This was to assess how noise varies and to provide a benchmark for further improvements to the noise environment. The locations chosen were residential, schools, City gardens, riverside and street locations. Weekend measurements included residential areas. Other potentially noise sensitive locations such as hotels, churches, libraries etc were not specifically included, but will be considered in any future survey.

In the 2009 noise monitoring survey, average noise levels in the City during the week day were found to be between 53dB $L_{Aeq,T}$ at the center of Barbican to 74dB $L_{Aeq,T}$ at Bank junction. At night, noise levels at the Barbican reduced to 50dB $L_{Aeq,T}$ and to 72dB $L_{Aeq,T}$ at Bank junction. Noise levels at the Barbican were very similar at weekends although in general weekends tend to be quieter in the City than the working week. Previous government funded National Noise Incidence Surveys (NNIS 2000) have found that, on average, noise levels at residential locations in England & Wales typically drop by around 10 dBA at night which confirms that night time noise levels may be unusually high in some parts of the City.



In 2010, a small noise attitude survey was undertaken in the City. In total 173 residents and 283 workers were asked how loud they thought noise levels were in the City. The results are shown below (in Figure 1), with 57% of workers, and 60% of residents considering that the City was either 'loud' or 'very loud'. The views of business and leisure visitors were not specifically sought as part of this survey.

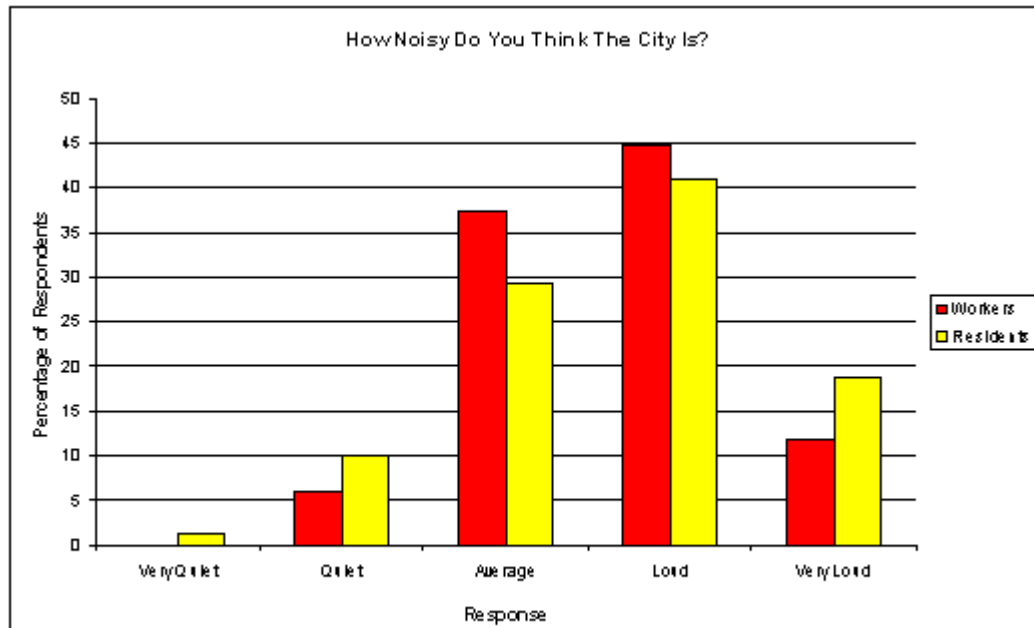


Figure 1: How noisy is the City? Responses from workers and residents.

A more recent government funded National Noise Attitude Survey with over 2,000 respondents (SoNA 2013) found that the majority of people interviewed did not think that noise spoilt their home life, with 82% reporting that noise did not at all or not very much spoil their home life. However, 6% of respondents to the national survey reported that noise spoilt their home life either quite a lot or totally. Also, one-sixth of the national sample (17%) reported that they or someone in their household had made a complaint or taken action about a noise issue within the past five years. The national survey, which was confined to householders, confirmed previous findings that only a small proportion of noise problems come to the attention of the relevant local authorities. The views of workers and visitors have not been obtained at the national level, although we consider that reflecting the views of all City stakeholders will be important to future noise policy in the Square Mile.

1.1.2 Noise sources and problems

The M&CP Pollution Control Team receives a large number of noise complaints every year. When the 2012 Strategy was being prepared the average from 2009 – 2011 was around 750 noise complaints per annum. The results below (Figure 2) show the main sources of noise and their proportion of the total complaints received for the three years to 31 December 2011. During this period around 30% of the noise complaints were received outside office hours, at night or at weekends and bank holidays.

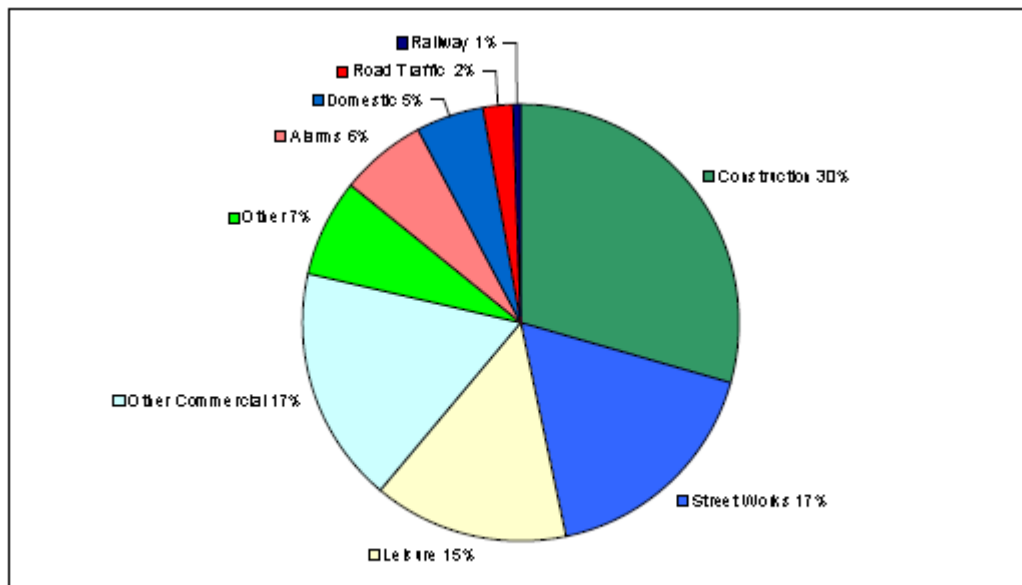


Figure 2: Source of noise complaints made to City of London 2009-2011.

As part of the preparation for this Strategy we have reviewed the noise complaints received since 2011. The total number of complaints received, presented by source and by year, is shown below (in Figure 3). The relative proportions of total complaints by source over the period 2012 to 2016 are also shown below (in Figure 4).

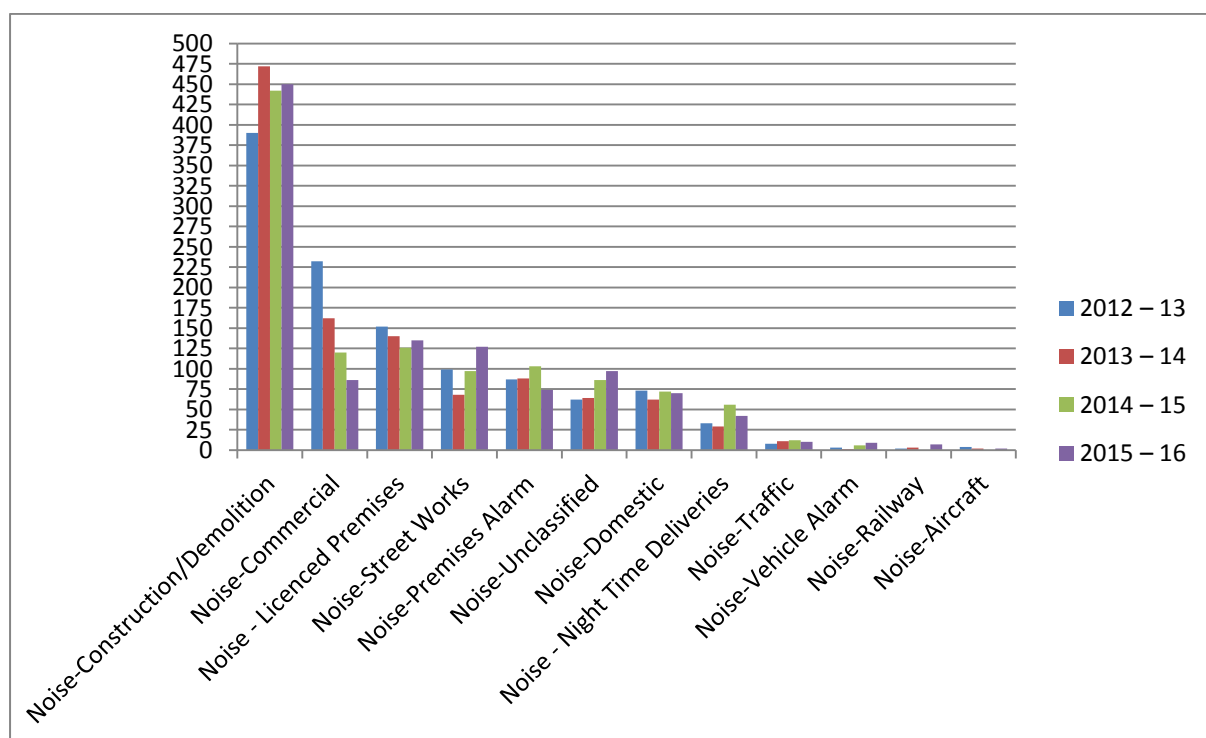


Figure 3: Number of noise complaints by source for years 2012 to 2016.

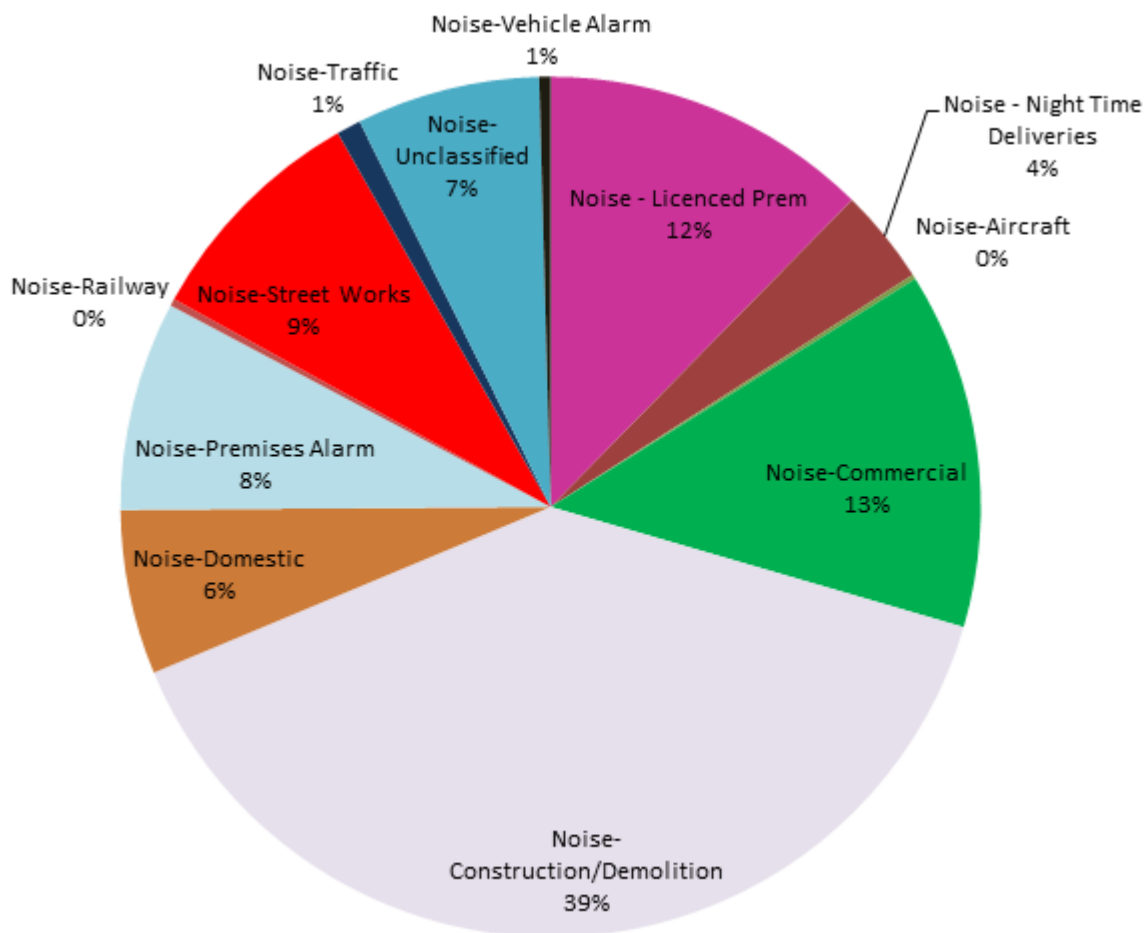


Figure 4: Source of noise complaints made to City of London 2012 – 2016.

The annual number of complaints received has increased to around 1,100 a year in 2015-16, representing around a 45% increase in requests for this service since 2011. However, the proportion of complaints attributable to the various sources has stayed fairly similar over this same period. For the year 2015-2016 487 (42%) of the total noise complaints were received outside office hours, at night or at weekends and bank holidays.

It should be noted that there could be many reasons behind an increase in noise complaints to the Pollution Control Team and that further research is required to determine the reasons behind this trend. For example, the trend may be because the City has become a noisier place, or because there are now more people living here, it may be that residents and workers are more aware of their rights, it may be that expectations have changed, it may be that our service has improved and that we are receiving more requests to help as a result, or it could simply be a consequence of changes and improvements in the way we are recording complaints. Furthermore, people tend not to complain if they think nothing can or will be done by the relevant authorities, so the number of complaints is only a partial indicator of public concern and our evidence base is therefore be supplemented by attitude surveys.

In the 2010 City noise attitude survey, a selection of residents, visitors and workers were interviewed about the type of noise that they notice in the City; 98% of residents and 87% of workers questioned noticed some form of noise. The noise source most evident was traffic and

building works as shown below (in Figure 5); 16% of residents also noticed noise from other people and 15% from pubs and bars. Residents were disturbed by a wider range of noise sources than workers.

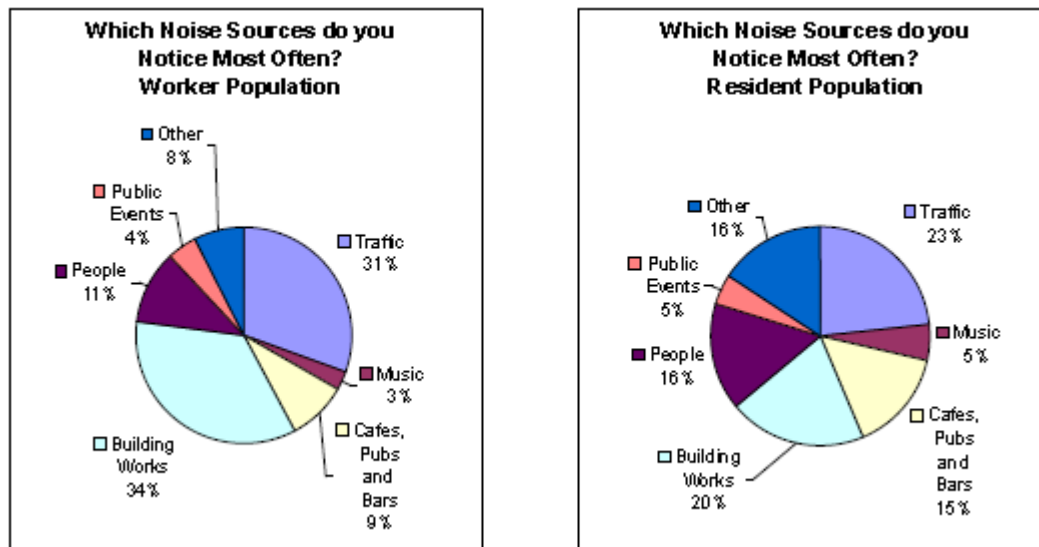


Figure 5: Noise sources noticed most often. Responses from workers and residents

Considering both the nature of complaints received by the Pollution Control Team and the City noise attitude survey results, the following noise sources remain of main concern:

- Building construction and demolition
- Street works
- Road traffic
- Leisure activities, particularly 'people' noise associated with licenced premises
- Noise from other commercial premises activities e.g. deliveries, plant and equipment noise, alarms
- To a lesser extent, neighbour noise (e.g. music / TV), alarms, other transport (e.g. aircraft, railways)

This list is not exhaustive and other sources of noise may well become important issues from time to time during the life of this Strategy. We will continuously review our approach to handling and responding to noise complaints in order to reflect local needs and priorities in addition to meeting our statutory responsibilities.

High levels of environmental and neighbourhood noise can also interfere with the conduct of business activities in the City and may spoil the visitor experience. According to the same survey, the majority of both residents and workers would like to see action to reduce noise levels in the City as shown below (in Figure 6).

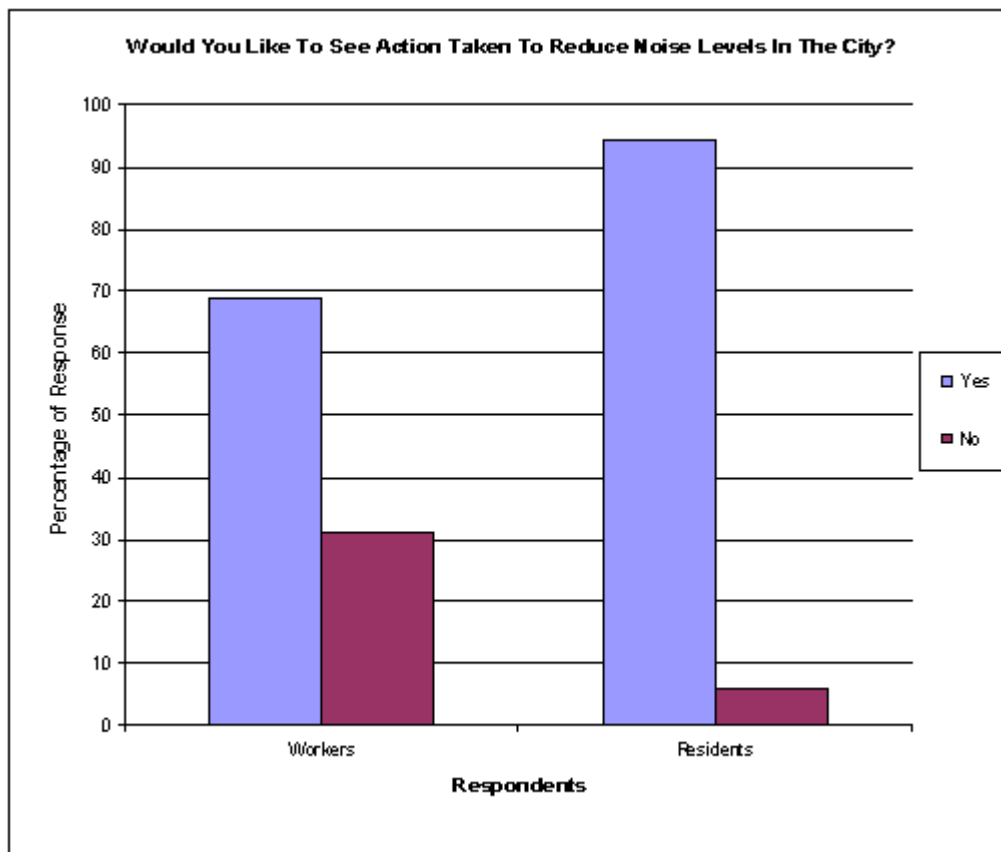


Figure 6: Should action be taken to reduce noise levels in the City? Responses of workers and residents.

1.1.3 Impact of noise on health and well-being

The relationship between noise exposure and health effects at the typical noise levels experienced in the everyday environment is not straightforward. Hearing loss does not occur from typical exposure to environmental noise and is more commonly associated with occupational exposure to much higher noise levels (above 75 dB(A)) over long periods, or exposure to very high noise levels (above 120 dB(A)) for a few minutes. Hearing loss is also associated with aging, certain diseases, head injuries, accidents and hereditary factors.

However, there is accumulating evidence of the impacts of everyday levels of environmental noise on health, well-being and quality of life. In the everyday environment, the response of an individual to both sound and noise is more likely to be behavioural or psychological (i.e. non-auditory) than physiological. The Health Protection Agency published an overview report in 2010 (Environmental Noise and Health in the UK, July 2010). The report cites examples of non-auditory health effects which have been linked to environmental noise including annoyance, sleep disturbance and other night time effects, cardiovascular and physiological effects, mental health effects, reduced performance, communication and learning effects.

Annoyance is the most frequently reported problem caused by exposure to transportation noise and is often the primary outcome used to evaluate the effect of noise on communities. There is some evidence that the attitudes and opinions of residents towards some sources of transport noise has been changing over the past twenty or thirty years.

Studies have shown that noise can effect sleep in terms of immediate effects (e.g. arousal responses, sleep state changes, awakenings, body movements, total wake time, autonomic responses), after-effects (e.g. sleepiness, daytime performance, cognitive function) and long-term effects (e.g. self-reported chronic sleep disturbance).

It has been shown that long term exposure to road traffic noise may increase the risk of heart disease, which includes heart attacks. Both road traffic noise and aircraft noise have also been shown to increase the risk of high blood pressure. It has been noted that there are few studies that exist regarding the cardiovascular effects of exposure to rail traffic noise. Although environmental noise is not believed to be the direct cause of mental illness, studies suggest that it can accelerate and intensify the development of latent mental disorders. Studies on the adverse effects of environmental noise on mental health cover a variety of symptoms which include anxiety, emotional stress, nausea, headaches as well as general psychiatric disorders e.g. neurosis, psychosis and hysteria.

Three European research studies have investigated possible cognitive impairment in schoolchildren from transportation noise. There is evidence from two of these studies of an association between aircraft noise exposure and cognitive performance in schoolchildren (reading comprehension and recognition memory), but the same association was not seen for road traffic noise. Neither aircraft noise nor road traffic noise affected sustained attention, self-reported health, or mental health. It has been suggested that the intensity, location of source, variability and unpredictability of aircraft noise is likely to result in a greater effect on children's reading than road traffic noise, which was of a more constant level in the studies.

Vulnerable groups are thought to be generally under-represented in current research studies. According to the WHO (Community Noise, 1995; Guidelines for Community Noise, 1999) vulnerable groups may include the old, ill or depressed people; people with particular diseases or medical problems; people dealing with complex cognitive tasks, such as reading acquisition; people who are blind or who have hearing impairment; babies and young children; and the elderly in general. The WHO suggest that such people "may be less able to cope with the impacts of noise exposure and be at greater risk for harmful effects".

Specifically regarding night time noise levels, which are known to be high in many parts of the City, the WHO (Night Noise Guidelines for Europe, 2009) state that "children are less sensitive to night noise due to a higher awakening threshold, however for other effects children seem to be equally or more reactive than adults. Children also spend more time in bed and as such are exposed to more night noise levels. Elderly people are more vulnerable to disturbance due to sleep structure becoming more fragmented with age. A similar situation occurs with pregnant women and with people who are ill. Shift workers also are at risk due to their sleep structure being under stress due to the changes in their circadian rhythm".

According to the WHO, 'In some situations, but not always, noise may adversely affect the health and well-being of individuals or populations'. More recently, the WHO has stated that 'Environmental noise is a threat to public health, having negative impacts on human health and well-being'.

1.2 NOISE MANAGEMENT ROLES AND RESPONSIBILITIES

The City Corporation recognizes that the effective management of noise requires a coordinated and long term approach that encompasses the actions of many relevant bodies and many aspects of modern society. This is also made clear in the government's Noise Policy Statement for England (NPSE, March 2010). Noise has already been included as a priority in the City's Joint Health and Well-being Strategy (as one of the key challenges). The City of London Noise Strategy provides the framework for a longer term approach and our longer term aims will underpin our day to day decision making. We have previously identified a number of particularly relevant bodies who will need to work together to deliver the aims of this Strategy:

The City Corporation Department of Markets and Consumer Protection (M&CP) Pollution Control Team is the main City regulator of environmental, neighbourhood and neighbour noise. The team takes proactive action, responds to complaints and, in conjunction with the **Department for the Built Environment (DBE)**, provides a 'round the clock' outside office hour's service. The team is also consulted on licence and planning applications.

The M&CP Port Health Service deploys its officers and launches on the Thames, particularly during summer months, to monitor and control night time activity noise, taking enforcement action as required.

The City of London Police receives and share noise and noise related Anti-Social-Behaviour complaints and assist M&CP with enforcement.

The City Planning Officer (DBE) initiates planning policies and area strategies, determines planning applications and conditions, negotiates Section 106 agreements and takes planning enforcement action.

City Housing Management and Registered Social Landlords e.g. Guinness Trust, sets and enforces tenancy conditions related to neighbour noise and behaviour and has involvement in neighbour complaints.

The City Corporation Licensing Authority processes applications for premises Licences, investigates and enforces breaches of noise related licensing conditions.

Highways Authorities – Both the City Corporation (**DBE**) and **TfL** have responsibilities for the environmental impact of road traffic and also commission highways and street scene improvement works with associated control over the permitting of other street works (e.g. utilities works), on their respective road networks.

The Civil Aviation Authority, Ministry of Defence and Airport Authorities maintain noise complaints data, and responses, about aircraft and helicopter movements over the City of London.

Other City Organizations are responsible for ensuring that the noise generating activities they have control over are managed to prevent nuisance and minimise impacts on residents and businesses:

- Managed Premises Facilities or Event Managers including City Corporation premises e.g. Barbican Centre, Museum of London, Barbican Exhibition Centre
- Contract and Project Managers for City Corporation departments e.g. City Surveyors' works, refuse collection and street cleaning contracts, infrastructure and street works etc.
- Contractors for City of London Corporation 'outsourced' services e.g. waste collection and street cleaning
- City Corporation contractors for 'structures', highways maintenance and improvement, and street scene enhancement
- Businesses, Utility Companies, construction and development companies, site management
- Crossrail, Network Rail, London Underground

1.3 LIST OF POLICIES - EVIDENCE

POLICY EVIDENCE 1: The City Corporation will maintain an evidence base that provides an overview of noise levels and the overall quality of the acoustic environment and soundscape in the Square Mile and to use the information to review, update and prioritise our overall approach to noise management.

POLICY EVIDENCE 2: The City Corporation will from time to time assess community attitudes to noise, and the wider acoustic environment, including obtaining views from residents, businesses (including hotels) and visitors (for both business and leisure) and to use this information to review, update and prioritise our overall approach to noise management.

POLICY EVIDENCE 3: The City Corporation will continue to provide a 24/7 noise complaint response service that will be made available to residents, businesses, workers and visitors alike.

POLICY EVIDENCE 4: The City Corporation will work with relevant bodies, including both internal and external organisations and departments, in order to facilitate the effective implementation of the City Noise Strategy.

1.4 LIST OF ACTIONS - EVIDENCE

1. To consider the feasibility of a permanent noise monitoring network in the Square Mile including a real time web based interface that will provide information on the acoustic environment to all interested stakeholders.

2. To repeat aspects of the previous City noise measurement survey during the life of this Strategy, including 24-hour noise measurements at the same or similar locations to last time, in order to assess trends over time and to help determine priorities. Also need to consider whether any new locations should be added to support the wider aims of this Strategy.

3. To explore the potential use of data derived from noise modelling and noise mapping initiatives within the City to improve the available evidence base that underpins the Noise Strategy.

4. To investigate the potential for undertaking GIS based analysis of noise levels in the City in combination with other available datasets to seek new insights on the acoustic environment of the Square Mile and its relationship with other policy issues.

5. To undertake a repeat noise attitude survey during the life of this Strategy, including further investigation of sounds both liked and disliked, in order to obtain the views of residents, workers and visitors and to help update this Strategy and to determine priorities.

6. To seek the inclusion of relevant questions about noise and the acoustic environment in any stakeholder surveys being undertaken by the City Corporation.

7. To continue to monitor and respond to complaints about environmental, neighbourhood and neighbour noise in accordance with our statutory duties and any current agreed local policies.

8. To undertake further research to better understand the reason behind the apparent significant increase in complaints to the Pollution Control Team in recent years.

- 9.** To review the current system used to collect noise complaint statistics to see if it can be improved. For example, we will consider recording more details on the type and time and resolution of noise complaints and whether they originate from residents, workers or visitors.
- 10.** The M&CP Pollution Control Team will promote this Strategy and lead a review of current arrangements for the identification of, and liaison between, relevant internal and external bodies, aiming to produce revised MoU's and improved working arrangements where necessary.
- 11.** To consider supporting any innovative research proposals that investigate the overall personal noise exposure of City residents and workers across a range of lifestyle types.

2. NEW DEVELOPMENTS

2.1 OVERALL AIMS - PLANNING/NEW DEVELOPMENT

To take into account the guiding principles of sustainable development and to:

- Avoid noise, and noise impacts, which could significantly adversely affect the health and well-being of City residents, workers and visitors
- Mitigate and minimise noise, and noise impacts, which could otherwise adversely affect the health and well-being of City residents, workers and visitors
- Protect, and where possible enhance, the acoustic environment and soundscape in suitable parts of the City in such a way that any measures will contribute to an improvement in health and quality of life/well-being of City residents, workers and visitors.

2.2 INTRODUCTION

The City of London has a highly complex, densely developed and intensively used built environment in which space is at a premium and where multiple activities occur in very close proximity. Therefore the effective management of noise impacts applies to both new development that introduces noise and new development that is sensitive to noise, and should always have regard to the longer term consequences and the intended future acoustic environment of the City.

Offices currently make up around 70% of all buildings in the City. Office based business and financial related services are the dominant activities, however the City is also a place where people live. The resident population is currently around 9,000 and is expected to grow slowly in the coming decade to around 10,000, with those aged 65 years and over contributing most to this growth. The workday population is currently around 373,000 and is expected to grow to around 428,000 over the same 10 year timescale. The workday population predominantly uses public transport to travel to work has a transient, male and younger (20 to 50 years old) age profile. The City has a number of locations which have particular noise sensitivities, for example our residential areas, churches, educational and health service sites as well as the City open spaces. Some of the existing noise challenges can be traced back to the historic origins of the City, whereas others are a legacy from previous planning policies and decisions.

The level and rate of new development, including redevelopment of existing buildings, continues to be high. The Local Plan anticipates continuing economic growth for the City, predominantly business and financial services led and identifies “significant competing demands between the need to accommodate new office development alongside the need for new housing, social and community facilities and improved transport infrastructure”. The arrival of new hotels, being both a source of noise and being sensitive to night time noise, is also likely to present new challenges for noise management in some areas.

The Local Plan identifies five “Key City Places” where there are specific pressures for development over the next 20 years. These *Key City Places* present both challenges and opportunities for the acoustic environment:

- **The North of the City** – addressing the impact of, and accommodating the growth resulting from Crossrail, whilst maintaining a mix of uses and protecting noise sensitive areas such as the main residential areas of the Barbican, Golden Lane, Barts Square and St Barts Hospital; need to respond to increasing visitor numbers; opportunities to promote soundscape initiatives in the proposed cultural hub around the Barbican.
- **Cheapside and St Paul's** – which is becoming the City's pre-eminent retail area with the success of One New Change; possible opportunities to promote soundscape initiatives centred on St Paul's Cathedral and the large number of visitors arriving across the Millennium Bridge.
- **Eastern Cluster** – will see significant office growth, there will be a number of new tall buildings, greater street level congestion and pressure on open space, a need to ensure a safe and attractive environment and to deliver a suitable acoustic environment for the people working in and commuting to this small area.
- **Aldgate** – expected to undergo significant improvements to the highway and public realm with promotion of social, environmental and business regeneration; this area currently suffers from high traffic levels, yet contains the Middlesex Street and Mansell Street residential estates and Sir John Cass's Foundation Primary School.
- **Thames and the Riverside** – encouraging a mix of commercial uses and increased accessibility; increased use of the river including a potential increased role in moving construction and deconstruction materials; promoting vibrant areas with offices and hotel development, managing noise affecting housing at the Temples and around Queenhithe; protecting and enhancing areas of higher soundscape quality such as existing relatively tranquil open spaces, specific riverside locations and addressing the acoustic quality of the riverside walk to promote recreation and enjoyment.

The intensive use of land, anticipated future economic growth and mixed uses of some of the *Key City Places* pose distinct and challenging noise management issues. It is particularly important to ensure that occupiers of commercial and residential buildings, hotels, serviced apartments, schools and hospitals have adequate protection against noise. At the same time, it is also important to protect and enhance the acoustic environment and soundscape when such opportunities arise.

The prevention and minimisation of noise associated with construction and demolition sites (we often use the term “deconstruction” to reflect a more careful managed process) is also an essential amenity consideration for residents, businesses, visitors and for other noise sensitive premises, such as churches, schools and libraries. Furthermore, it is not just major developments which have potential for noise impact; even minor works can cause significant local problems if they are not managed properly.

Planning and noise is a complex field in which a number of national, regional and local documents play an important role. These include the Local Plan, the London Plan, the NPPF, this Noise Strategy and the NPSE. These key documents together with relevant examples of national and/or international good practice will provide the basis for the management of noise and the enhancement of the acoustic environment relating to new development in the Square Mile. Our approach will be supported by more detailed policies contained in Supplementary Planning

Documents (SPDs), including the updated Environment SPD as well as other relevant City policy documents.

Noise impacts and solutions need to be considered within the broader framework of sustainable development, and in conjunction with other associated environmental impacts of development such as increased carbon emissions and air pollution.

2.3 THE MANAGEMENT OF NOISE RELATED TO NEW DEVELOPMENT

The main noise sources related to new developments in the City are:

- Construction and deconstruction work and associated activities e.g. piling, heavy goods vehicle movements, utilities street works
- Building services plant and equipment e.g. ventilation fans, air-conditioning, emergency generators
- Leisure facilities and licenced premises e.g. people and amplified music
- Servicing activities e.g. deliveries, window cleaning and building maintenance

The most common new noise sensitive developments in the City are:

- New residential developments, hotels, serviced apartments and offices.

For noise sensitive developments we will seek confirmation of appropriate acoustic standards at the design stage.

2.3.1 Demolition and construction

The high level of intensive development in the City, including major office redevelopments in the east and infrastructure projects such as Bank Station Capacity Upgrade, Thames Tideway and Crossrail, can have significant environmental impacts on occupiers of nearby noise sensitive premises. Protecting City businesses, residents and other noise sensitive premises (e.g. schools) from noise and vibration impacts of construction sites is essential to the City's continuing reputation as an excellent place to live, to visit and to work and do business.

Developers will continue to be required through planning consent conditions to obtain approval for and adhere to Environmental Management Plans which comply with the requirements of the City of London Code of Practice for Deconstruction and Construction Sites.

Use of s106 and Community Infrastructure Levy agreements and planning conditions for monitoring and the mitigation of noise associated with large developments will continue to be negotiated with developers at sites close to noise sensitive premises such as housing and schools.

For the ongoing large infrastructure projects (e.g. Crossrail, Bank Station Capacity Upgrade, Thames Tideway Tunnel), we will continue to make representations and actively engage with the relevant bodies to avoid significant adverse impacts and to minimise noise and amenity loss.

2.3.2 Building services plant and equipment

Mechanical plant and other equipment used for providing building services will emit noise which, if not controlled, can be detrimental to the amenity of an area or cause a nuisance to residents or businesses. Noise from these sources contributes to the overall ambient noise levels in the City and sometimes can adversely affect the acoustic environment of open spaces and otherwise relatively tranquil locations. The density, size, design and number of commercial buildings in the City have resulted in very large numbers of building services installations in a particularly compact area. In order to prevent nuisance and loss of amenity, to protect the acoustic environment and to minimise the upwards creep of ambient noise levels, developers will be required to demonstrate that there will be no increase in pre-existing background noise levels resulting from new plant, equipment or machinery.

2.3.3 Leisure facilities and licenced premises

The style and character of many licenced premises has changed significantly in recent years. Both existing and new premises seek longer operating hours, often to the early hours of the morning, providing live or recorded amplified music. This is an inherent part of the buzz of the City and is supported by the GLA's Night Time Commission and facilitated by the forthcoming Night Tube. However, some of these premises are close to residential accommodation and may result in complaints about disturbance and nuisance from excessive noise, particularly from people drinking and smoking outside, arriving or leaving. Planning policies are being developed to minimise the noise impact of new licenced premises. Guidance is provided to licence applicants in the City of London Statement of Licensing Policy on preventing public nuisance from noise. Representations can be made to the Licensing Authority in connection with new licence applications or variations on the grounds of preventing public nuisance.

2.3.4 Servicing

The concentration of businesses in the City necessitates the regular delivery and collection of equipment, materials, foods and solid waste to sustain their operations. This includes the City of London's waste collection service. For this purpose, a vast number of commercial vehicles enter and leave the City. Where vehicles are involved in noisy servicing in noise sensitive locations outside business hours e.g. early morning when close to residential accommodation, then disturbance resulting in a statutory nuisance can result. The waste collection service currently operates 24/7 and is managed to minimise the risk of noise nuisance wherever practicable.

Deliveries and collections close to residential accommodation which are likely to cause disturbance, loss of amenity or a nuisance will continue to be discouraged between 23:00–07:00 weekdays and Saturdays, with no deliveries permitted on Sundays and Bank Holidays.

However, some essential services such as refuse collection may continue to need to take place outside these times e.g. on Sundays or Bank Holidays. Additionally where parking or other restrictions prevent loading and unloading during workday working hours, flexibility in the application of the above times will be needed.

Where there are no alternatives to servicing taking place outside the above times businesses will be encouraged and, if necessary, required to use quiet delivery methods to minimise disturbance or nuisance.

Noise minimisation from servicing activities will be managed by the use of planning conditions, advice and encouragement, and, if necessary, enforcement of noise nuisance and other relevant law (e.g. Environmental Protection Act 1990, Licensing Act 2003, Noise Act 1996).

The use of consolidation centres to reduce the overall number of servicing and delivery movements in the City is being actively encouraged as is the use of acoustically considered loading bays which may facilitate 24 hour servicing.

2.3.5 New residential development

Housing is a key determinant of health. The provision of adequate housing is likely to be a growing challenge for London in the coming years. As it is primarily a business district the City has an unusual housing and household profile. There were just over 6,000 dwellings in the City as of March 2011, 83% are owner occupied or in the private rented sector. More than 50% of households comprise one person, and 80% of households have no children. Around half of dwellings in the City have two or fewer “habitable rooms”, and around 20% have only one habitable room. Private gardens are extremely rare. The number of dwellings was projected (in 2011) to increase by around 110 per annum. The unusual nature of most City households has implications for noise management and, in particular the need to ensure good internal acoustic conditions in bedrooms and the need to protect and enhance the acoustic conditions of our open spaces.

The majority (around 60%) of the City’s housing units are located in the north of the City, particularly at the Barbican Estate, Smithfield and Golden Lane. This spatial concentration of housing units has implications for noise management and these are the areas where many noise complaints are received.

We will seek to ensure good acoustic design of all new residential development in the City by the incorporation of suitable planning policies in the Environmental SPD. We will pay particular attention to acoustic design where new residential development is likely to be exposed to high levels of environmental and/or neighbourhood noise either now or in the foreseeable future.

2.4 LIST OF POLICIES – NEW DEVELOPMENTS

2.4.1 New noise making and noise sensitive development

POLICY DEVELOPMENTS 1: The City Corporation will seek to manage noise impacts as a result of new development through the introduction and application of appropriate and effective planning procedures, policies, conditions and agreements, and in particular:

- a) Influence and provide advice on design and layout of new developments at pre- application stages e.g. to require the good acoustic design of all new residential development, to minimise noise from servicing commercial buildings affecting residential premises, to encourage better building design to favour quieter plant and equipment where technically possible, to encourage internal layouts which provide protection from internal noise transmission and external noise and to encourage suitable noise screening where appropriate.
- b) Prevent nuisance, loss of amenity and minimise creeping ambient and background noise levels from developments. Developers will continue to be required to demonstrate that noise levels

from new plant, equipment or machinery do not increase background noise levels. Developers will be encouraged to achieve the lowest achievable noise emissions.

- c) Continue to limit and contain noise and vibration from construction and deconstruction activities through the Planning Consent process, based on the latest edition of the City of London Code of Practice for Deconstruction and Construction and other relevant standards. This includes requiring through planning conditions the approval and implementation of Environmental Management and Construction Logistics Plans where appropriate.
- d) For mixed use sites or developments, planning policies will generally encourage physical separation of noise generating activities from noise sensitive premises as long as this is compatible with good acoustic design of the site. Where necessary, conditions to minimise noise and noise impacts through mitigation and / or limiting hours of operation will be sought.
- e) Prevent the introduction of noise sensitive uses into areas close to commercial developments with high noise levels where the achievement of acceptable standards for quiet living conditions are not technically practicable.
- f) Place limits on the hours of operation of servicing and noise generating activities at developments where noise sensitive premises are likely to be adversely affected. Existing limits for hours of servicing (permitted between 07:00 – 23:00, Monday – Saturday, except Bank Holidays) to be applied; where this is not practicable a plan to minimise noise from servicing will be required to be approved and implemented.
- g) Resist the introduction of noise generating activities such as leisure or entertainment venues into areas with strong residential character. Where this is not compatible with wider planning or other economic and social objectives for the area, to limit noise impacts by ensuring good acoustic design and by placing appropriate conditions including constraints on activities and limits on hours of operation.
- h) Seek opportunities in connection with new development for the enhancement of the acoustic environment, for the promotion of soundscape initiatives and for the protection of quiet and tranquil places when and where such measures are supported by the local community.
- i) Encourage and promote good acoustic design, soundscape initiatives, good practice in noise reduction and control in the design of street scene and open spaces enhancement schemes including the public realm.
- j) Seek to use community infrastructure funding for monitoring and mitigation of noise and the enhancement of the acoustic environment and soundscape, particularly in relation to large developments at sites close to noise sensitive locations such as housing, schools and open spaces.

2.4.2 Premises Licence policies, conditions and enforcement

POLICY DEVELOPMENTS 2: The City Corporation will seek to manage noise emissions and impacts of new leisure and entertainment premises through the development, application and enforcement of

appropriate, consistent and effective policies, procedures and conditions within the framework of the City of London Statement of Licensing Policy, and in particular:

- a) Resist the introduction of leisure or entertainment premises into areas where there is a strong likelihood that noise will result in public and / or statutory nuisance or a significant adverse impact. Where the development forms part of agreed wider or longer term planning objectives for the area, seek to mitigate and minimise noise impacts by promoting the City of London Statement of Licensing Policy to ensure noise from licensable activities is adequately managed e.g. use of sound insulation, good acoustic design, operational management measures and limits on hours of operation.
- b) Where appropriate, making representations to the City Licensing Authority as one of the Responsible Authorities (e.g. Pollution Control Team, City Licensing Service, Development Control and City of London Police) on licences and licensing applications.
- c) Where appropriate, supporting applications for review of licences by responsible authorities (e.g. Police or Fire) or 'other persons' (e.g. residents or businesses).
- d) Recognising that existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of recent changes in nearby land uses.

2.4.3 Infrastructure projects

POLICY DEVELOPMENTS 3: The City Corporation will continue to work pro-actively to manage noise impacts of major developments and infrastructure projects through:

- a) Lobbying and technical representation.
- b) Use of Development Control Orders or planning conditions e.g. requiring provisions of Environmental Management Plans for prior approval.
- c) Promoting a flexible approach to compliance and good practice contained in the City of London Code of Practice on Deconstruction and Construction Sites.
- d) Where necessary, use of enforcement measures under the Control of Pollution Act 1974, Environmental Protection Act 1990 and other relevant legislation.

2.4.4 Engagement, advice and guidance

POLICY DEVELOPMENTS 4: The City Corporation requires the Pollution Control Team to continue to provide in-house advice, support and guidance on managing noise impacts arising from proposed City Corporation development activities.

POLICY DEVELOPMENTS 5: The City Corporation requires the Pollution Control Team to continue to provide advice, support and guidance on minimising noise and managing noise impacts of street and other open space events planned in the City.

POLICY DEVELOPMENTS 6: The City Corporation will expect the Pollution Control Team to work proactively with the leisure, hospitality, retail, construction and other business sectors to ensure

noise and other environmental impacts of new developments are adequately managed and minimised.

POLICY DEVELOPMENTS 7: The City Corporation will support Pollution Control Team activities to liaise with developers and other relevant bodies regarding potential soundscape initiatives in the Square Mile (see Section 5 for more detail).

2.5 LIST OF ACTIONS – NEW DEVELOPMENTS

- 1.** Continually review and update planning conditions and informatives relevant to noise and the acoustic environment to ensure they are fit for purpose and reflect the policies and aims of the NPPF and associated national guidance, the Local Plan, other City Policy documents, the NPSE and this Noise Strategy.
- 2.** Develop appropriate planning policies in the emerging Environment SPD and other City policy documents to reflect the policies and aims of this Noise Strategy.
- 3.** Consider the acoustic environment and soundscape issues in environmental enhancement area strategies as consultations emerge.
- 4.** Implement the revised guidance to construction businesses on noise considerations and content relating to Environmental Management Plans.
- 5.** Engage with Defra, DCLG and relevant professional organisations regarding the development of suitable guidance on planning and noise that is relevant to the unique conditions found in the Square Mile.
- 6.** Work to influence Licensing Policy through the proposed review of the City of London statement of Licensing Policy and procedures.
- 7.** Continue to lobby major infrastructure providers for support to enable us to provide an effective process and a timely response to all consent applications.
- 8.** Continue to provide ad hoc advice on noise and soundscape issues to a wide range of City Corporation Departments e.g. DBE project works, facilities and housing stock management, waste collection, Guildhall Yard Public Programme, Barbican Centre and ad-hoc events promotion and management
- 9.** Continue to consider noise impacts (and any opportunities for soundscape initiatives) relating to City events and filming through the Safety Advisory Group (SAG) and also via direct consultation with M&CP Pollution Control Team.
- 10.** Seek to assess the risk of any unusual sonic effects on the acoustic environment that may result from the use of innovative urban design in the City, such as excessive reflections from tall glass buildings, unusual reflections from curved buildings and overhangs, and a lack of acoustic absorption in hard external areas.

3. TRANSPORT AND STREET WORKS

3.1 OVERALL AIM - TRANSPORT AND STREET WORKS

Aim: To promote and support the management of noise and noise impacts as a result of transport and street works, including noise minimisation, mitigation and reduction where possible, whilst recognising the importance of transport infrastructure and essential maintenance work.

3.2 INTRODUCTION

The City of London needs and promotes an efficient transportation system that allows commuters to get to and from work, as well as couriers and goods vehicles to make essential deliveries and collections.

The City is located at the heart of London's public transport system. Seven of the eleven London Underground lines and the Docklands Light Railway serve the City via thirteen underground stations with night tube proposed for the Central Line in the short term. There are six mainline rail stations, four of which are major rail termini. Approximately fifty bus routes serve the City's streets. Approximately 360,000 people commute to the City each weekday and around 90% of them use public transport. The Local Plan predicts that City employment will increase significantly over the next decade with a corresponding increase in commuting. Crossrail is due to commence operation in 2018 and further capacity improvements are expected to the Northern Line.

Additional information is now available on noise levels from major roads, and noise levels from major railways, derived from two rounds of computer noise modelling that has been undertaken by Defra in response to the Environmental Noise Directive. Figure 7 below shows the estimated levels of road traffic noise in the City according to the strategic noise mapping. Figure 8 shows the Noise Action Planning Important Areas (IAs) for roads (blue) and railways (black). These IAs represent some of the noisiest areas in the City and can provide a framework for local management of transport related noise pollution. It is possible to supplement this information with the location of Air Quality Management Areas (AQMAs) to allow a more co-ordinated approach to transport related pollutants. Linking this newly available geographical information with other datasets may also provide useful new insights.

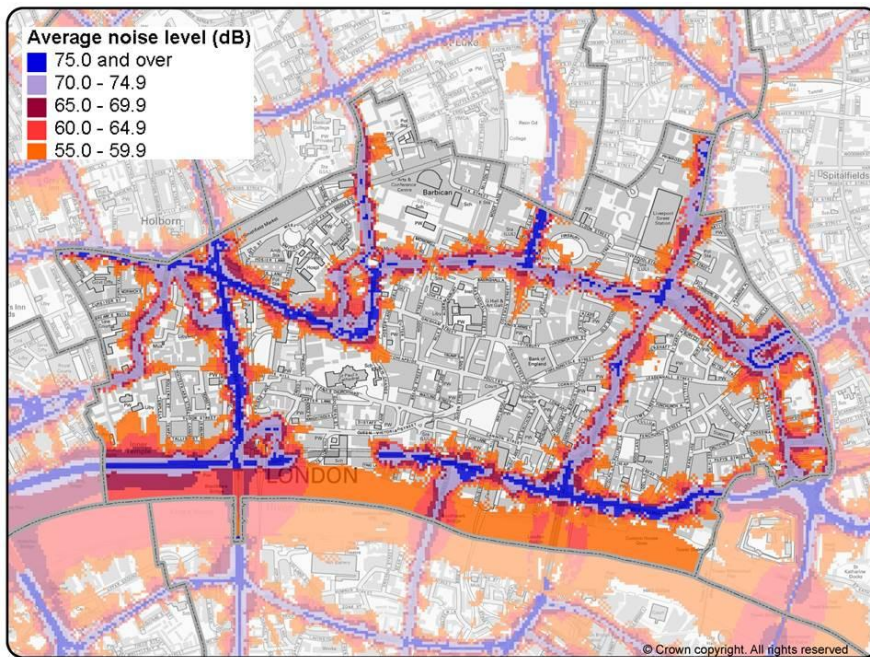


Figure 7: Average noise level (dB) from major roads in the City, according to Defra strategic noise mapping

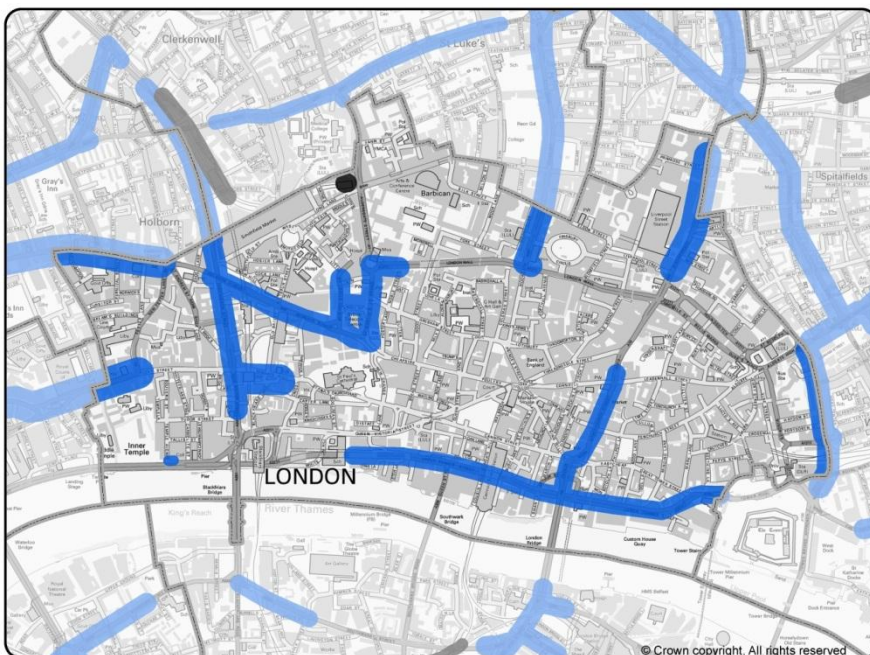


Figure 8: Noise Action Planning Important Areas in the City, according to Defra strategic noise mapping

[Figures 7 and 8 provided by Extrium Ltd, more information available at <http://www.extrium.co.uk/noiseviewer.html>]

Road traffic noise is the most prevalent source of environmental noise in the City, and it is known to result in adverse impacts on health and quality of life, but it is less frequently a source of complaint. Furthermore, very few complaints are received about other sources of transport noise such as from

aircraft, the rail and underground networks. This may be because transport infrastructure is regarded as an inevitable aspect of City life, or because there is a perception that nothing can be done. Street works currently result in more noise complaints than any other transport related activity. Previous City noise attitude surveys have shown that the majority of residents consider the City to be a noisy place to live. Attitudes to transport noise could change in the future with the more widespread adoption of low emission and low noise vehicles, with an increase in cycling and with the promotion of pedestrian movement within the City. We will undertake regular noise attitude surveys/ensure that noise is included in City attitude surveys so that we can monitor trends.

3.3 THE MANAGEMENT OF NOISE FROM TRANSPORT AND STREET WORKS

3.3.1 Road traffic noise

The strategic road traffic noise mapping undertaken by Defra estimates that a small number of City residents living next to identified busy roads may be exposed to adverse levels of noise. The Noise Action Plan for Agglomerations (that now covers all major cities in England) requires the assessment and, where appropriate, the implementation of noise management measures by relevant Highways Authorities. We will work with Defra and the relevant Highway Authorities, primarily TfL in the City, when opportunities arise to ensure that any nationally identified road traffic noise hotspots in the Square Mile are tackled effectively (see Figure 8).

Action will need to be considered to assess and manage road traffic noise exposure at other noise sensitive locations in the City. The Defra noise modelling is deliberately strategic and may need to be supplemented by additional detailed noise modelling, predictions and measurements in order to provide information that can be used to determine priorities and assess noise management options across the wider road network.

Road traffic noise in the City results from a number of different vehicular sources, primarily public transport and private vehicles such as lorries, coaches, vans, cars and motorbikes.

However, noise from commercial vehicles is also significant particularly on Transport for London 'red routes'. There is a significant amount of commercial vehicle and Hackney cab activity related to servicing the business and development needs of the City.

Freight accounts for a significant proportion of traffic in the City of London (20% between 07.00 and 19.00) and freight vehicles compete for scarce road space with other priority and vulnerable road users such as buses, cyclists and pedestrians.

Planning and transport policies to minimise disturbance to residents currently restrict night time and weekend commercial vehicle movements through the City. However, various TfL initiatives mean that the existing protections are likely to become more flexible to enable deliveries to take place outside traditional restricted periods. These arrangements need to be carefully considered against the needs and expectations of City residents and workers. This will involve close liaison with TfL regarding TfL roads and with DBE regarding City roads. We will work with TfL to pursue relevant future initiatives and good practice case studies seeking to control road traffic noise from commercial vehicles.

Road traffic noise is usually assessed in terms of its impact on residential properties. This is the sole focus of the Defra Noise Action Plan for Agglomerations. In the City, road traffic noise also impacts on other noise sensitive premises, businesses and the increasing numbers of pedestrians in some parts of the City. We will work with colleagues in TfL and DBE to consider whether there may be opportunities for wider initiatives on road traffic noise management, particularly in the proximity of principal roads and 'red routes'. Wherever possible, we will seek synergies with other initiatives, such as on safety and air quality. In addition any opportunities to reduce cumulative impacts of noise and vibration from all forms of transport will be considered together.

Existing planning and transportation policies, in particular the City of London Core Strategy 2011, promote walking and cycling and improvements in air quality. In doing so they support development of improved environmental quality for pedestrians, cyclists and residents, including a potential for reduced noise from road traffic in some locations.

The use of sirens at night by the emergency services causes disturbance in some residential areas of the City. Although mostly unavoidable, we will work with the GLA/TfL, and relevant City bodies such as the City of London Police, to seek improvements in current practice if possible.

3.3.2 Other Transportation

Rail and Underground: The Noise Action Plan for Agglomerations identifies the Barbican Underground station as an 'Important Area' which requires DfT and the ORR to assess and consider what actions if any could be taken to manage railway noise and to implement those actions. In addition, the Pollution Control Team receives occasional complaints about noise from underground trains and, about alleged excessive noise from station announcements. We will make representations to relevant bodies when complaints are received and as any noise management proposals emerge. The team will need to liaise closely with TfL and LUL regarding the noise implications of the "night tube" service as this is rolled out across London.

Helicopter use: Low flying and hovering helicopters over residential areas can cause disturbance and annoyance particularly at weekends and at night. There are reports of increased helicopter numbers over the City. However some emergency service helicopter movements are considered to be essential to the proper functioning of a modern city. We will work with the GLA and other London LAs to identify any potential improvements that can be made.

River traffic: Occasional complaints are received about noise from river traffic, the most common being excessive noise from party boats. We already work alongside other Riparian Boroughs to monitor complaints and consider appropriate remedial measures and will continue to do so. In addition we will host future meetings of the Riparian Steering Group.

3.3.3 Street Works

As well as actively promoting public transport, cycling and walking, the City Corporation and TfL seek to keep traffic flowing by effectively planning and managing the highway network. The City Corporation is also committed to ensuring that utility services continue to meet the demands of the world's premier financial centre. A permitting system exists for utility companies and other contractors (including those contracted to work for the City) who need to carry out street-works. At

noise sensitive locations, one or more measures are usually necessary to minimise noise impacts on businesses and / or residents. These include restricting times when noisy work is permitted, effective communications, using less noisy methods and using noise barriers.

Residential accommodation is now distributed more widely through the City and has increased the spread and number of noise sensitive locations, this has constrained the opportunities for carrying out noisy work on the highway at night time when traffic volumes are low.

Highways Authorities have a statutory obligation to seek to prevent traffic disruption and the City Corporation has a duty to take statutory action to remedy noise nuisances and prevent disturbance to residents. There is thus a potential for tension between conflicting roles when undertaking street works. We will continue to aim to strike an appropriate balance through the promotion and application of the City of London Code of Practice: Minimising the Environmental Impact of Streetworks. This requires the use of best practical means for noise control and restricts the times during which noisy activities are permitted in the City for the benefit of both residents and businesses. An example of recent application of a more balanced policy is that the City of London have agreed to a presumption that street works may take place for certain periods ('extended hours working') outside of the City's normal 'Standard Hours' at certain locations where disturbance to residents is deemed unlikely.

Effective consultation and communications with affected residents and businesses are key measures to minimise complaints. If the purpose, times and durations of noisy works are known (or agreed) in advance, noise and disruption is more likely to be tolerated. Good communications can also help to resolve problems quickly without the need to involve law enforcement or other legal action. We will always encourage good communication with local residents, local businesses and the provision of adequate information to pedestrians.

3.4 LIST OF POLICIES – TRANSPORT & STREET WORKS

3.4.1 City of London Noise Receiving Authority Function

POLICY – TRANSPORT 1: The City Corporation will meet any ongoing obligations as a "Noise Receiving Authority" in the Defra noise action planning process. This will involve close liaison with Defra and TfL regarding TfL roads and with DBE regarding City roads. It may also require liaison with relevant rail authorities.

POLICY – TRANSPORT 2: The City Corporation will consider the creation of a central co-ordination point for the handling of all complaints relating to noise from all transport sources and from street works whilst acknowledging that currently available powers of the Pollution Control Team are limited. This will allow the scale of the problem to be assessed, help to determine future priorities, and enable the Pollution Control Team to more effectively engage with responsible transport bodies and organisations.

POLICY – TRANSPORT 3: The City Corporation will seek opportunities to influence transport noise policy across London in order to secure improved conditions in the Square Mile, this will include liaison with DfT, Defra, the Mayor of London and TfL.

3.4.2 City of London Highways Authority Functions

POLICY TRANSPORT 4: The City Corporation will manage the noise impacts of street works having regard to the latest relevant City of London Code of Practice and wherever possible consider the available alternative arrangements to minimise duration of works and disruption to traffic.

POLICY TRANSPORT 5: The City Corporation requires the Pollution Control Team to continue to work closely on street works noise issues with the relevant City Corporation Departments, TfL, Utilities and contractors.

POLICY TRANSPORT 6: The City Corporation will promote, seek funding for and support the use of effective community communication strategies to help to manage noise disturbance from street works.

POLICY TRANSPORT 7: The City Corporation will integrate noise management considerations into policy, planning and design of City Corporation's transport, cleansing, planning, highways management and improvement activities across the City.

POLICY TRANSPORT 8: The City Corporation will integrate noise management considerations into our internal procurement processes and contract specifications for highways maintenance and improvement, engineering, transportation and cleansing activities.

POLICY TRANSPORT 9: The City Corporation will incorporate noise management considerations for in-house schemes, including good design practice, when considering improvements or changes to road transport planning, traffic and pedestrian routes.

POLICY TRANSPORT 10: The City Corporation will honour its obligations as a Highways Authority in the Defra noise action planning process. This will require action by DBE regarding City roads. We will also seek to ensure that TfL delivers on its obligations regarding TfL roads in the Square Mile.

3.4.3 Advocacy

POLICY TRANSPORT 11: The City Corporation will strive to influence relevant bodies such as TfL, Utilities companies, Network Rail, Crossrail, Civil Aviation Authority, Police Authorities and other emergency services, wherever possible to reduce noise and vibration and to better manage noise impacts from their operations for the benefit of City residents, workers, businesses and visitors.

3.4.4 Night Time Servicing

POLICY TRANSPORT 12: The City Corporation will continue to support restrictions on night time and weekend commercial vehicle movements through the City and to limit operational hours of noisy servicing activities in noise sensitive locations wherever necessary. However the City Corporation will consider a more flexible approach where our normal time restrictions are proving problematical provided that other acceptable noise management measures are implemented such as use of loading bays and consolidation centres. Where appropriate, we will promote TfL's Code of Practice for Quieter Deliveries within the City. Where there is no likelihood of disturbance 24 hour servicing is actively encouraged. We will review the implementation of this policy on an ongoing basis and will revise our approach as required

3.4.5 General

POLICY TRANSPORT 13: The City Corporation will seek to identify and exploit opportunities and synergies between this Noise Strategy and other City of London Corporation policies (e.g. the City Corporation's Air Quality Strategy and Local Transportation Implementation Plan) to reduce noise and vibration and to better manage the impact of noise from road transportation, servicing and street works.

POLICY TRANSPORT 14: The City Corporation will where possible, support and contribute to the development of low noise methods, schemes, management techniques and technologies which could reduce noise or better manage noise impacts from road traffic, street works and servicing.

3.5 LIST OF ACTIONS – TRANSPORT & STREET WORKS

1. Continue to work with DBE, contractors and utility companies to manage noise impacts and seek to facilitate reduced traffic disruption (e.g. extended working hours) due to street-works.
2. Review options for reducing traffic disruption while minimising noise impacts for residents and businesses including review of the current 'quiet hours' requirements in the CoL Code of Practice for Deconstruction and Construction.
3. Lobby TfL to build flexible arrangements into their proposed 'lane rental' scheme to prevent nuisance and disturbance to City residents in sensitive locations of the TfL network within the City.
4. Develop formal liaison protocols on relevant transport noise issues with TfL.
5. Work with relevant City of London Departments to provide advice and support on reducing noise and managing noise impacts from their transport and highways related operations.
6. Review and develop working arrangements between DBE and M&CP for integration of noise considerations where required into strategic and service planning and delivery.
7. Contribute to the inclusion of noise management considerations into any revision of the City of London Manual for Sustainable Streets.
8. Integrate noise management considerations in relevant City Corporation procurement processes and contracts e.g. specifications.
9. Noise Action Planning:
 - a) Ensure completion of all necessary investigations at road and rail noise "Important Areas" in the City.
 - b) Seek the implementation of all agreed measures to reduce noise levels at any "Important Areas" where the Corporation are the relevant Highways Authority
 - c) Similarly, use lobbying and other means to ensure that TfL, DfT and ORR meet their obligations to tackle the Important Areas where they are the relevant noise making authority.

- d) Consider updating Defra noise maps to make them more useful for local noise management purposes.
- e) Consider seeking formal designation for any special Quiet Areas in the City and make all relevant authorities aware of the implications for noise management.
- f) Consider reviewing the impact of traffic noise impacts on “other noise sensitive premises” in addition to the impact on residential premises.

10. Seek funding for additional transport noise modelling and noise measurement surveys to gather improved baseline noise data on road traffic noise levels in the City.

11. Continue discussions with major infrastructure providers and their contractors to minimise noise impact of their construction, including any tunnelling activities, and of the subsequent operational movements.

12. Continue to enforce and raise awareness of the City approach to night time deliveries in noise sensitive areas.

13. Where appropriate, promote TfL’s Code of Practice for Quieter Deliveries within the City. Review implementation and revise policies and procedures as required.

14. Continue to promote the use of quieter (and low emission) vehicles and other measures to reduce the number of road vehicles on City streets, through supporting and reinforcing measures contained in the Local Plan, City Corporation Cycling Plan and Air Quality Strategy etc.

15. To promote and facilitate the use of consolidation centres for deliveries to the City including the publication of a supplementary planning document.

16. To facilitate and contribute to the Riparian Noise Steering Group and input to any update of the Guidance for Control of Charter Cruise Noise on the Tidal River Thames.

17. Investigate and seek solutions to the noise implications of a reported increase in the number of helicopter flights over the City, in conjunction with the GLA, neighbouring LAs and other stakeholders.

4. DEALING WITH NOISE COMPLAINTS AND INCIDENTS

4.1 OVERALL AIM – NOISE COMPLAINTS AND INCIDENTS

To resolve noise complaints and incidents through a coordinated noise response, enforcement and information sharing network.

4.2 INTRODUCTION

Despite pro-active measures to prevent and manage noise, disturbance can still sometimes occur and become a problem. The City Corporation and its partners need to have the arrangements in place to respond, assess and take action to minimise and prevent recurrences of unacceptable noise.

The City of London Corporation Department of Markets and Consumer Protection's (M&CP) Pollution Control Team regulate and respond to noise complaints. An out of hours complaint handling service is currently in operation, in conjunction with DBE. Information presented in Section 2 shows that the number of noise complaints received is now around 1,100 a year, and that there has been a significant increase in requests for this service since 2011. In addition, the Team receives a similar number of requests for advice and assistance. The Port Health Service respond to noise complaints relating to leisure craft on the river, especially those hosting private parties and events.

Where noise is excessive and is actually causing disturbance at the time of the complaint, then we aim to provide a rapid response, often within an hour e.g. noise from street works affecting business activities on weekdays or affecting residents on Sundays.

Residents and businesses expect noise issues affecting them and referred to the City of London to be promptly resolved. A significant number of complaints are resolved through informal action and good-will, however where formal action is required our options are limited by statutes and regulations which can sometimes result in unmet expectations.

Not all noise complaints are necessarily made directly to the City Corporation. Some are received by the City of London Police, or are made directly to noise perpetrators or contractors through 'Helplines' such as those operated by infrastructure projects or construction sites.

Other City Corporation functions which can become involved with noise related enforcement issues are licensing, housing management, Barbican Centre, Highways Authority (permitting) and development management (planning).

Other agencies which also have powers and responsibilities for noise issues include:

- City of London Police
- Registered Social Landlords
- Transport for London
- Civil Aviation Authority and Airport Authorities
- Ministry of Defence

We have certain formalised joint working arrangements through e.g. M&CP and City of London Police Memorandum of Understanding and the Anti-Social Behaviour (ASB) information sharing protocol, the Planning and Environmental Health Enforcement Protocol, the Licensing Liaison Partnership, Environmental Health and Highways Liaison and weekly elected Member Bulletins. However, in some cases the current complaints liaison arrangements between organisations remain informal. Complaints information generated and held by City Corporation departments and other public organisations are formally shared and exchanges of information and intelligence occur in response to issues as they arise.

There is still further scope for strengthening and improving current levels of co-ordination and cooperation between those agencies with noise management responsibilities and the City Corporation Pollution Control Team, with the aim of providing a joined-up and responsive noise complaint service:

- Ensure clear understanding of roles of different organisations and communications between them
- Align enforcement approaches and evidence gathering and sharing across key agencies
- Share data, good practice and relevant research
- Address noise issues in City Corporation departmental policies and procedures so as to better manage noise from their premises, vehicles and activities, and to provide an initial response to noise complaints
- Seek opportunities to engage with businesses that may cause noise problems to provide advice and support, particularly with the licenced and hospitality sector

Potential benefits include quicker and proactive resolution of some noise issues before complaints are formally made to the M&CP Pollution Control Team (e.g. noise complaints in CoL managed premises such as the Barbican Centre), and more targeted enforcement and cooperation over the impact of the night time economy.

The collection and sharing of more comprehensive noise complaints information across the Corporation and its Partners, and its analysis can assist in spotting and assessing trends, determining priorities and, if necessary, taking proactive measures. The information can provide evidence for targeting noise issues through working groups such as the Licensing Liaison Partnership, Safer City Partnership and the Health and Well-being Board.

4.3 LIST OF POLICIES – NOISE COMPLAINTS AND INCIDENTS

4.3.1 Noise complaint resolution and enforcement

Responding 1: Provide a dedicated service responding to, assessing and resolving justifiable noise complaints according to statutory obligations, noise management policies and procedures, managing expectations and using regulatory tools where necessary.

Responding 2: Continue to provide a swift response to noise complaints requiring urgent action, in particular:

- 'Out of hours' noise response service to respond quickly to complaints of noise occurring outside office hours (currently provided in conjunction with DBE).
- Response during office hours to noise affecting businesses e.g. street works or construction sites.

Responding 3: The City of London, in its capacity as London Port Health Authority, will undertake some night time noise patrols on the River Thames, particularly during summer months, to monitor and control noise emanating from activities on the river, and prevent disturbances to City residents.

Responding 4: To apply noise prevention, control and mitigation guidance adopted by the City of London; the latest editions of the Code of Deconstruction and Construction Practice, the Streetworks Code of Practice and TFL's Code of Practice for Quieter Deliveries.

Responding 5: Continue to develop and deliver timely, consistent, co-ordinated joined up approaches to investigation and enforcement with other regulators and public bodies to resolve and reduce the frequency and severity of noise and ASB complaints. Partners include the Planning Authority, City of London Police, Licensing Authority, Highways Authorities, Housing Authorities, Social Services, Community Safety Team and Registered Social Landlords.

Responding 6: Organisations with noise management responsibilities will be encouraged and supported to resolve noise complaints made directly to them wherever possible.

4.3.2 Noise complaint information and data

Responding 7: Organisations with noise management responsibilities will be encouraged to maintain and share information and data on noise complaints. The information shared between them will be collated, analysed and shared between them (within the limitations of data protection legislation). A lead officer will be identified for collation.

4.3.3 Engaging with businesses

Responding 8: Continue to work proactively with the leisure, licenced, construction, and other business sectors to manage and minimise noise impacts and other environmental impacts of their operations. Such work to include the provision of advice and sharing information and best practice on reducing noise disturbance and complaints.

4.3.4 Service delivery

Responding 9: The City Corporation will undertake a review of the noise service delivery arrangements including its effectiveness and resourcing taking into account stakeholder feedback. And where possible identify areas of improvement.

4.4 LIST OF ACTIONS – NOISE COMPLAINTS AND INCIDENTS

- 1) Development, publication and ongoing review of an Environmental Supplementary Planning Document including noise issues.
- 2) Current edition of CoL Code of Practice on Deconstruction and Construction to be reviewed and updated.

- 3) Continue work with the Health and Well-being Board to include noise as a health 'issue' to be addressed in the Joint Strategic Needs Assessment and Health and Wellbeing Strategy.
- 4) Continue with work involving the City Police and Licensing Liaison Partnership, Community Safety Team and Safer City Partnership; encourage and support consistent and effective policies and procedures across the City Corporation and other agencies to respond to public nuisance related to operation of licenced premises.
- 5) Support a joined-up approach to noise issues in the review of the Statement of Licensing Policy and the implementation of any upcoming new licensing legislation.
- 6) Continue to support and take part in schemes which promote good practice in noise control and management e.g. City's Considerate Contractor Scheme (CCS) and 'Safety Thirst' scheme.
- 7) Review and refresh the formal liaison and coordination protocols with the City of London Police on noise and anti-social behaviour enforcement matters and including information sharing.
- 8) Continue to build on business engagement including attending and presenting at business, licenced trade, sector liaison and residents meetings.
- 9) Develop formal liaison protocols on noise issues with Transport for London and London Underground.
- 10) Review recording and analysis of complaint data to include 'visitors' in addition to residents and businesses.
- 11) Ensure in the implementation of a joint contact centre that call handling for noise complaints is streamlined to provide a smoother customer experience.
- 12) Develop and expand partnerships and collaborations with organisations, groups and stakeholders such as the Noise Abatement Society, GLA, TFL, LANAF and others with aligned objectives.
- 13) Assess options for securing funding for service provision from infrastructure projects, developers or other sources as they arise.
- 14) To conduct customer satisfaction surveys and utilise the results to inform review and improvement in service provision.
- 15) Investigate possibility of providing a "one-stop shop" to receive and co-ordinate the response to all noise complaints in the City.
- 16) Review current approach to handling complaints about church bells, recognising bells as an iconic City sound and striking an agreed balance between the requirements of the church community, bell ringers, residents, workers and visitors (including those staying in hotels) (see also related proposals in Section 5).
- 17) To undertake a review of our approach to noise from vehicle safety alarms including: (a) Review our current approach to the use of vehicle alarms on construction and demolition sites in the

City. (b) Work with internal departments and procurement team to phase in the use of less annoying alarms on City vehicles (e.g. refuse collection, street cleaning etc.). (c) Work with TfL, GLA, other London Boroughs and Noise Abatement Society to encourage greater uptake of less annoying alarms across London.

- 18) To undertake a review of our current approach to managing noise issues that may affect large numbers of residents in a particular area, including the use of bespoke policies and improved liaison with residents associations and similar groups.

5. PROTECTING AND ENHANCING THE ACOUSTIC ENVIRONMENT AND SOUNDSCAPE OF THE CITY OF LONDON

5.1 OVERALL AIM – ACOUSTIC ENVIRONMENT AND SOUNDSCAPE

To protect, and where possible enhance, the acoustic environment and soundscape in suitable parts of the City in such a way that any measures will contribute to an improvement in health and quality of life and well-being for residents, workers and visitors.

In delivering this aim it will be necessary to seek opportunities for the enhancement of the acoustic environment, for the promotion of soundscape initiatives and for the protection of quiet and tranquil places when and where such measures are supported by the local community.

5.2 INTRODUCTION

Other chapters of this strategy recognise the importance of reducing the high levels of noise (unwanted sound) that occur in many parts of the City. However, there is also growing interest in seeking, where possible, to improve the overall quality of the acoustic environment. Whilst much of the emphasis in this strategy is on **noise**, this chapter specifically addresses **sound** in outdoor space and in hybrid indoor-outdoor spaces such as rooftop open spaces, malls, markets, transport terminals and similar.

The soundscape of the City is an inherent part of the overall character of the Square Mile. It impacts directly on residents, workers and visitors albeit in different ways. Its management is just as important as the visual landscape yet it is sometimes not even considered by architects and wider design teams and we would like this to change.

The London Plan (2014 revision) (policy 7.15) requires, inter-alia, that:

Development proposals should seek to manage noise by improving and enhancing the acoustic environment and promoting appropriate soundscapes (including Quiet Areas and spaces of relative tranquillity).

Boroughs and others with relevant responsibilities should have policies to identify and nominate new Quiet Areas and protect existing Quiet Areas in accordance with the procedure in Defra's Noise Action Plan for Agglomerations .

The London Plan also states that the “management of noise is about encouraging the right acoustic environment in the right place at the right time – to promote good health and a good quality of life within the wider context of achieving sustainable development. Managing noise includes improving and enhancing the acoustic environment and promoting appropriate soundscapes.”

Policy 78 of Sounder City, The Mayor's Ambient Noise Strategy for London (2004) states:

The Mayor will urge Boroughs and others with responsibilities for open spaces and public realm management to consider the need for frameworks for managing soundscapes in open spaces and the wider public realm. Elements include noise mapping, measurement and attitude surveys,

access to quiet, and exploring designation of Areas of Relative Tranquility or Special Soundscape Interest.

The third aim of the government's Noise Policy Statement for England is:

Where possible, contribute to the improvement of health and quality of life through the effective management and control of environmental neighbour and neighbourhood noise within the context of Government policy on sustainable development.

An explanatory note states that this will include the protection of quiet places and quiet times as well as the enhancement of the acoustic environment.

In addition, the government's National Planning Policy Framework includes a requirement for local planning policies and decisions to:

Aim to identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

5.3 WHAT DO WE MEAN BY SOUNDSCAPE POLICY?

The acoustic environment of a place or space is the physical sound from all sources as modified by that place. Soundscape exists through human perception of the acoustic environment. The International Organisation for Standardisation (ISO) has recently defined "soundscape" as the "acoustic environment as perceived or experienced and/or understood by a person, or people, in context" [ref 12].

It is useful to draw an analogy between soundscape and landscape. Landscape is regarded as both a perceptual construct and a physical phenomenon and has been defined in the European Landscape Convention as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors". Landscape can take a geographical form, or be a system of physical components, or be a place for recreational activity, or a determinant or reflection of culture (e.g. a landscape painting), or the component of an activity such as landscape planning. A parallel description of soundscape would become – the acoustic environment of a place, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.

The European Landscape Convention also defines landscape policy and, by analogy, this usefully results in soundscape policy being described as "the expression by the competent public authorities of general principles, strategies and guidelines aimed at the protection, planning and management of soundscapes".

The management of soundscape overlaps with, and arguably embraces and develops the better established but narrower concept of environmental noise management. In the environmental noise field, sound is conceived as a waste product to be removed and reduced where necessary. In contrast, the soundscape field treats sound largely as a resource to be protected and enhanced where appropriate so as to contribute to an improvement in human quality of life.

The management of the soundscape of the City needs to reflect both the complexity of the urban environment and the varied expectations of the urban population. It is recognised that at some

places and times relative quiet and tranquillity may be preferred, in other places and times a more varied soundscape may be desirable, and yet in other situations it may be appropriate to experience a degree of urban vibrancy that demonstrates how dynamic and thriving the City is.

This chapter sets out to outline a soundscape policy for the City of London. We are one of the first city authorities to attempt to do this and we will therefore monitor and review progress during the life of the strategy and adapt our procedures where necessary.

5.4 THE CITY'S OPEN SPACES

Much of the early focus of soundscape research and practice has been on the soundscape of outdoor areas, in particular streets and squares, City parks and gardens and other open spaces.



The City's many open spaces provide an opportunity for rest and relaxation for workers, visitors and residents. However some may also provide an opportunity to meet and communicate, host markets, for exercise, for the appreciation of public art and music etc. There are 277 sites of open space within the City covering 32.18 hectares, with 23.31 hectares being open to the public. The Core Strategy (policy CS19) aims to protect existing open space and create additional, publicly accessible, open space where feasible.



As part of the previous Noise Strategy the City Corporation has already looked at options to protect and enhance certain open spaces and has undertaken social surveys to see how people in the City felt about the importance of tranquillity. The Local Plan requires the protection of the City's quiet areas (policy CS15) and improvements in the City's environment and open spaces (policy CS10).

The City of London's Open Spaces Strategy 2015 contains a vision for open space provision within the Square Mile. The Strategy recognises the necessity of green spaces to absorb noise and in the provision of tranquil spaces for users; some of the strategic objectives are either directly or indirectly linked to the quality of the acoustic environment and the enhancement of soundscape:

Paragraph 3.3.35 states "Opportunities will be identified for improving and enhancing the tranquillity and soundscape of open spaces during the improvement or enhancement of new spaces"

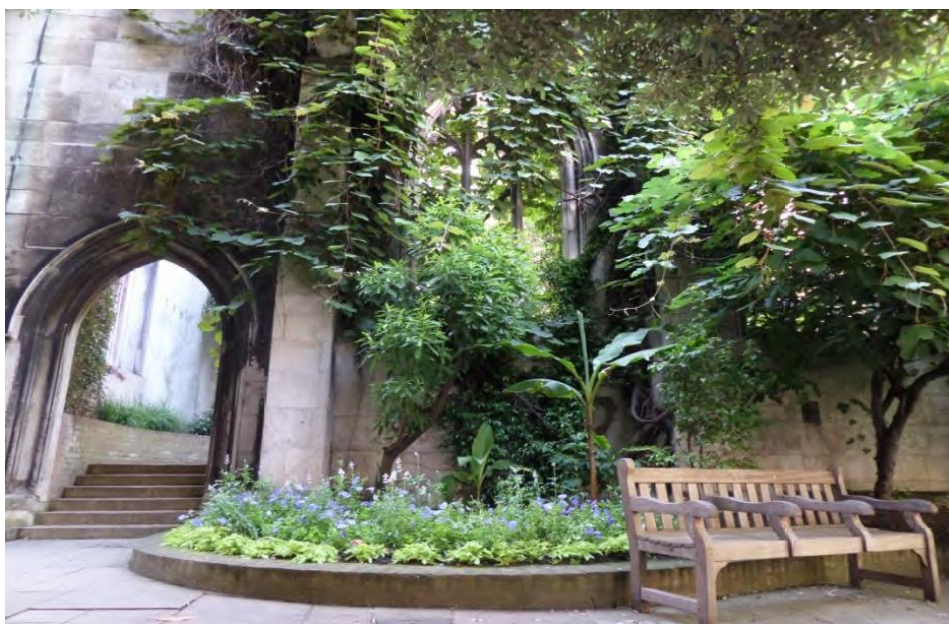
"Strategic Objective 1 To maintain and increase public access to existing open spaces and enhance the quality of these spaces, in terms of both design and management.

Strategic Objective 6 Ensure that enhanced and additional open spaces accord with high standards of sustainable design, construction and management and take account of the potential changes to the City climate, particularly the urban heat island effect"

The World Health Organisation (WHO) recommends that noise levels in gardens and recreation areas, which could include the City's open spaces, should preferably be less than 55 dB L_{Aeq} during day time. Previous noise monitoring at selected locations in the City has revealed that only a few areas of the City fall below this level. These include Thames Walk, the centre of the Barbican and inside the boundary of the Guinness Trust estate.

When considering what makes an open space tranquil, people's perception of the space, as well as noise levels can have an impact. Research by the City of Amsterdam has revealed that an area can be considered to be 'quiet' when it is around 6dBA lower than its surroundings. The absolute noise level seems less important.

St Dunstan's in the East, *pictured below*, has a typical noise level during the day of around 65 dB L_{AeqT} . This is 10 dB L_{Aeq} higher than the WHO recommended level yet the space scored very highly for tranquillity during a 2009 visitor noise survey. Quotes from people surveyed include 'you can't find a more tranquil place in London' and 'its wonderful here'.



Our approach to soundscape policy recognises that a mandatory policy requirement for quiet and/or tranquillity will not always be desirable, or even possible to achieve, in every open space in the City. In accordance with the London Plan our goal is to ensure the right acoustic environment in the right place – that the soundscape is congruent with (supportive of) the use of the place.

5.5 CITY SOUNDSCAPE MANAGEMENT PROCEDURE

Within the City we will encourage a logical approach to the management of soundscape in outdoor spaces and hybrid indoor-outdoor places and we propose to broadly align with the following procedure [*adapted from Brown et al, ref 13, 14, 15*]:

CITY SOUNDSCAPE MANAGEMENT PROCEDURE

1. Define the function or dominant activities of the place (from the visitor/user/listener's perspective)
2. Establish unambiguous soundscape objectives (see below)
3. Analyse sound at the place, identifying sounds of preference and wanted and unwanted sounds
4. Acoustically evaluate and assess the sound at the place
5. Study design options for managing wanted and unwanted sound components and the wider acoustic environment so as to achieve the proposed soundscape objectives.

Examples of the underlying basis for establishing unambiguous soundscape objectives [*adapted from Brown et al, ref 13, 14, 15*] might include:

- A specific sound should be clearly audible over a certain area
- Must be able to have a conversation at certain locations/places without having to shout

- Hear mostly (non-mechanical, non-amplified) sounds made by people
- Not to be able to hear sounds made by other people
- Suitable to hear (amplified/non-amplified) speech
- Suitable to hear (amplified/non amplified) music
- Must be predictable periods of respite from high levels of traffic noise
- Moving water should be the dominant sound heard
- Sounds of nature should be audible over a certain proportion of the space
- Acoustic installation/artwork/sculpture sounds should be clearly audible
- Sounds conveying the City's vitality should be the dominant sounds heard
- Sounds conveying the place's history/heritage should be the dominant sounds heard
- Sounds that convey the identity of a place should be the dominant sounds heard

It is important to note that the soundscape management procedure puts the requirements of residents, workers and visitors at the forefront of the design process. An underlying principle is that any initiatives must be supported by the local community.

Whilst this soundscape management procedure represents our preferred methodology we will consider other approaches and will work with stakeholders to keep abreast of developments in this newly emerging field [ref 16].

5.6 TRANQUILITY

People who live in and work in the City value relatively quiet, tranquil areas. The 2010 City noise attitude survey asked workers and residents about their views on the importance of areas that offer relative quiet and tranquillity in the City; 57% of workers surveyed and 58% of residents actively seek out quiet areas in the City; 78% of residents and 70% of workers questioned would like more to be done to protect the quieter more tranquil areas of the City *as shown in Figure 9 below*.

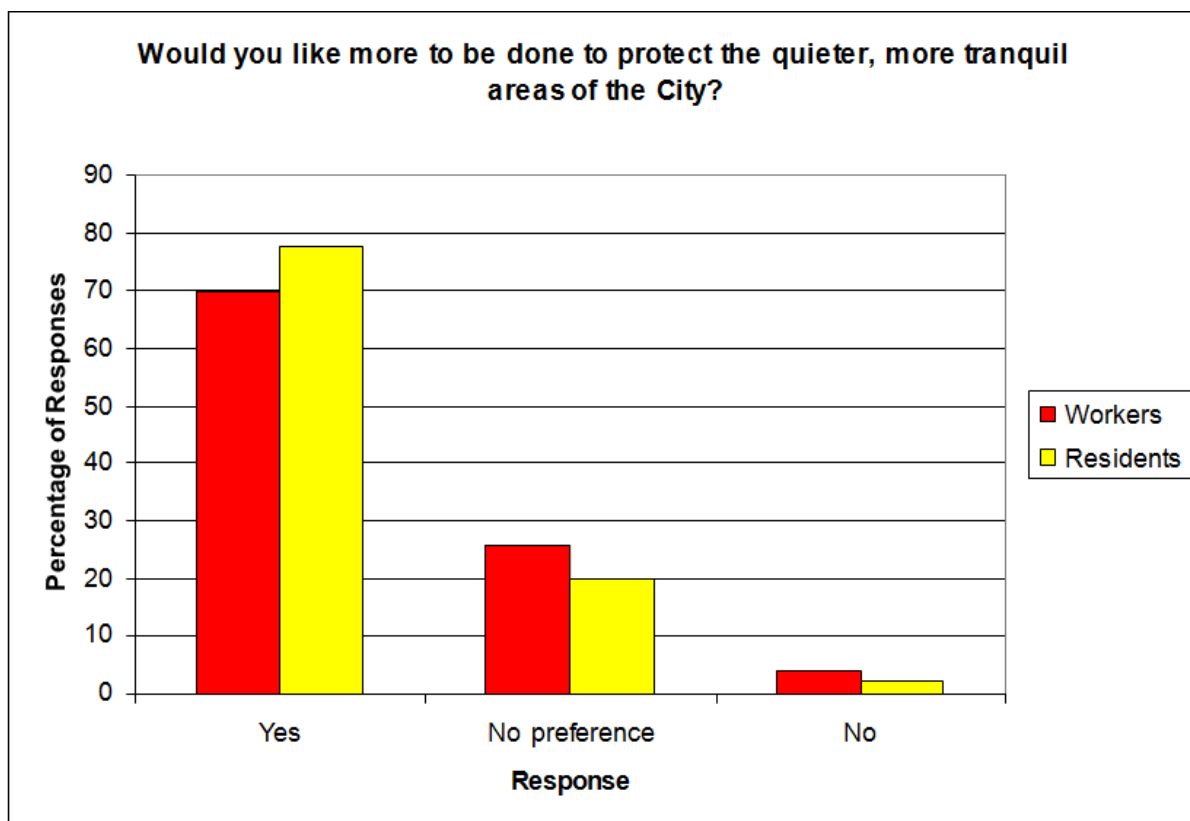


Figure 9: demand for protection of tranquil areas. Responses from workers and residents

In 2010, Environmental Protection UK (EPUK) published a report for the City of London called “Quietesting Open Spaces - Towards sustainable soundscapes for the City of London”. The document contains ideas for improving the tranquillity of a selection of open spaces in the Square Mile. Proposals included encouraging quieter vehicles and machinery, smoothing traffic flow, quieter road surfaces, encouraging walking and cycling, using glazed noise barriers that incorporate educational and historic information, as well as other innovative measures such as using gravel paths that reveal footfall, using water features to mask unwanted sounds, encouraging planting to attract insects and birds, and promoting sound art installations. This report was used to inform the most recent Local Plan and Open Spaces Strategy and the designs of new or enhanced open spaces.

There are a number of plants that may help enhance the perception of the acoustic environment in the City’s open spaces. Dense evergreens can shield noise sources, attract wildlife and introduce associated natural sounds, and may even have some impact on noise reduction – for example: Holm Oak, Laurel and Holly. Grasses and bamboos can provide visual screening and movement, as well as rustling sounds in the breeze that may mask other unwanted noises - suggestions include *Miscanthus* sp., *Bamboo* sp., *Arundo donax* and *Miscanthus floridulus*. There are also potential new urban landscaping developments that may also bring acoustic (and air quality) benefits, such as the “City Tree” installations that have recently been trialled in hard landscaped urban open spaces in Paris, Oslo and Dresden.



5.7 ICONIC SOUNDS

In addition to seeking out tranquil areas, residents, workers, and visitors like to be able to hear what we might call ‘iconic sounds’ in the City above the general noise of traffic and air handling plant. 91% of workers and 80% of residents questioned said they would like to be able to hear iconic sounds. The iconic sounds most identified in our survey were church bells.

The impact of the iconic sound from the many Wren churches could perhaps be enhanced by additional co-ordinated “bell happenings” to increase awareness of their existence (beyond the Lord Mayor’s Show). The current radius of audibility of Bow Bells could be investigated and efforts made to extend their reach. The audibility of St Paul’s bells could be used as a popular indicator of soundscape quality, perhaps with people registering that they have heard the bells via a GIS linked mobile phone app.



In addition there may be opportunities to introduce new iconic sounds. For example, the warning signal for Tower Bridge opening is currently a loud klaxon, whereas in historic times the warning was

provided by handbells. Whilst the warning sound will need to be loud enough to be heard above the sound of modern traffic it may be possible to improve on the current klaxon sound design.



5.8 LOST AND DISAPPEARING SOUNDS

Many City streets and buildings are named after lost trades. This offers a potential opportunity to retrieve lost sounds and perhaps to create “sonic districts”. Attention to lost and disappearing sounds offers practical interpretative and educational opportunities while not constraining development. Acoustic archaeology is a relatively new field but may be supported by interested organisations such as the Museum of London. The development of sonic districts may also offer new opportunities for attracting visitors to an area.

New developments may be able to incorporate artificial soundscapes that evoke certain lost sounds of the City (e.g. *Bishopsgate Institute / The Gentle Author - Cries of London Exhibition* or the proposed ‘House of Sound’ project).

A City Soundscape Inventory could be launched, engaging the public and developing a short list of lost and disappearing sounds. Potential partners might include City Livery companies many of which derive from historic trades and have a desire to show contemporary relevance.

5.9 WANTED AND UNWANTED SOUNDS

There is growing interest in the introduction, and re-inforcement, of positive or wanted sounds to enhance the soundscape. In most situations it is preferable to seek to reduce unwanted sounds rather than to seek to mask them, but it is not always practicable to do so. The sound of carefully designed water features and fountains in public open spaces can have positive impacts on health and well-being and also help to mask unwanted sounds from traffic. Recent evidence suggests that

intermittent operation and patterning of such water features creates a more positive human response (and may also save energy).

There is growing interest in supporting small scale musical events in appropriate parts of the Square Mile such as Guildhall Yard and the GIGS:Big Busk at St Pauls. Sound stage and busker policy could be reviewed in conjunction with relevant users to ensure that it is perceived to be improving the soundscape. The sounds of children playing can either be encouraged or discouraged by the carefully siting of play equipment. The play equipment can itself incorporate relevant sounds, and thus help to foster an awareness of the sounds of the City in the younger generation.

5.10 ADDED SOUNDS

Adding new sounds into an existing soundscape always has to be undertaken cautiously. However sound can be sourced in ways that has some integrity in terms of reflecting and reinforcing City identity. Added sound may help to evoke links with the past, or to embrace the present or envisaged future role of an area. Sounds need to be added carefully, in liaison with users, and perhaps in conjunction with other measures so as to enhance the overall experience of an area (e.g. the introduction of subtle artificial lighting and intermittent birdsong via discreet speakers in a suitable urban open space) rather than to cause annoyance.

It may be feasible to translocate certain sounds from one part of the City to another, or from places in another part of the globe with which the relevant occupiers deal. It may also be possible to amplify certain wanted sounds in situ (e.g. sounds of the River lapping the shore) so that they become more audible and enhance the overall experience of an area.

5.11 PUBLIC DOMAIN SOUND ART INSTALLATIONS

Sounds can also be introduced into urban areas by way of public art installations. For example, a sound sculpture was installed by Liminali in July 2011 in Carter Lane Gardens near St Paul's Cathedral. The sculpture was called "Organ of Corti", a four metre tall installation that sought to absorb the City's traffic noise and transform it into music. This particular installation was not regarded as particularly effective due to the local context of multiple intermittent noise sources and reflections. However, we are keen to work with others to support sound art installations in appropriate City locations.



5.12 SOUNDWALKS

Soundwalks and audio described walks could be devised and promoted to demonstrate areas of low and high acoustic quality in the City. These walks could include any demonstration soundscape initiatives, sound art commissions and related offers (cycle hire, coffee stops) for tourists and walkers could be incorporated. One possible route would be northwards from Tate Modern across Millennium Footbridge to St Paul's Cathedral, Museum of London, Barbican/Guildhall and Smithfield.

There are already commercial soundwalks operating in the City. The Corporation could seek funding/sponsorship to run its own soundwalks or it could support and encourage other organisations to offer City soundwalks. Alternatively, the Corporation could support others to develop a phone app that promoted self-guided soundwalks or pushed content to existing apps.

5.13 LIST OF POLICIES – ACOUSTIC ENVIRONMENT AND SOUNDSCAPE

POLICY – SOUNDSCAPE 1: The City Corporation will, where possible, seek to integrate acoustic design and management into other relevant City Corporation policies and strategies and environmental management practices so as to enhance the acoustic environment and soundscape of the City.

POLICY – SOUNDSCAPE 2: The City Corporation will identify certain open spaces in the City that would benefit from further protection or enhancement of the acoustic environment and/or from soundscape initiatives and will seek appropriate supportive funding.

POLICY – SOUNDSCAPE 3: In line with national policy in the NPPF the City Corporation will consider measures that aim to identify and protect any areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason. We will

also consider protecting quiet places and quiet times where these are particularly valued by the local community.

POLICY - SOUNDSCAPE 4: The City Corporation will encourage those involved in major developments in the City to consider opportunities to enhance the existing acoustic environment and to include soundscape initiatives as an integral part of new developments.

POLICY - SOUNDSCAPE 5: The City Corporation will provide information to the public on any freely accessible sites or events that are of special soundscape interest, including the locations of any identified areas of relative tranquillity, public sound art installations, GIGS:Big Busk events and the timings of any iconic sound events.

POLICY – SOUNDSCAPE 6: The City Corporation will support the installation of public sound art installations where these enhance the acoustic environment and soundscape and are welcomed by the local community.

5.14 LIST OF ACTIONS – ACOUSTIC ENVIRONMENT AND SOUNDSCAPE

- 1.** We will seek the inclusion and integration of our revised approach to the management of the acoustic environment and soundscape in future iterations of relevant City Plans and Strategies, such as the Local Plan, Open Spaces Strategy, City Together Strategy, VisitorStrategy, Cultural Strategy.
- 2.** We will identify potential open spaces in the City that would benefit from further protection and/or enhancement of the acoustic environment and/or from soundscape initiatives in conjunction with relevant internal teams and interested external organisations.
- 3.** We will promote the City Soundscape Management Procedure both within and outside the Corporation and will seek opportunities to trial the approach and to share any lessons learned both within London and with other major world cities.
- 4.** The wider benefitsof the enhancement of the acoustic environment and soundscape of the City, to residents, workers and visitors, will be promoted both within and outside the City Corporation.
- 5.** We will continue our ongoing initiative regarding the identification of relatively tranquil areas in the City and the development of polices to protect and enhance these spaces.
- 6.** We will seek opportunities and pursue soundscape related initiatives with a wide range of internal Departments and external bodies including the City Art Galleries and Libraries, City Churches Network (e.g. promoting tranquil churches, churchyards, libraries and art galleries, supporting iconic church bell ringing events), City Arts Initiative (e.g. talking statues, public sound art), City Visitor Experience (e.g. soundwalks etc.).
- 7.** We will encourage the identification, protection and promotion of disappearing sounds, and the careful re-introduction of relevant lost sounds, with interested internal teams, other external organisations, particularly those with an interest in promoting heritage related aspects of the City.
- 8.** We will encourage the development and promotion of “City Sound Walks” that will highlight the unique and varied soundscape of different areas of the City and thus support the City Visitor

Strategy; we will consider providing this initiative in-house and/or by supporting suitable external partners.

9. We will actively encourage developers, architects and planners to consider a variety of soundscape initiatives as an integral part of the design of new developments, particularly large iconic developments in the Key City Places.

10. We will work with the Noise Abatement Society, Environmental Protection UK, acousticians, sonic artists, developers, architects, planners and other interested parties, to promote and support the establishment of world leading soundscape initiatives within the Square Mile.

11. We will support church bells as an iconic sound of the City and establish a multi-disciplinary working group to explore wider acoustic issues relating to our City churches.

APPENDIX 1: NOISE STRATEGY POLICIES AND ACTIONS –Review May 2016

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
Developments 1 Tranquil Areas 1	Review and update planning conditions and informatives to ensure they are fit for purpose and reflect the policies and aims of the new National Planning Policy Framework (NPPF), Core Strategy and City of London Noise Strategy,	December 2012 and ongoing	Most conditions reviewed and updated on Planning protected document in 2012/13. Further review and update of conditions completed September 2015 to ensure they are necessary and enforceable. Revised conditions submitted to for submission into their protected document for use by case Planning Officers.	Completed
	Develop appropriate planning policies in the emerging Development Management DPD and other policy documents to reflect policies and aims of the Noise Strategy.	March 2014	Completed – comments made and have on the whole been integrated into the Local Plan published 2015 except where previously agreed by committee before the noise strategy is Core Strategy. Review of 2015 Local Plan commenced in 2016 and input made. Work on a City Environmental SPD commenced including noise to be completed April 2017.	Completed 2016/17
	Consider noise and ‘tranquil’ areas issues in	Ongoing	Comments made on strategies when known.	Ongoing

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
	Environmental Enhancement Area Strategies as consultations emerge.		Environmental Enhancement and Environmental Health Liaison meetings commenced.	
	Develop further guidance for designers and developers on designing 'tranquil' spaces and minimising final use noise impacts.	March 2014	Not started. Environmental SPD under development to include 'tranquillity' as part of wider 'soundscape' chapter.	April 2017
	Review guidance to construction businesses on noise considerations and content relating to Environmental Management Plans.	March 2013	Completed. Incorporated into revised Construction and Deconstruction Code of Practice May 2013. <u>Further action:</u> Code of Practice being further reviewed as an action in Pollution Control Business Plan 2016/17.	April 2017
	Engage with relevant organisations including DEFRA and Department for Communities and Local Government, for noise related guidance on planning control during the early stages of implementation of the NPPF.	March 2012 - March 2014	No guidance produced or forthcoming.	N/A
Developments 2	Work to influence Licensing policy through the proposed review of the City of London Statement of Licensing Policy and procedures.	June 2012 - December 2012	Completed. City of London Statement of Licensing Policy published January 2013. N.B. New update Licensing Policy expected 2016/17	Completed

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
Developments 3	Continue to lobby Crossrail for support to provide a timely response and consent process to Section 61 consent applications.	Ongoing	Completed and ongoing.	Completed & ongoing
Developments 4	Continue to provide ad hoc advice to a wide range of City Corporation Departments e.g. Department of the Built Environment project works, facilities and housing stock management, waste collection, and events promotion and management, Barbican Centre.	Ongoing	Ongoing	Ongoing
Developments 5	Continue to consider noise impacts of City events and filming through the Augmented Safety Advisory Group (ASAG) and also via direct consultation with M&CP Pollution Team.	Ongoing	Ongoing. Safety Advisory Group now very established. Noise considerations are an integral consideration for event planning and filming.	Ongoing
Transport 1, 2, 3, 11	Continue to work with Department of the Built Environment (DBE), contractors and utility companies to facilitate reduced traffic disruption (e.g. extended working hours) due to street works.	Ongoing	Street Works Code of Practice published August 2013. Distributed to streetworks stakeholders at all opportunities. Presentation given on environmental impacts at workshop exploring extended hour's opportunities with DBE and utilities. Outcomes fed into noise strategy revision.	Completed & ongoing

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
	Review options for reducing traffic disruption while minimising noise impacts for residents and businesses including review of the current 'quiet hours' requirements in the City of London Code of Practice for Deconstruction and Construction.	March 2013	Completed – Construction and Deconstruction Code of Practice revised and published May 2013; Street Works Code of Practice developed and published August 2013; extended hour's scheme approved and revised.	Completed
	Lobby TfL to build flexible arrangements into their proposed 'lane rental' scheme to prevent nuisance and disturbance to City residents in sensitive locations of the TfL network within the City.	June 2012	Completed. Report on effectiveness of current arrangements published December 2015 by Ecorys for Defra.	Completed
	Develop formal liaison protocols on noise issues with Transport for London.	September 2013	Street Works Code of Practice published August 2013. <u>Further action:</u> Consider the development of a Memorandum of Understanding on noise and liaison issues between Pollution Control Team and TFL.	Completed 2016/17
	Work with relevant City Corporation Departments to provide advice and support on minimising noise and noise	Ongoing	Requires further review – working has been reactive and dependant on our awareness of new proposals	Ongoing.

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
	impacts from their transport and highways related operations.		<p>and initiatives. Need to explore formally integrating assessment of noise impacts into new projects.</p> <p>General Note: A lot of work has gone into getting noise issues into strategic City policy documents especially planning ones. Next steps – to raise awareness and knowledge of how those policies can be taken forward by document owners and policy implementers. Options to explore include considering a noise network, offering to provide briefings to planning policy people and planning officers, publication of an Environmental including Noise SPD.</p>	
Transport 4, 6	Review and develop working arrangements between DBE and M&CP for integration of noise considerations where required into strategic and service planning and delivery.	September 2013	<p>We have built a stronger relationship through the Highways / EH liaison meetings and meetings with Transportation and Public Realm Director, but there are no formal or informal arrangements for assessing noise impacts of strategic or service plans for DBE or other key ‘noise generating departments.’</p> <p>Action: For further consideration.</p>	April 2016/17
	Contribute to the inclusion of noise minimisation considerations into the City of London Manual for Sustainable Streets.	March 2013	<p>Completed.</p> <p>To input to any future revisions.</p> <p>To provide supplementary guidance to DBE officers to</p>	Completed

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
			help DBE officers implement. This links to the Noise SPD.	
Transport 5	Develop policy and arrangements for integration of noise management considerations into relevant City Corporation PP2P (Procure to Pay) procurement processes and contracts e.g. specifications.	May 2012 - March 2013 - & ongoing review	<p>Responsible Procurement Manager recruited. Noise management embedded into the City's Responsible Procurement Strategy. Noise guidance document produced for City Procurement Team. Training and engagement programme delivered.</p> <p>Review undertaken and report produced for EDCOG specific to City land and contracts of controls which help the City in the mitigation of noise alongside statutory controls</p> <p>Meetings between City Solicitors and City Procurement to finalise integration of noise requirements into standard procurement documents and standardised list of policies and strategies appended to all relevant specifications.</p>	Completed.
Transport 7	Seek funding for noise surveys to gather baseline noise data on road traffic noise levels in the City.	March 2013	<p>Baseline data collection for Bank junction under discussion.</p> <p>Look for further opportunities to obtain funding through S.106, LIP, and CIL.</p>	2016/17

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
Policies Reference	Actions	Timescale	Review and Revised Actions 2016	Timescale
	<p>Noise Action Planning:</p> <ul style="list-style-type: none"> - Complete investigation stages at Important Areas First Priority Locations (FPL) - Following the investigation stage, to consider and secure budget, where practical, to implement measures to reduce high road traffic noise levels at FPL's where the Corporation are the Highways Authority - Lobby and support, where necessary, TfL, Department of Transport and Office of the Rail Regulator to meet their similar obligations on other routes in the City. 	<p>November 2012</p> <p>September 2013</p>	<p>COL HA – investigation stage completed.</p> <p>TfL HA – investigation stage completed.</p> <p>TfL U/G – investigation completed.</p> <p><u>Further action:</u> no apparent appetite with Defra to continue supporting this work but need to continue liaison with DBE and TfL regarding any traffic related measures to be considered in City to raise noise a design issue</p>	Completed & ongoing
Transport 8	Continue discussions with Crossrail and their contractors to minimise noise impact of tunnelling and train movements when operational.	Ongoing	Completed. Tunnelling completed. Construction of track bed underway.	Completed & ongoing

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
Transport 9	Continue to enforce and raise awareness of the City limits on night time deliveries in noise sensitive areas including temporary relaxation in the lead up to the Olympic and Paralympic games; the policy on night time delivery time limits may need to be considered and reviewed after the games.	April - September 2012 Review December 2012	Completed.	Completed.
	Continue to be involved with trials and schemes which promote quieter deliveries and premises servicing in the City during the Olympic and Paralympic Games: e.g. TfL Quiet Deliveries trials and Code of Practice.	April - August 2012	<p>Post Olympics reverted to traditional City policy of no deliveries 2300 – 0700 Mon-Sat. Recent committee report from Planning proposes to explore with TfL MoL policy and recommended to assemble more data about freight operations and to undertake various pilot studies to assess the viability of measures to encourage more sustainable delivery and servicing arrangements. Included protections for residents re noise. Leading to City Freight Strategy.</p> <p>Pilots with TfL and City businesses under discussion through the TfL Re-timing Working Group.</p> <p>Updated TfL Code of Practice for Quieter Deliveries launched September 2015 and promoted by City.</p> <p>SPD on consolidation centres under development. Use</p>	Ongoing

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
			<p>of 106 agreements for use of loading bays, consolidation centres and 24 hours servicing.</p> <p>ACTION – Continue to work with Planning, DBE, TFL and others to facilitate night time servicing and deliveries / freight movement while minimising disturbance to City residents and other vulnerable occupiers. Anticipate contributing to development of an initial City Freight Strategy.</p>	
Transport 4, 10, 11	Continue to promote the use of quieter vehicles and reduced use of road traffic vehicles for journeys through the Core Strategy, Local Implementation Plan, City of London Cycling Plan and Air Quality Strategy.	Ongoing	Ongoing.	Ongoing.
Responding 1, 2, 4	Review, update and consolidate current M&CP noise service management and delivery policies.	March 2013	Completed. Noise Response Service Delivery Policy published.	Completed
	Support and encourage good noise management practice in Licensed Premises through the development of good practice guidance for licensees.	September 2013	<p>Contributed towards the current guidance.</p> <p>Further Action: Provide examples of good practice and areas for improvement when guidance next updated.</p>	Ongoing

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
	Current edition of City of London Code of Practice on Deconstruction and Construction to be reviewed and updated.	March 2013	Completed May 2013. Further Action: Review existing edition for any necessary changes.	Completed April 2017
Responding 5, 6, 7, 9	Continue work with the Health and Well-being Board to include noise as a health 'issue' to be addressed in the Joint Strategic Needs Assessment.	Ongoing	Completed. Working towards development of an appropriate indicator for 'Noise' exposure for the City. Incorporate 'soundscape and tranquil spaces' in JSNA as part of worker wellbeing work stream.	Completed. April 2017
	Continue with work involving the Licensing Liaison and Safer City Partnerships; encourage and support consistent and effective policies and procedures across the City Corporation and other agencies to respond to public nuisance related to operation of licensed premises.	Ongoing	Completed. COLP, Licensing and Pollution Team are working much closer together with joined up approaches to issues and incidents related to public nuisance. This will be an ongoing matter to enhance effectiveness, particularly as the Community Safety work being co-ordinated via Town Clerk's Department integrating work of City Police and City of London Corporation, including Joint Contact & Command Centre progresses.	Completed & ongoing

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
	Support a joined-up approach to noise issues in the review of the Statement of Licensing Policy and the implementation of pending new licensing legislation.	June - December 2012	Completed.	Completed
	Continue to support and take part in schemes which promote good practice in noise control and management e.g. City's Considerate Contractor Scheme (CCS) and 'Safety Thirst' scheme.	Ongoing annual schemes	Ongoing.	Ongoing
	Develop formal liaison and coordination protocols with City Police on noise and anti-social behaviour enforcement matters and including information sharing.	September 2012	MOU developed Pollution Control Team identified as the lead for all public nuisance complaints. Anti-social Behaviour Crime and Policing Act 2014 launched with joint training event across all partners. Projects underway to implement lead by the Community Safety Team. Ongoing matter to enhance effectiveness, particularly as the Community Safety work being co-ordinated via Town Clerk's Department integrating work of City Police and City of London Corporation, including Joint Contact & Command Centre progresses.	Completed.

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
	Develop protocols with City Corporation DBE Development Planning on enforcement issues liaison relating to noise from unauthorised developments.	March 2013	Completed. Signed November 2014.	Completed
	Develop protocols with City Corporation Housing Management (including Barbican Estate, Registered Social Landlords and Barbican Centre) for responding to and resolving neighbour and neighbourhood noise complaints.	March 2014	Antisocial Behaviour policies and protocols now in place for City Housing. Parkguard now employed and intelligence reports circulated to key partners.	Completed.
	Continue to build on business engagement including attending and presenting at business, licensed trade, sector liaison and residents meetings.	Ongoing	Meetings attended as opportunities arise. Customer engagement survey completed September 2014.	Ongoing.
Responding 8	Make arrangements for the public sharing and availability of noise complaint data.	September 2012	Summary data available on request. CIEH noise surveys completed annually. Data provided to Licensing Liaison Partnership monthly and elected Members weekly.	Completed.
Tranquil Areas 1 – 4	None		Policy 1 – Representations made on Local Plan, Open Spaces Strategy, Area Environmental Strategies, Street Scene Manual, LIP, Aldgate Gyratory Scheme; to create	Completed

Policies Reference	Actions	Timescale	Review of Actions May 2016	Timescale
			<p>the policy space for implementation.</p> <p>ACTION: Need to develop a plan to put these, and remaining Tranquil Areas policies into mainstream COL practice.</p>	Ongoing

References

1. City of London Local Plan, City of London Corporation, 2015
2. Sounder City – The Mayor’s Ambient Noise Strategy, 2004
3. National Noise Incidence Survey (NNIS), Defra, 2000
4. Survey of Noise Attitudes (SoNA), Defra, 2013
5. Environmental Noise & Health in the UK, HPA, 2010
6. Community Noise, WHO, 1995
7. Guidelines for Community Noise, WHO, 1999
8. Night Noise Guidelines for Europe, WHO, 2009
9. Noise Policy Statement for England (NPSE), Defra, 2010
10. National Planning Policy Framework (NPPF), DCLG, 2012
11. The London Plan, Mayor of London, 2014
12. ISO 12913 Soundscape - Part 1: Definition and Conceptual Framework, 2014
13. A. Brown, Soundscape planning as a complement to environmental noise management, Proceedings of Inter-noise, Melbourne, Australia, 2014
14. A. Brown & A. Muhar, An approach to the acoustic design of outdoor space, Journal of Environmental Planning and Management, 2004
15. A. Brown & C. Grimwood, Loci for urban soundscape planning, design and management, Proceedings of International Congress on Acoustics, Buenos Aires, Argentina, 2016
16. Soundscape and the Built Environment, J. Kang & B. Schulte-Fortkamp (Eds.), CRC Press, 2016
17. L. Lavia, J. Xiao, J. Kang, A soundscape community engagement conceptual model for managing urban development, Proceedings of Inter-Noise, Hamburg, Germany, 2016